Seep Well Field Area Bioremediation Treatability Study

2021 Annual Progress Report

Nevada Environmental Response Trust Site
Henderson, Nevada

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LIST OF ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
AOI	Area of Interest
BWPC	Bureau of Water Pollution Control
Cascade	Cascade Technical Services
CoH	City of Henderson
DO	Dissolved Oxygen
DVSR	Data Validation Summary Report
EVO	Emulsified Vegetable Oil
FS	Feasibility Study
Ft/ft	Feet per foot
Gpm	Gallons per Minute
ISB	In-Situ Bioremediation
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter
mV	Millivolts
NDEP	Nevada Division of Environmental Protection
NERT or Trust	Nevada Environmental Response Trust
NMR	Nuclear Magnetic Resonance
O&M	Operation and Maintenance
OU	Operable Unit
ORP	Oxidation-Reduction Potential
PLFA	Phospholipid Fatty Acids
PRG	Preliminary Remediation Goal
Psi	Pounds per Square Inch
QA/QC	Quality Assurance/Quality Control
RI	Remedial Investigation
Site	Nevada Environmental Response Trust site, Clark County, Nevada
SRB	Sulfate-Reducing Bacteria
SWF	Seep Well Field
SU	Standard Units
Tetra Tech	Tetra Tech, Inc.
TOC	Total Organic Carbon
UIC	Underground Injection Control
UMCf	Upper Muddy Creek formation

Acronyms/Abbreviations	Definition
UNLV	University of Nevada at Las Vegas
USEPA	United States Environmental Protection Agency

CERTIFICATION

Seep Well Field Area Bioremediation Treatability Study 2021 Annual Progress Report
Nevada Environmental Response Trust Site
(Former Tronox LLC Site)
Henderson, Nevada

Nevada Environmental Response Trust (NERT) Representative Certification

I certify that this document and all attachments submitted to the Division were prepared at the request of, or under the direction or supervision of NERT. Based on my own involvement and/or my inquiry of the person or persons who manage the systems(s) or those directly responsible for gathering the information or preparing the document, or the immediate supervisor of such person(s), the information submitted and provided herein is, to the best of my knowledge and belief, true, accurate, and complete in all material respects.

Office of the Nevada Environmental Response Trust

Le Petomane XXVII, not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Signature: _____ Not Individually, but Solely as President of the Trustee _____, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Name: Jay A. Steinberg, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Title: Solely as President and not individually

Company: Le Petomane XXVII, Inc., not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Date: 8/17/22

CERTIFICATION

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been prepared in a manner consistent with the current standards of the profession, and to the best of my knowledge, comply with all applicable federal, state, and local statutes, regulations, and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

Description of Services Provided: Prepared Seep Well Field Area Bioremediation Treatability Study, 2021 Annual Progress Report.

August 17, 2022

David S. Wilson, CEM
Principal Engineer
Tetra Tech, Inc.

Date

Nevada CEM Certificate Number: 2385
Nevada CEM Expiration Date: September 19, 2022

1.0 INTRODUCTION

At the direction of the Nevada Environmental Response Trust (NERT or Trust), Tetra Tech, Inc. (Tetra Tech) has prepared this *Seep Well Field Area Bioremediation Treatability Study 2021 Annual Progress Report* to document activities associated with the ongoing Seep Well Field Area Bioremediation Treatability Study within the northern portion of the NERT Remedial Investigation Study Area, located in Clark County, Nevada (Figure 1). This report is being submitted to the Nevada Division of Environmental Protection (NDEP) under the Interim Consent Agreement effective February 14, 2011. This Annual Progress Report, which covers the period of January 2021 through December 2021 (referred to herein as the reporting period), provides a summary of the activities performed, presents the data collected, and discusses the results associated with the ongoing extension of the Seep Well Field (SWF) Area Bioremediation Treatability Study. This treatability study extension was implemented consistent with the NDEP-approved *Treatability/Pilot Study Modification No. 6 – Seep Well Field Area Bioremediation Treatability Study* (Tetra Tech, 2018). Subsequent NDEP-approved annual progress reports from previous reporting periods also included recommendations to further optimize implementation of the treatability study extension (*Seep Well Field Area Bioremediation Treatability Study 2019 Annual Progress Report* [Tetra Tech, 2020b] and *Seep Well Field Area Bioremediation Treatability Study 2020 Annual Progress Report* [Tetra Tech, 2021]). These recommendations were subsequently accepted by NDEP and incorporated into the treatability study program. Details related to recommendations and remaining treatability study activities are discussed in the Summary of Key Findings and Future Activities section of this report.

1.1 BACKGROUND

The SWF Area Bioremediation Treatability Study, which began in 2017, was implemented to evaluate and demonstrate the effectiveness of using in-situ bioremediation (ISB) to reduce the flux of perchlorate mass in groundwater that is migrating towards the Las Vegas Wash and not currently being captured by the existing extraction well network known as the SWF. As part of this treatability study, 25 injection wells were installed in a transect-orientation generally perpendicular to groundwater flow, with monitoring wells installed at varying distances upgradient, between, and downgradient of the injection wells (Figure 2). Following well installation, carbon substrate injections performed from 2017 – 2018 provided a sustained reducing environment in the subsurface and created a biologically active zone necessary for effective and continual perchlorate and chlorate biodegradation. Effectiveness monitoring results indicated that groundwater in this area is amenable to biodegradation of perchlorate, chlorate, and nitrate, including a reduction in perchlorate concentrations to less than the perchlorate Preliminary Remediation Goal (PRG) of 15 micrograms per liter (μg/L) in groundwater samples collected from several monitoring wells. Complete results of the treatability study through October 2018 were presented in the *Seep Well Field Area Bioremediation Treatability Study Results Report* (Tetra Tech, 2019a).

Since the SWF Area Bioremediation Treatability Study successfully demonstrated that ISB can be effective at reducing perchlorate concentrations in groundwater, NERT recommended that this treatability study be extended to evaluate long-term operation and maintenance requirements. This study extension was detailed in Treatability/Pilot Study Modification No. 6 (Modification No. 6), which was approved by NDEP on December 14, 2018. Long-term operation and maintenance components being evaluated as part of this extension include injection frequency, injection well pressures and flow rates, and injection well maintenance requirements. This information will be used in the remedy alternatives evaluation to be conducted as part of the forthcoming Feasibility Study (FS), as it is not only important to determine if the alternative can be effective at achieving the remedial action objectives, but also equally important to evaluate key components of the remedial alternative that will make it successful with regards to both implementation and long-term operation and maintenance.

1.2 OBJECTIVES

Because the original SWF Area Bioremediation Treatability Study demonstrated the effectiveness of the ISB technology at reducing perchlorate and chlorate concentrations in groundwater, the overall purpose of extending the SWF Area Bioremediation Treatability Study is to develop a more thorough understanding of the key design considerations and operation and maintenance components as they relate to potential long-term applications of ISB within the NERT Remedial Investigation (RI) Study Area. Specifically, the objectives of the study extension are as follows:

- Evaluate the injection frequency and required injectate quantities for long-term ISB operation, with injectate quantities of carbon substrate, nutrients, and distribution water assessed over time to provide optimal dosing that sustains the reducing conditions required for ISB of perchlorate and chlorate in groundwater.
- Develop a more in-depth understanding of long-term operation and maintenance requirements of injection well networks associated with ISB systems within the NERT RI Study Area related to evaluation of the following:
    - Impacts of biological activity and biomass accumulation on the injectability of carbon substrate into the injection wells through evaluation of injection pressures and flows;
    - Injection well maintenance requirements, including maintenance frequency and optimal techniques, to maintain long-term injectability; and
    - Costs associated with long-term operation and maintenance (O&M) of ISB systems.

Data collected as part of this treatability study extension will be incorporated into the FS to provide information with respect to effectiveness, operational requirements, and associated costs to support the long-term viability of ISB should it be selected as part of the final remedy.

1.3 REPORT ORGANIZATION

This report is organized as follows:

- **Introduction (Section 1.0):** Provides a brief background of the study, primary objectives of this treatability study extension, and organization of this report.
- **Routine Operations (Section 2.0):** Presents a summary of the injection activities implemented within the study area during this reporting period.
- **Periodic Maintenance (Section 3.0):** Summarizes injection well maintenance activities performed during this reporting period and evaluates the results of these maintenance activities.
- **Effectiveness Monitoring (Section 4.0):** Provides an overview of the effectiveness monitoring program and summarizes the chemical, geochemical, microbial, and hydrogeological data collected during this reporting period.
- **Summary of Key Findings and Future Activities (Section 5.0):** Presents the overall findings of data collected during this reporting period, a preliminary cost evaluation, and a summary of future activities planned for the ongoing extension of the SWF Area Bioremediation Treatability Study.
- **References (Section 6.0):** Lists the documents referenced in this report.

2.0 ROUTINE OPERATIONS

The primary operational component of the SWF Area ISB system is injection of a carbon donor into the subsurface to maintain reducing conditions for remediation of perchlorate- and chlorate-contaminated groundwater. From 2017 through 2021, eight injection events were performed as part of the SWF Area Bioremediation Treatability Study. All injection events have been performed by Cascade Technical Services (Cascade) under Tetra Tech oversight and direction. Details of the first six injection events performed as part of this treatability study were provided in the following documents:

- The first three injection events were performed under the original treatability study scope of work and summarized in the Results Report (Tetra Tech, 2019a).
- The fourth and fifth injection events were performed as part of Modification No. 6 activities and were summarized in the 2019 Annual Progress Report (Tetra Tech, 2020b).
- The sixth injection event was performed during the 2020 reporting period and was summarized in the 2020 Annual Progress Report (Tetra Tech, 2021).

During this reporting period (January 2021 to December 2021), two injection events were performed (Injection Event 7 and Injection Event 8). The seventh injection event was performed from February 23 through March 16, 2021. The eighth injection event was performed from November 3 through November 21, 2021. The overall injection system and framework for the two injection events in 2021 followed the general protocols and procedures for the prior injection events performed under the original treatability study scope of work unless otherwise noted. This section provides a summary of the seventh and eighth injection events, and includes a discussion of injection event activities, quantities, procedures, and frequency. Data collected during Injection Event 7 and Injection Event 8 are provided in Appendix A.

2.1 DESIGNED INJECTION QUANTITIES

As stated in the Results Report and the previous Annual Progress Reports, the designed carbon substrate and distribution water requirements for the ISB system were determined based on several criteria including:

- Review of stoichiometric requirements;
- Results and findings from the University of Nevada at Las Vegas (UNLV) laboratory bench-scale studies including oil adsorption tests;
- Results and findings from previous NERT treatability studies (both laboratory and field);
- Literature case studies (emulsified vegetable oil [EVO] adsorption reports in particular);
- Established industry protocol documents;
- Prior experience of Tetra Tech engineers/remedial designers; and
- Discussions with EOS Remediation (the manufacturer of the selected EVO product).

Ultimately, an oil retention ratio was employed as the governing criterion for the selection of EOS PRO quantities during the first injection event, and injection quantities were varied during the first three injection events as part of the treatability study injection design process, as discussed in the Results Report (Tetra Tech, 2019a). Based on the effectiveness monitoring results, it was determined that the quantities injected during the third injection event, which were approximately 85 percent of the carbon substrate injected during the first injection event, resulted in robust perchlorate and chlorate treatment and sustainment of reducing conditions. Therefore, the same general quantities were injected during all subsequent activities performed to date under Modification No. 6 (Injection Event 4 through Injection Event 8).

The quantities injected during Injection Event 7 included a total of approximately 16,700 gallons of EOS PRO, 380 gallons of glycerin, 120 gallons of phosphate solution, and 300 pounds of sodium sulfite. The quantities injected

during Injection Event 8 included a total of approximately 17,200 gallons of EOS PRO, 370 gallons of glycerin, 120 gallons of phosphate solution, and 300 pounds of sodium sulfite. Glycerin serves as an immediate source of carbon to rapidly drive the groundwater anaerobic and reduce acclimation time. Because EOS PRO is already formulated with minor quantities of macronutrients, namely phosphorus, only a nominal quantity of additional phosphate was added to the injectate solution. Finally, sodium sulfite acts as an oxygen scavenger to remove dissolved oxygen chemically and prevent aerobic microbial growth in the formation to the extent possible.

In addition to the carbon source and amendments, water was required for dilution of the injectate solution and subsequent injections of water to optimize the distribution of carbon substrate within the subsurface. The water source selected for injections was extracted groundwater, which is the same water source used during previous injection events. During this process, groundwater was extracted via submersible pumps placed in five upgradient monitoring wells (SWFTS-MW08A, SWFTS-MW11, SWFTS-MW12, SWFTS-MW13, and SWFTS-MW17) and transferred to the two 16,400-gallon frac tanks for use during injection operations. Extracted groundwater was then batch mixed with amendments and EOS PRO in the frac tanks to achieve a dilution ratio of 1:4 parts of EOS PRO:water. Following injections of carbon substrate and amendments, approximately 341,000 gallons of extracted groundwater were injected as distribution water during each injection event. Appendix A presents tabulated summaries of the injection and extraction quantities.

2.2 INJECTION PROCEDURES

The overall injection system and framework for the first five injection events followed the same general protocols and procedures for batch mixing of the injectate solution. As recommended in the 2019 Annual Progress Report, in-line mixing was evaluated as an alternative substrate mixing technique during the sixth injection event in accordance with the NDEP-approved *In-Situ Bioremediation Injections – In-line Mixing and Injections Field Guidance Document* (Tetra Tech, 2020a). Although in-line mixing was successfully implemented as the mixing technique during the sixth injection event, it was determined that batch mixing generally provides a more controlled and reliable mixing process that results in less variation in mixture consistency, as well as higher daily injection rates. Discussion of implementation and results of the in-line mixing protocol was included in the 2020 Annual Progress Report (Tetra Tech, 2021). In accordance with the recommendations in Section 5.3 of the 2020 Annual Progress Report, the seventh and eighth injection events were performed using batch mixing implemented in accordance with the NDEP-approved *In-Situ Bioremediation Injections – Batch Mixing and Injections Field Guidance Document* (Tetra Tech, 2019c).

The injection process involved collecting extracted groundwater in the frac tanks until the targeted water quantity was achieved for each batch. The required quantities of EOS PRO, glycerin, phosphate solution, and sodium sulfite (based on the injectate solution recipe) were then added to the frac tank of extracted groundwater. The injectate solution was recirculated within the frac tank using a submersible pump to achieve mixture consistency prior to injections. Following preparation, the injectate solution was pumped from the frac tank to the injection wells via an injection manifold system that was connected to up to 13 injection wells at a single time. During substrate injection activities, the specific gravity of the injectate solution was periodically measured to verify mixture consistency throughout the injection process. Upon completion of substrate injections, distribution water was injected into the injection wells to optimize the distribution of carbon substrate within the subsurface. Following completion of the injections, the frac tanks were cleaned and all equipment was dismantled and removed from the study area.

During all injection operations, flow rate, pressure, and total quantities injected were measured at each injection well. As summarized in Appendix A, Tables A.2 and A.7, the quantities of the injectate solution and distribution water varied between injection wells based on the screen lengths and thickness of the targeted formation at each injection location. Specific gravity measurements of the injectate solution have also been provided in Appendix A, Tables A.5 and A.10.

2.3 INJECTION WELL PERFORMANCE

Operational data collected during injection activities are used to evaluate long-term injectability. Specifically, injection flow rate and pressure at each injection well are key indicators of injection well performance. These parameters are also evaluated with respect to increasing cumulative injection volumes and injectate viscosity (i.e., carbon substrate solution versus distribution water). A summary of average flow rate and pressures for the injection wells during each injection event for the duration of the treatability study is provided in Appendix A, Table A.11. This section specifically discusses injection well performance during the seventh and eighth injection events performed during the reporting period.

2.3.1 Injection Event 7

During the seventh injection event, measurements of flow rate and injection pressure at each injection well indicate that the average injection rate was approximately 9 gallons per minute (gpm) while sustained injection pressures generally averaged 19 pounds per square inch (psi). All 25 injection wells received their targeted injectate solution and follow-up distribution water at reasonable injection flow rates and pressures.

It should be noted that injection well maintenance was performed in February 2021 prior to the seventh injection event on three injection wells that had only received a portion of their targeted carbon substrate solution quantity during Injection Event 6 (namely, SWFTS-IW13B, SWFTS-IW15, and SWFTS-IW19). During the seventh injection event, injectability significantly improved in these three injection wells. For example, the average injection rate into SWFTS-IW15 was 11 gpm during the seventh injection event performed in February/March 2021 compared to an average injection rate of 6.9 gpm during the sixth injection event in May/June 2020. Additionally, injectability into SWFTS-IW13B during Injection Event 7 was restored to baseline conditions observed during the first injection event as a result of the February 2021 maintenance (Appendix A, Table A. 11).

Injections into injection wells SWFTS-IW06B and SWFTS-IW19 were successful during the fifth injection event following well maintenance activities in September 2019. However, during the sixth injection event, injection well SWFTS-IW19 only accepted a portion of the targeted carbon substrate solution but successfully accepted the full targeted follow-up distribution water. Although SWFTS-IW06B accepted its designed quantities of carbon substrate solution and distribution water during the sixth injection event, a relatively high ratio of average sustained pressure to average flow rate of 9.8 psi:gpm was observed at this well during Injection Event 6 (Appendix A, Table A.11). Based on observations during the sixth injection event, more aggressive well maintenance techniques were applied during the second maintenance event for each of these wells in February 2021, including hydrojetting only (no chemical addition) at SWFTS-IW06B and hydrojetting with chemical addition at SWFTS-IW19. Performance of SWFTS-IW06B during the seventh injection event improved significantly following well maintenance, as indicated by the ratios of average sustained pressure to average flow rate of 9.8 psi:gpm and 4.3 psi:gpm during sixth and seventh injection events, respectively (Appendix A, Table A.11). Similarly, injectability was improved at SWFTS-IW19 with an average injection rate of 10 gpm during the seventh injection event performed in February/March 2021 compared to the previous sixth injection event in May/June 2020 with an average injection rate of 5.3 gpm.

2.3.2 Injection Event 8

During the eighth injection event, measurements of flow rate and injection pressure at each injection well indicated that the average injection rate was approximately 8 gpm while sustained injection pressures generally averaged 20 psi. All 25 injection wells received their targeted injectate solution and follow-up distribution water at reasonable injection flow rates and pressures.

No additional injection well maintenance was performed prior to the eighth injection event. As discussed in Section 3.1, the empirical threshold or early signal for the need of well maintenance currently being considered is an injection pressure to injection rate ratio greater than 5.0. The ratio of average sustained pressure to average

flow rate at all 25 of the injection wells measured below this 5.0 psi/gpm during the eighth injection event (Appendix A, Table A.11). Injection pressures and flow rates observed during Injection Event 8 indicated that the improved injection well performance observed during Injection Event 7 was maintained.

2.4 EVALUATION OF INJECTION FREQUENCY

As previously described in Section 1.2, the objectives of the treatability study extension include evaluating the injection frequency and required injectate quantities for long-term ISB operation to provide optimal dosing that sustains the reducing conditions required for ISB of perchlorate and chlorate in groundwater, as well as the objective of evaluating requirements for long-term O&M resources and costs for this technology application. Injection protocol requirements are an important design consideration for the creation and maintenance of adequate anaerobic conditions for sustained perchlorate bioremediation. Generally, injection frequency and carbon substrate requirements for ISB systems can vary over the operational time frame, particularly with passive systems that involve the periodic injection of slow-release carbon substrates, such as EVO, which tend to adsorb and persist in the saturated subsurface over time. Therefore, the injection frequency and required carbon substrate and distribution water quantities are key long-term O&M components that determine both remedy effectiveness and associated cost to maintain the remedial system.

Since the study began in 2017 through this reporting period, a total of eight injection events have been performed as part of the original study and subsequent study extension. ***Table 1*** presents an overview of the injection events over time since the treatability study began.

Table 1 Injection Frequency Over Time

Injection Events	Months Between Injection Events
Event 1 to 2	4
Event 2 to 3	4
Event 3 to 4	7
Event 4 to 5	8
Event 5 to 6	8
Event 6 to 7	8
Event 7 to 8	8

As presented in ***Table 1***, the injection frequency has decreased over time (i.e., more months between injection events) while still sustaining a biologically active zone that is degrading substantial perchlorate and chlorate in groundwater based on the effectiveness monitoring results described in Section 4.0. Decreasing the injection frequency over time while maintaining remedial effectiveness has also resulted in a reduction in sampling frequency. Over the period of this study extension, the injection frequency, potential adjustments to injection quantities, and groundwater sampling frequency and parameters will continue to be evaluated as part of ISB system optimization.

3.0 PERIODIC MAINTENANCE

ISB performed through periodic injections of a slow-release substrate is generally considered a passive remedy. As part of the ISB process, both perchlorate-degrading biomass and precipitated organic and inorganic solids are expected to develop over time, which can result in localized permeability reductions within the injection wells and surrounding filter pack. Injection wells that periodically encounter permeability reduction due to buildup of biomass and/or inorganic precipitates (as indicated by injection pressure fluctuations) require occasional physical and/or chemical well maintenance. Therefore, some degree of injection well maintenance will be necessary should ISB be selected as part of the final remedy (USEPA, 2013).

Project stakeholders have raised concerns over potential reduction in injection well efficiency and aquifer permeability in the vicinity of the injection wells due to biomass and chemical precipitate accumulation. To address these concerns, this study extension continues to evaluate the maintenance requirements to sustain long-term injectability in an ISB remedy. The previous 2019 and 2020 Annual Progress Reports presented thorough discussions of the biomass and precipitates typically observed in injection wells associated with ISB systems, as well as summaries and results of the injection well maintenance activities performed in 2019 and 2020 (Tetra Tech, 2020b and Tetra Tech, 2021).

Based on the results of the previous injection well maintenance activities and performance during the sixth injection event conducted in May/June 2020, additional limited injection well maintenance activities were performed in February 2021. This section provides a summary of the February 2021 injection well maintenance activities and a preliminary evaluation of the long-term effects of the well maintenance activities performed to date in terms of technique effectiveness and frequency of application.

3.1 INJECTION WELL SELECTION

As described in the *Proposed Injection Well Maintenance Activities Technical Memorandum* (herein referred to as Well Maintenance Technical Memorandum) (Tetra Tech, 2019b) and 2019 Annual Progress Report, injection wells are selected for maintenance based on review of their respective injection pressures and injection flow rates during the most recent injection event, as well as trends throughout all injection events to date. Ratios of the injection pressure to injection flow rates observed during the injection events are calculated to highlight injection wells that exhibit an increase in injection pressures and decrease in injection rates, thereby exhibiting higher ratios of pressure to flow. The empirical threshold or early signal for the need of injection well maintenance currently being considered is an injection pressure to injection rate ratio greater than 5.0 psi:gpm. It should be noted that once this treatability study extension is completed, this threshold may be adjusted based on collection of additional data. Injection pressure and injection flow rate data for all eight injection events performed to date are provided in Table A.11 of Appendix A.

During the 2021 reporting period, injection well maintenance was performed in February 2021 (prior to the seventh injection event) on four injection wells, namely SWFTS-IW06B, SWFTS-IW13B, SWFTS-IW15, and SWFTS-IW19. These wells were selected for the reasons described below.

- **SWFTS-IW06B –** This injection well was selected for maintenance during the first maintenance event performed in September 2019 due to an injection pressure to injection flow rate ratio of 10.7 psi:gpm during the fourth injection event. Although injection well SWFTS-IW06B accepted the targeted injectate and distribution quantities during the sixth injection event (performed in May/June 2020), the injection pressure increased and the injection flow rate decreased, resulting in an overall injection pressure to flow rate ratio of 9.8 psi:gpm. As a result, injection well SWFTS-IW06B underwent maintenance again during the February 2021 maintenance event consisting of a more aggressive redevelopment technique than originally employed as discussed in Section 3.2 below.

- **SWFTS-IW13B –** This injection well previously underwent maintenance during both the 2019 and 2020 maintenance events, which may in part be due to the shorter injection well screen and relatively high proportion of inorganic calcium precipitates observed at SWFTS-IW13B. Although the post-maintenance aquifer testing results did show a slight improvement when compared to the pre-maintenance results, injection well SWFTS-IW13B did not accept injectate during the fifth injection event. Following a slightly more aggressive maintenance effort during the February 2020 maintenance event (as described in Section 3.2), this injection well was restored and injections proceeded during the sixth injection event. However, injection well SWFTS-IW13B stopped accepting injectate at the Underground Injection Control (UIC) pressure limit of 35 psi after reaching approximately 50 percent of the targeted volume. Therefore, injection well SWFTS-IW13B was selected for a third maintenance effort in February 2021.
- **SWFTS-IW15 –** This injection well successfully accepted injectate and distribution water at reasonable injection pressures and flow rates during the first five injection events. During the sixth injection event performed in May/June 2020, injection well SWFTS-IW15 did not reach its targeted injectate quantity due to low injection rates at the UIC pressure limit of 35 psi. However, as with SWFTS-IW19, this injection well did accept its targeted volume of distribution water during Injection Event 6. Due to the limited injectate quantity being accepted during the sixth injection event, this well was included in the maintenance program in February 2021, which is the first time that maintenance had been performed on this well.
- **SWFTS-IW19 –** As with injection wells SWFTS-IW06B and SWFTS-IW13B, this injection well was also part of the first maintenance event in 2019 due to non-acceptance of injection flow at 35 psi during the fourth injection event. Following maintenance in September 2019, SWFTS-IW19 accepted injectate during both the fifth and sixth injection events. However, during the sixth injection event, only a portion of the targeted carbon substrate solution was injected into SWFTS-IW19 due to extremely low injection rates at the UIC pressure limit of 35 psi. However, this well successfully accepted the full targeted follow-up distribution water. The overall injection pressure to injection flow rate ratio observed at SWFTS-IW19 during the sixth injection event measured 5.7 psi:gpm, slightly above the empirical threshold 5 psi:gpm considered in this study extension. Based on observations during the sixth injection event, injection well SWFTS-IW19 was included in the February 2021 maintenance event consisting of a more aggressive redevelopment technique than originally employed.

3.2 INJECTION WELL MAINTENANCE ACTIVITIES

The third injection well maintenance effort was conducted from February 16 – 19, 2021. As described in the Well Maintenance Technical Memorandum and 2019 Annual Progress Report, various well maintenance techniques are being evaluated to determine the appropriate maintenance method to maximize long-term injectability. The three methods being evaluated included traditional surge and bail, hydrojetting, and/or hydrojetting with chemical addition (AQUA-CLEAR® MGA and AQUA-CLEAR® AE). Procedural details of these maintenance techniques are documented in the 2019 Annual Progress Report.

The maintenance method selected for an injection well is dependent on both the injection pressure to flow rate ratio and past maintenance performed (if any). Selecting a different maintenance technique in an injection well that has previously undergone maintenance allows for direct comparison of improved and lasting injectability using different maintenance methods. The following maintenance activities were selected during the February 2021 maintenance event.

- Traditional surge and bail, the least aggressive method of well maintenance being evaluated as part of this study, was selected for SWFTS-IW15 since this was the first maintenance effort at this injection well.
- Hydrojetting (a moderately aggressive method) was selected for the maintenance technique on SWFTS-IW06B so that operational time and injection pressure to flow rate ratios after application of this more aggressive technique could be compared to data collected for the previously applied surge and bail method at SWFTS-IW06B in September 2019.

- The most aggressive maintenance option using a combination of surge and bail with hydrojetting and addition of chemicals was appropriate for injection well SWFTS-IW13B, due to the presence of calcium precipitates combined with the incremental improvements following the first and second maintenance events.
- Hydrojetting with chemical addition was also selected for SWFTS-IW19 so that the results could be compared to the results achieved at this well using hydrojetting only during the first September 2019 maintenance event.

During the initial surge/brush/bail activities conducted at each injection well, groundwater that was removed from the well was typically light to dark grey and with an organic odor. Solids removed from the injection wells during maintenance included black organic fines and colloidal materials and/or white to yellowish-white inorganic precipitates. The black organic fines consisted of both active and dead biomass and very fine-grained sand and silt representative of the surrounding formation. In general, the solids initially removed from the injection wells by brushing the well screen were soft with a malleable, soapy texture, and smeared easily with finger pressure, indicating the presence of calcium oleate (a breakdown product of EVO). As expected, the largest volume of suspended solids was observed at SWFTS-IW15, where well maintenance had not been conducted previously. These solids primarily consisted of accumulated biomass with some soft, soapy inorganic precipitates. A smaller volume of suspended solids was removed from SWFTS-IW13B and SWFTS-IW19 in February 2021 compared to previous well maintenance events, which suggests that additional application of well maintenance continued to improve the condition of these two injection wells. As the bulk of the accumulated solids were cleared from each injection well casing and screen, the groundwater that was removed from the well became relatively clear to light grey with only trace black organic fines, colloidal material, and/or inorganic precipitates.

3.3 PRELIMINARY EVALUATION OF LONG-TERM WELL MAINTENANCE

Evaluation of the O&M requirements to maintain long-term injectability of injection well networks associated with potential future NERT ISB implementations is a key objective of Modification No. 6. Data collected regarding injection well maintenance frequency, optimal well maintenance techniques, and maintenance costs will be incorporated into the FS. Although a complete evaluation of long-term injection well maintenance will be performed at the conclusion of this study extension, a preliminary evaluation through this reporting period is included herein.

Eight injection events have been performed over 5 years as part of this treatability study. Since the inception of the treatability study, 14 of the 25 injection wells have required no injection well maintenance and continue to accept injectate solution at low injection pressure to injection flow rate ratios of less than 5.0 psi:gpm. Of the 11 injection wells that have received well maintenance, only three have received maintenance more than one time during the 5-year period.

During the seventh injection event, all injection wells accepted their targeted injectate and distribution water at acceptable injection flow rates and injection pressures. As a result, no maintenance activities were performed prior to the eighth injection event. Injection pressure to flow rate ratios remained low during the eighth injection event, which indicates no injection well maintenance is currently required.

As previously stated, an objective of this study extension is to determine the most appropriate well maintenance technique and likely frequency that maintenance is required for long-term injectability. Results to date indicate that all three injection well maintenance techniques (surge and bail, hydrojetting, and hydrojetting with chemical addition) have improved the injectability. ***Table 2*** presents a summary of well maintenance conducted at each injection well and the range of ratios of average sustained pressure to average flow rate observed during injection events before and after maintenance activities.

Table 2 Injection Well Maintenance Methods

Injection Well ID (1)	Maintenance Event			Ratio of Average Sustained Pressure (psi) to Average Injection Rate (gpm)				
	September 2019	February 2020	February 2021					
	After Injection Event 4	After Injection Event 5	After Injection Event 6	Injection Event 4	Injection Event 5	Injection Event 6	Injection Event 7	Injection Event 8
SWFTS-IW01A	None	None	None	2.0	1.4	1.8	1.8	1.4
SWFTS-IW01B	None	**Hydrojetting**	None	2.4	7.8	2.2	2.2	2.0
SWFTS-IW02A	**Surge and Bail**	None	None	5.8	3.2	1.6	2.5	1.8
SWFTS-IW02B	None	None	None	4.3	2.0	2.4	2.5	1.9
SWFTS-IW03	None	None	None	2.2	2.8	1.6	2.0	2.1
SWFTS-IW04	None	None	None	2.7	1.8	1.9	1.6	2.3
SWFTS-IW05	None	None	None	0.6	3.2	1.7	2.2	2.2
SWFTS-IW06A	**Hydrojetting with Chemical Addition**	None	None	5.4	2.5	3.1	2.6	2.2
SWFTS-IW06B	**Surge and Bail**	None	**Hydrojetting**	10.7	5.0	9.8	4.3	3.9
SWFTS-IW07	None	None	None	1.5	3.4	1.3	1.5	2.8
SWFTS-IW08	None	None	None	2.0	2.0	2.0	2.2	3.3
SWFTS-IW09	**Surge and Bail**	None	None	7.4	3.8	3.2	2.6	3.7
SWFTS-IW10	**Hydrojetting**	None	None	7.8	2.8	2.4	2.9	3.7
SWFTS-IW11	**Hydrojetting**	None	None	5.6	1.2	1.9	1.6	1.3
SWFTS-IW12	None	None	None	2.2	1.2	2.7	1.4	1.4
SWFTS-IW13A	None	None	None	3.5	3.9	2.6	1.9	1.6
SWFTS-IW13B	**Hydrojetting with Chemical Addition**	**Hydrojetting with Chemical Addition**	**Hydrojetting with Chemical Addition**	– (2)	– (2)	8.4	3.2	4.0
SWFTS-IW14	None	None	None	1.5	2.4	2.9	1.6	2.3
SWFTS-IW15	None	None	**Surge and Bail**	3.6	3.3	2.9	1.6	2.1
SWFTS-IW16A	None	None	None	2.7	2.3	3.1	2.4	3.0
SWFTS-IW16B	None	None	None	2.9	2.5	3.1	2.5	2.9
SWFTS-IW17	None	None	None	3.9	1.4	3.3	2.4	2.7
SWFTS-IW18	**Hydrojetting with Chemical Addition**	None	None	7.5	2.1	3.0	2.4	2.9
SWFTS-IW19	**Hydrojetting**	None	**Hydrojetting with Chemical Addition**	– (2)	3.0	5.7	2.3	2.7
SWFTS-IW20	None	None	None	3.5	5.1	2.7	2.1	3.3
Total Wells Receiving Maintenance	**9**	**2**	**4**					

Notes:
1. Bold font indicates wells that have had maintenance.
2. No injections performed at this well due to zero flow at the maximum permissible pressure limit of 35 psi.

Indicates well maintenance was performed between the injection events indicated.

Each of the four injection wells that received maintenance during the 2021 reporting period (namely, SWFTS-IW06B, SWFTS-IW13B, SWFTS-IW15, and SWFTS-IW19) is discussed below.

- ***SWFTS-IW06B –*** In February 2021, hydrojetting was conducted at SWFTS-IW06B, which resulted in improved performance during both the seventh and eighth injection events (injection pressure to flow rate ratios of 4.3 and 3.9 psi:gpm, respectively). As expected, these results indicate that the more aggressive hydrojetting method likely results in greater longevity of injectability compared to the previously applied surge and bail technique, which returned to pre-maintenance conditions approximately 8 months after surge and bail was performed.
- ***SWFTS-IW13B –*** Hydrojetting with chemical addition was performed in February 2021 before the seventh injection event. This maintenance event successfully restored SWFTS-IW13B, as indicated by the injection pressure to flow rate ratio of 3.2 psi:gpm observed during the seventh injection event. This improved injectability was sustained during the eighth injection event, with an observed ratio of 4.0 psi:gpm. These results suggest that even after the injection well was unable to accept injectate during the fourth and fifth injection events, the injection well was able to be incrementally restored and injectability now has been sustained during both injection events performed in 2021.
- ***SWFTS-IW15 –*** In February 2021, surge and bail injection well maintenance was performed for the first time at SWFTS-IW15. As a result, SWFTS-IW15 successfully accepted all of the designed carbon substrate and distribution water quantities during the seventh and eighth injection events at improved injection pressure to flow rate ratios of 1.6 psi:gpm and 2.1 psi:gpm, respectively.
- ***SWFTS-IW19 –*** Hydrojetting with chemical addition was performed on SWFTS-IW19 during the February 2021 well maintenance event, which resulted in improved injection performance during both the seventh and eighth injection events (injection pressure to flow rate ratios of 2.3 and 2.7 psi:gpm, respectively). These results suggest that hydrojetting with chemical addition is likely to have longer lasting results and lower injection pressure to flow rate ratios than hydrojetting alone, which had been performed on this well in September 2019.

As these extension activities continue, more data will be collected on the injection pressures, injection rates, and preferred maintenance technique to arrive at the optimal criteria for when injection well maintenance should be performed and the associated frequency required for full-scale ISB applications. A complete evaluation of injection well maintenance will be provided at the conclusion of this study extension.

4.0 EFFECTIVENESS MONITORING

Effectiveness monitoring is ongoing to observe groundwater contaminant, geochemical, and hydrogeological changes during long-term operations following alterations to a variety of O&M components, such as modifications to the mixing/injection strategies (i.e., batch versus in-line mixing) and performance of different maintenance techniques on injection wells. Because ISB has already demonstrated effectiveness at reducing perchlorate concentrations to below the PRG of 15 μg/L, the sampling program was scaled down in 2019 through a reduction in sampling frequency and associated analytes in accordance with NDEP-approved Modification No. 6. Additional reductions to sampling frequency were recommended in the 2020 Annual Progress Report, which was approved by NDEP on November 17, 2021. Therefore, those changes to the effectiveness monitoring program will be implemented during the 2022 reporting period. This section summarizes the effectiveness monitoring program implemented during this reporting period and presents an analysis of the hydrogeological evaluation and effectiveness monitoring results.

4.1 EFFECTIVENESS MONITORING ACTIVITIES

As part of the effectiveness monitoring program, groundwater samples were periodically collected from both upgradient and downgradient monitoring wells within the treatability study area (as shown on Figure 2). Groundwater sampling activities were conducted in accordance with the *Field Sampling Plan, Revision 1* (ENVIRON, 2014). Prior to groundwater sample collection, groundwater levels were gauged in all treatability study monitoring wells to be used in potentiometric contouring. Field low-flow purge logs for all groundwater sampling events are provided in Appendix B.

A total of six groundwater sampling events were conducted during the 2021 reporting period. Per Modification No. 6, groundwater samples were analyzed for key parameters of perchlorate, chlorate, nitrate, total organic carbon (TOC), sulfate, and field parameters (dissolved oxygen [DO], oxidation-reduction potential [ORP], pH, turbidity, temperature, and conductivity). Additional parameters of ferrous iron, sulfide, select metals, methane, perchlorate reductase, and phospholipid fatty acids (PLFA) were analyzed on a quarterly, semi-annual, or annual basis in accordance with Modification No. 6[1].

4.1.1 Data Validation

A Data Validation Summary Report (DVSR) was prepared for the laboratory analytical data collected during the reporting period of January 2021 – December 2021. This report was prepared to assess the validity and usability of laboratory analytical data from groundwater monitoring associated with the ISB of perchlorate in groundwater. Tetra Tech collected additional quality assurance and quality control (QA/QC) samples, which included equipment blanks, field blanks, field duplicates, and matrix spike/matrix spike duplicates to aid in assessing data quality. The QA/QC samples provided information on the effects of sampling procedures and assessed potential sampling contamination, laboratory performance, and matrix effects.

The DVSR is provided as Appendix C to this annual progress report. The laboratory analytical data were verified and validated to Stage 2A in accordance with procedures described in the *Quality Assurance Project Plan, Revision 5* (Ramboll, 2020a), *Quality Assurance Project Plan, Revision 6* (Ramboll, 2020b, NDEP Data Verification and Validation Requirements (NDEP, 2018), and the references contained therein. The review

[1] Additional reductions in analysis frequency recommended in the 2020 Annual Progress Report began during the 2022 reporting period following NDEP approval of the 2020 Annual Progress Report on November 17, 2021.

process also used professional judgment and guidance from the USEPA National Functional Guidelines to determine the final qualifiers, which were added to the database and presented in the DVSR tables.

4.2 HYDROGEOLOGICAL EVALUATION

Changes in hydrogeological conditions over time can affect treatability study results. Therefore, long-term water level monitoring transducers were installed in 2017 and have been recording data since then to monitor hydrogeological conditions over the course of the treatability study. During this study, 10 transducers were installed in monitoring wells within the immediate treatability study area, while two transducers were installed upgradient of the treatability study area near the City of Henderson (CoH) Pond 13 to monitor discharges of clean treated effluent to the pond. A detailed description of the hydrogeological monitoring program and results is provided in Appendix D.

In general, hydraulic rises observed in the transducer data are associated with the injection events and significant storm events. The 2021 injection events (February/March and November 2021) were visible in the transducer data as small rises of a few inches in groundwater elevation each day that injection occurred. The amount of water level rise observed during injections was relatively small, which was expected due to the high hydraulic conductivity in the treatability study area and the transducers being installed in monitoring wells that are located at least 20 feet away from the injection wells. However, the multiple precipitation events occurring in 2021 resulted in significant water table rise and overland flow and flooding in the treatability study area in July 2021 (Appendix D, Figure D.3). Groundwater elevations rose between 0.5 feet and 4 feet due to these storm events between the June and July 2021 monitoring events in western area monitoring wells (PC-88, PC-91, PC-92, SWFTS-MW02, SWFTS-MW04, SWFTS-MW06A/B, SWFTS-MW07A/B, and SWFTS-MW20).

In addition to injection events and significant storm events, periodic discharges of water by the CoH to upgradient Pond 13 have also been observed to cause noticeable hydraulic rises in the downgradient treatability study area and can also affect perchlorate concentrations migrating into the treatability study area. In November 2021, the CoH began to utilize some of its ponds in ways inconsistent with the previous decade. Beginning in November 2021 and continuing until February 2022, the CoH filled a number of previously unused infiltration ponds which allowed millions of gallons of treated water to recharge shallow groundwater. This resulted in significant and widespread increase in groundwater elevation and such water level rises were clearly evident in December 2021 in the vicinity of both Pond 13 and the treatability study area. In the vicinity of Pond 13, water level rises of up to 14 feet were observed in December 2021, with subsequent water level rises of up to two feet observed in the treatability study monitoring wells beginning within two days after the water levels in the vicinity of Pond 13 began to increase (Appendix D, Figure D.2).

Overall, water discharged to Pond 13 and major precipitation events resulted in temporary changes to the potentiometric surface. Such changes in hydraulic gradient have the potential to result in temporary changes to treatment effectiveness because the ISB injection transects were designed to intercept groundwater at the baseline gradient and flow direction within the small treatability study area. Groundwater potentiometric contours from the baseline, pre-injection synoptic gauging event in July 2017 and from all six monitoring events during the 2021 reporting period are provided on Figures 4a and 4b. Typically, the hydraulic gradient from the west ranges from approximately 0.007 feet per foot (ft/ft) to 0.008 ft/ft while the hydraulic gradient from the south ranges from approximately 0.014 ft/ft to 0.016 ft/ft. The upgradient groundwater flow direction and hydraulic gradients observed in June and September 2021 are consistent with these baseline conditions (Figures 4a and 4b). However, the groundwater contours from the July 2021 effectiveness monitoring event indicate that the hydraulic gradient from the west increased to 0.015 ft/ft, which is twice the typical gradient from that direction, whereas the hydraulic gradient from the south increased only slightly to 0.017 ft/ft compared to a baseline gradient of 0.014 ft/ft to 0.016 ft/ft (Figure 4b).

In addition, the groundwater flow direction in the western portion of the treatability study area observed in July 2021 shifted slightly to flow more from the northwest towards the southeast, essentially parallel to the injection

well transect, rather than the baseline west to east flow direction. The baseline west to east flow direction has always resulted in some influx of untreated groundwater to influence perchlorate concentrations in downgradient monitoring wells. However, the conditions observed in July 2021, namely a steeper gradient towards the southeast, likely resulted in migration of a larger flux of untreated water from the western portion of the treatability study area both in between the injection well transects and downgradient monitoring wells in the western portion of the treatability study area, which resulted in a noticeable impact to perchlorate concentration reductions compared to previous reporting periods. Groundwater flow direction and gradient had returned to baseline conditions by the subsequent monitoring event in September 2021.

As previously discussed, a steep water level rise of 14 feet was observed in the transducer data from the Pond 13 area in December 2021. This rise was associated with CoH's effluent release to Pond 13 and other typically unused ponds beginning in November 2021. The December 2021 effectiveness monitoring event was conducted at the beginning of the month and therefore, the potentiometric surface for December 2021 may not reflect the full magnitude of the potential shift in hydraulic gradient in the treatability study area that occurred due to the steep rise in water levels near Pond 13. The hydraulic gradient from the west in December 2021 increased to 0.011 ft/ft, which is elevated above the baseline gradient of 0.007 ft/ft to 0.008 ft/ft (Figure 4b). The effects on treatment effectiveness of the study from the CoH's use of Pond 13 and the adjacent ponds, along with additional details on how the flooding of the CoH ponds affected the study area and the surrounding area in Operable Unit (OU)-3, will be reported in the next reporting period and also discussed in the forthcoming RI Report for OU-3.

4.3 EFFECTIVENESS MONITORING RESULTS

As explained in Section 4.1, groundwater samples were periodically collected and analyzed for a variety of constituents during the treatability study to evaluate the aquifer's response to varying O&M components related to ISB injections. This section provides an overview of the groundwater sampling results, including a discussion of the primary contaminants, additional chemical and geochemical parameters, and relationships among these parameters. Because perchlorate is the primary chemical of concern associated with this treatability study, Section 4.3.1 presents a detailed discussion of the perchlorate degradation response, an estimate of perchlorate distribution, and an estimate of perchlorate mass destroyed during this reporting period. Other significant constituents, including chlorate, nitrate, and TOC, are discussed in Sections 4.3.2 through 4.3.4. Additional parameters, including DO, ORP, pH, sulfate, sulfide, metals, and methane, have also been evaluated and are discussed in Section 4.3.5. Data for all parameters are presented in the comprehensive data tables provided in Appendix E, Tables E.1 through E.4. Data for perchlorate, chlorate, nitrate, TOC, arsenic, phosphorus, DO, and ORP are depicted graphically in individual well trend profiles provided in Appendix F. Field logs from all groundwater sampling events are provided in Appendix B and the DVSR is provided in Appendix C.

4.3.1 Perchlorate

An evaluation of the perchlorate degradation response, perchlorate distribution throughout the treatability study area, and estimates of perchlorate mass removed during the reporting period are presented in the subsequent sections.

4.3.1.1 Perchlorate Degradation Response

Groundwater perchlorate concentrations have continued to show decreases following the seventh and eighth injection events when compared to baseline (pre-injection) concentrations. As previously described in Sections 2 and 3, several O&M components have varied since the treatability study extension began, including implementation of additional mixing requirements during the fifth injection event, evaluation of in-line mixing during the sixth injection event, and various injection well maintenance techniques over three maintenance events. The 2020 Annual Progress Report included an evaluation of batch and in-line mixing operations. An evaluation of aquifer response to the seventh and eighth ISB injection events and varying O&M components

including well maintenance techniques is presented below based on the general location of the monitoring wells with respect to the treatability study area.

Monitoring Wells Located Upgradient of the Injection Well Transects

During the previous 2020 reporting period, increased perchlorate concentrations were observed in groundwater samples collected at upgradient locations within the western portion of the treatability study area from which groundwater migrates into the area without passing through the treatment zone (such as monitoring well SWFTS-MW04 [trends presented in Appendix F, Figure F.9]). During this reporting period, perchlorate concentrations at upgradient monitoring well SWFTS-MW04 ranged from 4,600 micrograms per liter (µg/L) to 10,000 µg/L and remained elevated above the average perchlorate concentration of approximately 3,700 µg/L observed at this monitoring well in the first three years of the treatability study (2017-2019). Results from samples collected from SWFTS-MW04 indicate that considerable fluctuations in perchlorate concentrations continued to be observed in the western portion of the study area during this reporting period. These fluctuating perchlorate concentrations in the western portion of the study area could have an impact on the extent and efficiency of treatment observed at downgradient locations, because groundwater with these fluctuating concentrations migrates into the downgradient portions of the study area without passing directly through the treatment zone and is, therefore, not treated within the biologically active zone that is part of the treatability study.

During this reporting period, increased perchlorate concentrations were also observed in groundwater samples collected at upgradient locations within the southern portion of the study area (such as monitoring wells SWFTS-MW07A/B, SWFTS-MW08A, and SWFTS-MW11). Trends in the groundwater samples from these wells are presented in Appendix F, Figures F.14 through F.16 and F.20, respectively. Increasing trends in perchlorate concentrations began in June 2021 and continued through the remainder of the 2021 reporting period. The perchlorate concentrations observed in groundwater samples collected from these four upgradient monitoring wells during the December 2021 sampling event are the highest concentrations measured at these locations during the five years of the treatability study. Groundwater samples collected from these four upgradient monitoring wells indicated perchlorate concentrations increased to an average of 22,000 µg/L (and a maximum concentration of 26,000 µg/L, the highest ever measured at any location during the 5-year treatability study) in December 2021. This concentration increase is approximately 2.8 times higher than the average perchlorate concentration of 7,900 µg/L observed at the end of the previous reporting period. Similar concentration increases were also observed in groundwater samples collected from nearby SWF extraction wells during the same time period. These increases are likely associated with flushing of perchlorate from the vadose zone due to an increase in groundwater elevation as a result of the substantial discharge events that occurred at upgradient CoH operated ponds as discussed in Section 4.2.

As discussed in pervious progress reports, perchlorate concentrations observed in groundwater samples collected from SWFTS-MW12 (located approximately 150 feet upgradient of the injection wells and the monitoring well from which most of the distribution water was extracted during the fifth injection event showed dramatic decreases following the fifth injection event, with perchlorate concentrations reducing from 4,200 µg/L to less than the sample detection limit. It was concluded that a combination of the extraction from SWFTS-MW12 and an increase in injection rates and pressures during the fifth injection event likely resulted in transport of the injectate to the vicinity of monitoring well SWFTS-MW12, which ultimately reduced perchlorate concentrations in groundwater. During this reporting period, perchlorate concentrations in groundwater samples collected from SFWTS-MW12 ranged from <0.31 µg/L in February 2021 to 1,500 µg/L in December 2021 (Appendix F, Figure F.21), indicating that perchlorate continues to be reduced in the vicinity of this upgradient monitoring well following the eighth injection event, but that concentrations are beginning to slowly rebound approximately 20 months after initial arrival of carbon at SWFTS-MW12. It should be noted that there was not a significant increase in TOC concentrations in groundwater samples collected from SWFTS-MW12 following the sixth, seventh, or eighth injection events. This rebound in perchlorate concentration suggests that procedural changes in injection operations consisting of lower extraction rates from SWFTS-MW12, and slightly lower injection pressures/injection

rates at nearby injections wells SWFTS-IW09 and SWFTS-IW10, were successful at mitigating transport of additional injectate solution upgradient towards the vicinity of SWFTS-MW12.

Monitoring Wells Between Injection Well Transects

To monitor the creation of a biologically active zone, four monitoring wells (namely, SWFTS-MW02, SWFTS-MW14, SWFTS-MW15, and SWFTS-MW16) were installed between the injection well transects, with 2021 data discussed below.

Soon after the seventh injection event, the groundwater sample collected from monitoring well SWFTS-MW02, (located along the western edge of the treatability study area) had a perchlorate concentration of 4,900 µg/L, which is an approximate 80 percent reduction compared to baseline (Appendix F, Figure F.7). This result represents the lowest concentration observed in groundwater samples collected from this monitoring well since 2019. Although perchlorate concentrations in groundwater from this monitoring well continued to remain significantly below baseline levels during this reporting period (ranging from 61 percent to 80 percent less than baseline concentrations), the significant change in hydraulic gradient and increased input of perchlorate-contaminated groundwater migrating into the area without passing directly through the treatment zone (previously discussed in Section 4.2) resulted in a slight contaminant rebound during the second half of the reporting period. The highest perchlorate concentration of 9,800 µg/L during this reporting period was observed following the change in hydraulic gradient in July 2021.

Following the seventh injection event, perchlorate concentrations in groundwater collected from SWFTS-MW14 decreased to 790 µg/L, which represents an approximate 97 percent reduction compared to baseline concentrations (Appendix F, Figure F.23). Although concentrations remained significantly reduced compared to baseline (ranging from 74 to 88 percent reduction), perchlorate concentrations began to increase in the summer of 2021, which is likely a result of the increased flux of untreated groundwater from the western portion of the treatability study area related to the changing hydraulic gradients observed in July 2021. Following the eighth injection event, the perchlorate concentration in the November 2021 groundwater sample collected from SWFTS-MW14 was 670 µg/L, which represents an approximate 97 percent reduction compared to baseline. These results indicate that injection of carbon substate is effective at reducing perchlorate (as evidenced by the fact that perchlorate concentrations were previously decreased to below the PRG of 15 µg/L), but that perchlorate concentrations at SWFTS-MW14 likely reflect a mixture of treated and untreated water due to shifting hydraulic gradients and increased groundwater flow velocity (i.e., reduced residence time).

As explained in previous progress reports, the groundwater samples collected from SWFTS-MW15 have historically indicated a slower degradation response compared to other monitoring wells between the injection well transects, likely due to subsurface lithological and geochemical heterogeneity, potential Upper Muddy Creek formation (UMCf) back diffusion, and/or insufficient injection coverage in this immediate area. Despite this, the perchlorate concentration in groundwater from SWFTS-MW15 following the seventh injection was 7,900 µg/L, which represents an approximate 47 percent reduction compared to baseline concentrations. However, perchlorate concentrations generally increased for the remainder of the reporting period, and ultimately reached its highest concentration recorded during the treatability study of 23,000 µg/L, which is approximately 53 percent above the baseline concentration of 15,000 µg/L (Appendix F, Figure F. 24). Perchlorate concentrations in groundwater at this well increased in tandem with significantly increasing perchlorate concentrations observed in samples from nearby upgradient monitoring wells SWFTS-MW08A and SWFTS-MW11, where perchlorate concentrations have also increased to the highest ever recorded during the treatability study (Appendix F, Figures F.16 and F.20). As a result, monitoring results during this reporting period continue to indicate that local heterogeneity, along with unusually high upgradient concentrations, have prevented groundwater adjacent to SWFTS-MW15 from being influenced as strongly by ISB injections.

Lastly, perchlorate concentrations in groundwater collected from SWFTS-MW16 continued to remain at concentrations significantly below baseline levels during this reporting period (ranging from 77 percent to greater than 99 percent below baseline concentrations [Appendix F, Figure F. 25)]). Following the seventh injection event,

the perchlorate concentration was 2.4 μg/L, which is less than the perchlorate PRG of 15 μg/L. Similar to groundwater trends observed at other monitoring wells located in between the injection well transect, perchlorate concentrations began increasing in the summer of 2021, which is once again likely attributed to the shift in hydraulic gradients described in Section 4.2. Additionally, groundwater perchlorate concentrations in the nearest, most directly hydraulically upgradient monitoring well SWFTS-MW08A have more than doubled from 8,700 μg/L to 21,000 μg/L during this reporting period, which is likely having an impact on the perchlorate concentrations in groundwater from SWFTS-MW16. This would indicate that perchlorate continues to degrade very readily in the vicinity of SWFTS-MW16 (reduction of 91 percent compared to upgradient concentrations), but the treatment efficiency is being affected by an exceptionally large upgradient influx that could be creating a transient increase in groundwater perchlorate concentrations in groundwater at SWFTS-MW16.

Monitoring Wells Located Downgradient of the Injection Well Transects

Sixteen monitoring wells are located throughout downgradient portions of the study area and were regularly sampled to evaluate the downgradient extent of perchlorate reduction. In general, results indicate that groundwater samples collected from nine of the 16 downgradient monitoring wells exhibited perchlorate concentration reductions greater than 70 percent compared to their respective baseline concentrations during this reporting period. These noteworthy results are discussed below.

Groundwater samples collected from monitoring wells located immediately downgradient from the injection well transects (namely, PC-91, PC-92, SWFTS-MW10A, and SWFTS-MW18 located within approximately 50 feet) provide important data regarding the impact of various well maintenance techniques and different injection protocols (in-line versus batch mixing) that were implemented in 2020 and 2021. Results from these groundwater samples are described below.

- A greater than 99 percent decrease in perchlorate concentrations continued to be observed in groundwater samples collected from PC-91, where perchlorate concentrations were below the PRG of 15 μg/L in five of the six sampling events (Appendix F, Figure F.3). Nearby monitoring well PC-92, which is screened deeper than PC-91 and has thus far shown marginal decreases and several anomalous increases in groundwater perchlorate concentrations, indicated fluctuations in groundwater perchlorate concentrations between 4,000 μg/L and 10,000 μg/L (Appendix F, Figure F.4). As noted in previous reports, the proximity of the paleochannel in this vicinity likely contributes to the varying effects on perchlorate concentrations in groundwater between PC-91 and PC-92. Based on the groundwater flow patterns, both PC-91 and PC-92 are likely impacted by injections but PC-91 more so due to its proximity to SWFTS-IW11. Additionally, historical perchlorate concentration trends in groundwater samples collected from both monitoring wells were similar through 2015. However, after that (but prior to injections), concentrations in groundwater samples from PC-91 continued to be similar while samples collected from PC-92 began to indicate higher and less stable concentrations, which is similar to the observations at nearby upgradient monitoring well SWFTS-MW04. As a result, the same upgradient influence is likely affecting both SWFTS-MW04 and PC-92, but not PC-91, likely due to the shallower screened interval of PC-91. Lastly, the highest perchlorate concentration measured in groundwater collected from PC-92 during this reporting period was observed after the July 2021 hydraulic shift, which further supports that PC-92 is more strongly influenced by untreated water migrating from the western side of the study area.
- Consistent with the 2020 reporting period, this reporting period also continued to indicate elevated perchlorate concentrations in groundwater samples collected from SWFTS-MW10A. Since late 2019, perchlorate concentrations in groundwater samples collected from SWFTS-MW10A have gradually increased, with concentrations of up to 14,000 μg/L this reporting period. This rise in perchlorate concentrations is accompanied by simultaneous increases in nitrate and chlorate concentrations to greater than baseline concentrations of 5.1 milligrams per liter (mg/L) and 27,000 μg/L, respectively. (See

also Sections 4.3.2 and 4.3.3.) These increases may be attributed to a combination of factors, which include lithological characteristics and hydrological fluctuations.

  - Although upflux of contaminated groundwater will be more thoroughly evaluated in the forthcoming RI Report for OU-3, the paleochannel is incised into the UMCf surface in the vicinity of SWFTS-MW10A, which may be resulting in upflux of contaminated groundwater from the UMCf. Upflux from the UMCf in this area is supported by the upward vertical gradient observed between alluvial monitoring wells SWFTS-MW10A and SWFTS-MW10C, which is screened in the UMCf at the same location.
  - The elevated perchlorate concentrations in groundwater at SWFTS-MW10A observed during this reporting period, like those discussed previously at PC-92, may also be related to the increased upgradient concentrations and hydraulic gradient changes in the western portion of the plume (as discussed in Section 4.2).

  Results for groundwater samples collected from this monitoring well will continue to be evaluated with respect to upgradient concentrations and the nearby paleochannel in the vicinity of SWFTS-MW10A.

- Groundwater perchlorate concentrations in samples collected from monitoring well SWFTS-MW18 indicated the lowest concentrations measured to date, with concentrations of 1,400 µg/L and 760 µg/L observed following the seventh and eighth injection events, respectively (Appendix F, Figure F.27). Monitoring well SWFTS-MW18 is located east of the area most significantly influenced by the shifting hydraulic gradients discussed in Section 4.2. Therefore, the perchlorate concentration reductions observed at SWFTS-MW18 are more representative of groundwater passing through the biologically active zone than those observed at monitoring wells in the western portion of the study area. During this reporting period, perchlorate concentrations in groundwater collected from SWFTS-MW18 averaged 71 percent below baseline conditions, with the lowest concentration to date of 760 µg/L in December 2021 representing a 94 percent decrease from the baseline concentration of 13,000 µg/L. These results are even more significant when compared to the increased perchlorate concentrations in groundwater at SWFTS-MW15, which is generally upgradient of SWFTS-MW18. The performance of SWFTS-MW18 is indicative of the continued success in reducing perchlorate mass within the biologically active zone despite upgradient concentration increases.

Other noteworthy results within portions farther downgradient of the treatability study area are provided below. It should be noted that farther downgradient areas within the treatability study are likely to be more influenced by groundwater migrating into the treatability study area from flow paths that originate from the west and outside of the study area and therefore bypass the primary treatment zone.

- During the first part of the 2021 reporting period, groundwater samples collected from monitoring well SWFTS-MW01 indicated perchlorate reductions of approximately 62 to 67 percent compared to baseline, which is consistent with previous reporting periods (Appendix F, Figure F.6). Perchlorate concentrations began increasing in the summer of 2021, which is likely a result of the increasing hydraulic gradients. SWFTS-MW01 is located within the paleochannel downgradient of SWFTS-MW10A. Therefore, the concentrations observed at SWFTS-MW01 are likely associated with the factors discussed previously regarding the increasing trend at SWFTS-MW10A.
- Perchlorate concentrations in groundwater samples collected from SWFTS-MW05B decreased to their lowest concentration in 4 years (26 µg/L) following the seventh injection event and maintained an average perchlorate reduction of 90 percent below baseline concentrations throughout this reporting period. As discussed in previous progress reports, perchlorate concentrations in groundwater samples collected from the shallow monitoring well in this area, SWFTS-MW05A, have not observed the same decreases (approximately 40 percent less than the baseline concentrations) during the treatability study. The higher concentrations observed at SWFTS-MW05A may be related to this shallower well being screened in a finer matrix than SWFTS-MW05B, which could reduce mobility and carbon delivery in this area.

- Groundwater perchlorate concentrations in samples collected from monitoring well SWFTS-MW20 during this reporting period were the lowest that have been observed at this location during the entire treatability study, with consistent reductions of greater than 99 percent compared to baseline concentrations (Appendix F, Figure F.29). In addition, perchlorate was less than the perchlorate PRG of 15 μg/L in groundwater samples collected immediately following the seventh and eighth injection events. Groundwater perchlorate concentrations in samples collected from SWFTS-MW21 during this reporting period were also the lowest that have been observed at this location during the entire treatability study, with reductions of up to 90 percent (Appendix F, Figure F.30). One of the factors that is likely contributing to the performance of SWFTS-MW20 and SWFTS-MW21 is the well maintenance performed in injection wells SWFTS-IW13B and SWFTS-IW19, which resulted in improved injection flow rates and successful delivery of the designed carbon substrate quantities during the seventh and eighth injection events. In addition, these results indicate the success of the more aggressive well maintenance techniques (i.e., hydrojetting as well as addition of chemical reagents) performed at SWFTS-IW13B and SWFTS-IW19 in 2021.
- Groundwater samples were collected from the farthest downgradient monitoring wells (i.e., greater than 150 feet downgradient of the injection well transects – PC-94, SWFTS-MW03, SWFTS-MW09A, SWFTS-MW24, and SWFTS-MW25; Appendix F, Figures F.5, F.8, F.17, F.33, and F.34) generally continued to exhibit perchlorate reductions averaging 55 percent and up to 80 percent during this reporting period. These farther downgradient areas are likely to be more influenced by groundwater migrating into the study area from the west that is not passing through the treatment zone. Although decreases have been observed previously, groundwater perchlorate concentrations from samples collected from monitoring well SWFTS-MW09B have fluctuated since injections began (Appendix F, Figure F.18), with a perchlorate concentration of 20,000 μg/L observed in December 2021. Although these results are likely associated with the high perchlorate concentrations observed outside of the treatment area as discussed previously, it should also be noted that the screened interval of monitoring well SWFTS-MW09B is only 5 feet and extends below the maximum depth treated within the upgradient injection well transect. Lastly, perchlorate concentration reductions observed in groundwater samples collected from SWFTS-MW22 were only reduced an average of approximately 26 percent compared to baseline concentrations (Appendix F, Figure F.31). This is likely associated with the simultaneously increasing concentrations hydraulically upgradient in areas that are not being actively treated, as discussed above.

Summary

Because the original treatability study results showed that ISB was effective at remediating perchlorate-contaminated groundwater, the focus of this study extension was evaluation of long-term O&M of an ISB remedy (such as injection frequency and long-term injectability). As demonstrated in this report and in prior annual progress reports, a variety of O&M components (such as modifying the mixing/injection strategies and performing different maintenance techniques on injection wells) have demonstrated that the treatability study extension objectives have been met. Additionally, even with the recent hydraulic fluctuations and impacts from the CoH's use of numerous previously unused ponds, a biologically active zone continues to be maintained following the seventh and eighth injection events in wells in between the transects and those immediately downgradient of the transects with some exceptions. In particular, groundwater samples collected from several key monitoring wells located immediately downgradient from the second injection well transect, namely, SWFTS-MW18, SWFTS-MW20, and SWFTS-MWFTS-MW21, indicated some of the lowest groundwater concentrations measured to date. However, perchlorate concentrations in groundwater samples at many of the monitoring wells located farther downgradient appear to have been negatively impacted by the increased hydraulic gradient from the west and northwest of the study area. Perchlorate concentration fluctuations are likely due to a combination of factors including 1) greater flux of untreated water from the west that does not pass through the biologically active zone; 2) unprecedentedly high perchlorate concentrations observed in groundwater samples collected from upgradient monitoring wells; 3) preferential flow pathways for carbon substrate migration; 4) presence of paleochannels and

potential upflux from the UMCf; and/or 5) varying lithological heterogeneity that was previously noted during drilling activities. Additionally, as part of Modification No. 6, injection frequency has intentionally been reduced in order to evaluate longevity, as discussed in Section 2.4. This data will be valuable for evaluation of a potential full-scale ISB remedy in the forthcoming FS.

It should also be noted that perchlorate from the neighboring AMPAC plume (generally located west of the NERT OU-3 boundary and north of the SWF) is migrating in the vicinity of the Las Vegas Wash towards the Pabco Road Weir downgradient of the treatability study area (***Figure 1***). Therefore, this plume is likely impacting groundwater quality at the most distant downgradient monitoring wells within the treatability study area. The delineation of the NERT and AMPAC perchlorate plumes will be defined in the forthcoming RI Report for OU-3.

4.3.1.2 Estimate of Perchlorate Distribution

Figures 5a and 5b present perchlorate plume isoconcentration contour interpretations during the reporting period compared to baseline concentrations. Specifically, the baseline event represents pre-injection perchlorate concentrations in groundwater within the vicinity of the treatability study, followed by depictions of subsequent sampling event results post-injection. These comparisons show significant reduction in perchlorate concentrations during the reporting period. As illustrated in the isoconcentration maps on ***Figures 5a and 5b***, a biologically active treatment zone was sustained following the seventh and eighth injection events, with perchlorate concentrations in groundwater reduced to less than 15 μg/L in the white contour intervals. As upgradient groundwater flowed through the treatment zone, perchlorate continued to reduce in concentration. In addition, perchlorate concentrations in groundwater downgradient from the treatment zone also reduced in concentration from baseline conditions.

Given the presence of the AMPAC plume migrating in the northern portions of the treatability study area, the downgradient extent of perchlorate concentrations below 15 μg/L is somewhat limited. Groundwater samples in some areas within the treatment zone had slightly less reduction in perchlorate concentrations, which may be due to the hydraulic fluctuations, heterogeneous nature of the subsurface, and localized presence of low permeability within that portion of the injection well transect. If ISB is selected as a component of the NERT final remedy, remedial design could account for situations like this by installing additional injection wells within these low permeability zones to achieve a more uniform biologically active treatment zone.

In addition to the two-dimensional visualizations provided on ***Figures 5a and 5b***, three-dimensional visualizations are presented on ***Figures 5c and 5d***. These figures have been prepared to respond to previous NDEP requests for three-dimensional images of perchlorate concentrations over time, including the differences between the most recent and baseline concentrations. Specifically, ***Figure 5c*** provides three-dimensional visualization of perchlorate distribution during baseline and select monitoring events following the seventh and eighth injection events with views using a concentration threshold of greater than 5,000 μg/L. ***Figure 5d*** presents the treated perchlorate from the baseline sampling event through December 2021, again with a concentration threshold of greater than 5,000 μg/L.

4.3.1.3 Estimation of Perchlorate Mass Removal

The objective of the mass removal estimation is to assess the effectiveness of ISB as a field technology to destroy perchlorate mass in the saturated subsurface. For purposes of this treatability study, the mass removal estimation process relies upon the following assumptions:

- Groundwater sampling data from the March and July 2017 sampling events were assumed to represent baseline conditions.
- Saturated thickness was assumed to be constant throughout this study.
- The area of interest (AOI) was defined to include only the areas investigated during this study.

This section presents the methodology and analyses for the estimation of perchlorate mass that was biodegraded during this approximate 12-month treatability study reporting period.

4.3.1.3.1 Data Sources

Data used for mass estimation were obtained from water level measurements and perchlorate concentrations in groundwater samples collected in or near the treatability study area. Some data were collected specifically for this treatability study, while other data were obtained from the NERT database maintained by Ramboll and were collected from monitoring wells near the treatability study area. In addition, Ramboll provided ArcGIS shapefiles and raw data representing groundwater elevations, perchlorate concentrations, and UMCf geologic surface elevations.

4.3.1.3.2 Procedures

As part of the mass removal calculations, a number of grid surfaces were first generated, as described in the prior *Seep Well Field Area Bioremediation Treatability Study Results Report* (Tetra Tech, 2019a). These surfaces represented the alluvium/UMCf contact, groundwater elevation, saturated thickness, hydraulic conductivity, and perchlorate concentrations during each groundwater monitoring event following a carbon substrate injection. The UMCf surface, groundwater elevation, saturated thickness, and hydraulic conductivity grids were not modified as part of the updated mass estimate calculations since they did not change significantly over the course of the year. However, new perchlorate concentration grid surfaces were generated for each monitoring event conducted. To generate these grid surfaces, analytical results collected as part of effectiveness monitoring in the AOI were combined with analytical data obtained from the Ramboll database for wells outside the AOI.

The second step was to estimate the amount of mass entering and leaving the AOI during each sampling event. To do this, the saturated thickness, perchlorate concentration, and hydraulic conductivity surfaces were used to develop saturated thickness, perchlorate concentration, and hydraulic conductivity estimates in cross sections through the upgradient and downgradient ends of the AOI. Next, Darcy's Law was used to calculate the volume of water entering and leaving the study area during each sampling event.

The flow area was calculated from the saturated thickness and the distance between the extracted points for each cross section. The volume of water passing through the cross section was calculated from the estimated hydraulic conductivity at each extracted point, the hydraulic gradient, and the effective porosity (estimated from area-specific nuclear magnetic resonance [NMR] data). The volume of water passing through the cross section multiplied by the extracted perchlorate concentrations along the cross-section results in the mass of perchlorate passing through that cross section at each sampling event. However, due to spatial constraints in the data, the upgradient cross section passes through the injection well transects, so only the baseline mass entering could be estimated from the cross section. Therefore, a multiplier was developed to adjust incoming mass by the overall change in concentration in each sampling event observed at the Seep Well Field area, which is located just upgradient of the treatability study area. During the current reporting period, there were significant changes in the incoming hydraulic gradient, so the influx calculations were adjusted to account for the changes in gradient.

The third step was to estimate the amount of mass present in the AOI during each monitoring event. The saturated thickness and concentration grids were used to estimate mathematically the mass of perchlorate present in the AOI. The average porosity of 25 percent obtained from NMR logging for the alluvial well screens within the treatability study area was used to estimate the mass present in pore spaces. Next, the net mass change in perchlorate mass between each monitoring event was estimated using the mass that entered the study area during the elapsed time in between events, minus the mass that left the study area during the elapsed time, plus the change in mass present in the study area. It should be noted that this analysis does not account for matrix diffusion of perchlorate from the UMCf. If the calculated net mass change between monitoring events was negative (i.e., the perchlorate increased in the area), then zero mass treatment was assumed for that time period. Finally, a time-weighted average was used to estimate the overall mass removal rate.

4.3.1.3.3 Results

During the reporting period January through December 2021, an estimated total of 712 pounds of perchlorate was destroyed in the groundwater in the vicinity of the treatability study area (an approximate average of 2 pounds per day), which is similar to the 2020 reporting period. The influx to the study area of perchlorate comes from two primary directions: 1) the small east-west oriented paleochannel parallel to the Las Vegas Wash; and 2) the south, outside any paleochannel. The upgradient influx was low during the first half of the reporting period but increased significantly during the second half of the reporting period. The continuing effectiveness of the biologically active zone was clearly shown when the concentrations coming in from the south increased up to 60 percent above baseline in the last half of the reporting period, yet the concentrations within the study area remained very low. Fluctuations in upgradient perchlorate concentrations are commonly observed within the study area and do not impact achieving the goals of the treatability study extension, which is focused on long-term operations and maintenance.

4.3.2 Chlorate

Chlorate has been reported in groundwater within the treatability study area at concentrations that are often higher than those of perchlorate. Like perchlorate, chlorate is amenable to anaerobic biodegradation. Chlorate concentrations are summarized in Appendix E, Table E.1, and are graphically depicted in Appendix F. ***Figures 6a and 6b*** present chlorate plume interpretations, which show significant reductions in chlorate concentrations similar to the perchlorate reductions shown on ***Figures 5a and 5b***.

In general, chlorate concentration trends followed a similar reducing pattern to the perchlorate concentration trends during this reporting period. However, there are select wells (SWFTS-MW01, SWFTS-MW05A/B, SWFTS-MW14, and SWFTS-MW16) in which the chlorate reduction is greater than the perchlorate reduction over time. As discussed in previous reports, reasons for this phenomenon could be that the microbial kinetic degradation is higher for chlorate compared to perchlorate, and some microorganisms could intermittently prefer chlorate as an electron acceptor compared to perchlorate and nitrate.

During this reporting period, chlorate concentrations in groundwater samples collected from monitoring wells between the injection well transects generally observed decreases similar to previous reporting periods. Chlorate concentrations measured in groundwater samples collected from SWFTS-MW14 and SWFTS-MW16, which are located between the injection well transects, generally measured less than 100 μg/L, which represents a more than 99 percent decrease when compared to baseline concentrations (Appendix F, Figures F.23 and F.25). The only exception was the chlorate concentration of 2,300 μg/L observed in the groundwater sample collected from SWFTS-MW14 in July 2021, which is likely related to the shift in hydraulic gradient observed during that time of increasing input of untreated water from the west of the study area to the vicinity of SWFTS-MW14. Chlorate concentrations in groundwater samples from SWFTS-MW02 also observed chlorate decreases ranging from 69 to 95 percent when compared to baseline. Lastly, chlorate concentrations in groundwater samples collected from SWFTS-MW15 fluctuated throughout the reporting period, with reductions of up to 47 percent compared to baseline as well as an increase up to a 35 percent above the baseline concentration. Similar to the trends in perchlorate concentrations at this location, chlorate concentrations in groundwater at this monitoring well also increased in tandem with increasing chlorate concentrations observed in groundwater samples collected from nearby upgradient monitoring wells SWFTS-MW08A and SWFTS-MW11, where chlorate concentrations have increased to the highest ever recorded during the treatability study (Appendix F, Figures F.16 and F.20).

As with the trends in perchlorate, the changes in chlorate concentrations in groundwater samples collected from monitoring wells located within 100 feet downgradient of the second injection well transect (namely, PC-91, PC-92, SWFTS-MW05A/B, SWFTS-MW10A, SWFTS-MW18, SWFTS-MW20, and SWFTS-MW21) are key in evaluating the effectiveness of various O&M components of the study. Chlorate concentrations observed at the three monitoring wells located immediately downgradient in the eastern portion of the study area (SWFTS-MW05A/B and SWFTS-MW21) remained at or below 90 μg/L throughout the reporting period, which generally

represents reductions of greater than 99 percent below baseline conditions. In contrast, chlorate concentrations at the remaining five monitoring wells located immediately downgradient in the central and western portion of the study area were more variable throughout the reporting period. Chlorate concentrations in groundwater collected from PC-91 and SWFTS-MW20 continued to indicate reductions in chlorate concentrations of greater than 88 percent in this reporting period with concentrations ranging from less than 9.8 μg/L to 200 J-[2] μg/L. Chlorate concentrations at SWFTS-MW18 fluctuated throughout this reporting period between 300 μg/L and 14,000 μg/L, which still represent reductions of 73 percent to greater than 99 percent compared to the baseline concentration of 52,000 μg/L. Chlorate concentrations at PC-92 and SWFTS-MW10A (both of which are screened within the lower alluvium in the vicinity of the paleochannel on the western side of the study area) continued to fluctuate, with both concentration decreases and increases observed during the reporting period. The fluctuating chlorate concentrations observed at PC-92 and SWFTS-MW10A are likely related to the same hydraulic changes previously discussed in Sections 4.2 and 4.3.1. Chlorate concentrations observed in groundwater samples at monitoring wells located in the western portion of the study area reflect a flux of untreated groundwater into the study area.

Groundwater concentrations in monitoring wells located farther downgradient of the injection well transects (PC-94, SWFTS-MW01, SWFTS-MW03, SWFTS-MW09A/B, SWFTS-MW22, SWFTS-MW24, and SWFTS-MW25) displayed a similar pattern. Groundwater samples collected from monitoring wells SWFTS-MW03 and SWFTS-MW24, which are in the eastern portion of the study area, indicated chlorate concentration reductions of greater than 81 percent compared to baseline concentrations. Groundwater samples collected from downgradient monitoring wells screened in the vicinity of the paleochannel (PC-94, SWFTS-MW01, and SWFTS-MW09A/B) and samples from downgradient monitoring wells in the vicinity of the areas receiving untreated groundwater flowing from the western portion of the study area (SWFTS-MW22 and SWFTS-MW25) all indicated significant concentration reductions when compared to baseline, but with much more variable chlorate concentrations during this reporting period.

4.3.3 Nitrate

Nitrate concentrations continue to be evaluated during the study extension because nitrate is the most likely competing electron acceptor for perchlorate reduction and a consumer of organic carbon substrate. Both perchlorate and chlorate biodegradation generally commence when nitrate biodegradation (denitrification) is substantially complete. However, perchlorate and chlorate biodegradation could also occur concurrently with nitrate biodegradation. In the presence of a continuing carbon source, and after DO and nitrate have been reduced, both chlorate and perchlorate act as electron acceptors for anaerobic respiration. Nitrate concentrations are summarized in Appendix E, Table E.1, and are graphically depicted in Appendix F, where ***Figures 7a and 7b*** present nitrate plume interpretations, which show continued significant reductions in nitrate concentrations during the treatability study.

Nitrate generally measured less than 2 mg/L during the reporting period in groundwater samples collected from monitoring wells SWFTS-MW14 and SWFTS-MW16 (Appendix F, Figures F.23 and F.25), which are located between the injection well transects. Similar to perchlorate and chlorate concentration trends, groundwater samples collected from monitoring wells SWFTS-MW02 and SWFTS-MW15, which are also between the injection well transects, generally indicated fluctuating nitrate concentrations (Appendix F, Figure F.7 and F.24).

As presented on ***Figures 7a through 7b***, nitrate concentrations were reduced not only within the biologically active treatment zone but also in much of the downgradient portion of the study area. Nitrate concentrations in groundwater samples collected from 12 monitoring wells located hydraulically downgradient of the injection well transects reduced by greater than 50 percent when compared to their baseline concentrations during several

[2] A qualifier of J- indicates the result is an estimated quantity, but the result may be biased low.

sampling events from this reporting period. Additionally, groundwater collected from 11 of the 16 monitoring wells located downgradient from the second injection well transect indicated nitrate concentrations less than 5 mg/L during this reporting period. Groundwater collected from six of those 16 monitoring wells exhibited nitrate concentrations of less than 2 mg/L during this reporting period.

4.3.4 Total Organic Carbon

Total organic carbon can sometimes be a surrogate parameter to evaluate carbon substrate distribution in the subsurface. As a result, TOC has continued to be analyzed during the reporting period to monitor changes in groundwater concentrations after injections compared to baseline pre-injection concentrations. TOC concentrations are summarized in Appendix E, Table E.1, and are graphically depicted in Appendix F.

During the reporting period, there were only isolated events of elevated TOC concentrations. The highest groundwater TOC concentrations of 530 mg/L and 210 mg/L were observed at PC-91, located approximately 50 feet downgradient of the injection well transect, following the seventh and eighth injection events, respectively. Monitoring wells SWFTS-MW20 and SWFTS-MW18, which are also located immediately downgradient of the injection well transect, observed marginal increases in TOC concentrations to greater than 4.0 mg/L for the first time since inception of the study, which correlates to significantly lower perchlorate and chlorate concentrations during this reporting period. No other concentration increases significantly above baseline TOC concentrations were observed in groundwater samples. This observation of minimal TOC concentration increases is expected because the injectate (measured as TOC) is consumed closer to the injection well transect(s) themselves and does not migrate in significant quantities to downgradient locations.

As previously discussed, TOC at SWFTS-MW12 increased to 560 mg/L in 2019, which was attributed to extraction and injection operations during the fifth injection event. Since the initial arrival of injectate at SWFTS-MW12, TOC has slowly reduced over time to 2.2 mg/L in December 2021, while perchlorate, chlorate, and nitrate concentrations gradually began to rebound in the second half of 2021. These data indicate the modifications to injection/extraction procedures during the sixth, seventh, and eighth injection events were generally successful.

4.3.5 Additional Chemical and Geochemical Evaluation

This section provides a summary of the additional data collected during the reporting period (namely, field parameters [DO, ORP, and pH], methane, phosphorus, sulfate, and sulfide) and their influence on perchlorate biodegradation. A discussion of metals, including arsenic, iron, and manganese, has also been included due to the potential for metals mobilization during implementation of ISB systems. Results for all parameters discussed herein are presented in the comprehensive data tables provided in Appendix E, Tables E.1 through E.3. Dissolved arsenic, phosphorus, DO and ORP readings are graphically depicted in Appendix F.

4.3.5.1 Field Parameters

The field parameters DO, ORP, pH, turbidity, temperature, and conductivity are recorded during groundwater sampling events. Of these parameters, DO, ORP, and pH relate to bioremediation processes. This section summarizes the results for DO, ORP, and pH and their significance in the ongoing bioremediation processes.

4.3.5.1.1 Dissolved Oxygen and Oxidation-Reduction Potential

DO and ORP measurements are often useful parameters to ascertain geochemical conditions in the groundwater and to confirm that anaerobic conditions have been achieved and sustained during the creation of a biologically reductive groundwater environment, which is essential for perchlorate biodegradation. ORP readings sometimes provide a valuable tool to identify the redox conditions in groundwater and ascertain reducing conditions. At some sites, ORP readings correlate well with DO values and, therefore, provide a means to verify the extent of reduction. However, in aquifers with several electron acceptors and redox pairs (such as iron pairs, nitrogen pairs, perchlorate/chlorate/chloride and sulfur pairs), redox measurements may not always be accurate and

interpretations from these data should be made with a degree of caution. As part of the treatability study extension, both DO and ORP measurements were collected using field equipment as part of low-flow groundwater sampling during all effectiveness monitoring events.

During baseline (pre-injection) activities, the aquifer was generally aerobic with DO concentrations greater than 1.0 mg/L and positive ORP averaging approximately 98 millivolts (mVs). Since injections began, average DO and ORP readings have generally been lower and indicative of sustained anaerobic conditions conducive to perchlorate biodegradation. In general, groundwater from monitoring wells that showed the most significant and consistent perchlorate and chlorate biodegradation appeared to be consistently anaerobic throughout the treatability study, as inferred from DO and ORP readings.

During this reporting period, groundwater samples collected from the four monitoring wells located between the injection well transects, namely SWFTS-MW02, SWFTS-MW14, SWFTS-MW15, and SWFTS-MW16, had DO readings that averaged 0.79 mg/L, with many readings measuring less than 0.5 mg/L. ORP readings of groundwater samples collected from three of the four monitoring wells located between the injection well transects (SWFTS-MW14, SWFTS-MW15, and SWFTS-MW16) were generally negative throughout the reporting period. Although ORP readings at the fourth monitoring well SWFTS-MW02 were generally positive during this reporting period, DO measurements for the four monitoring wells located between the injection well transects averaged 0.66 mg/L, which suggests anaerobic conditions. Overall, the DO and ORP are generally consistent with results from earlier sampling events, indicating that robust anaerobic conditions have been established within the biologically active zone in the vicinity of the injection well transects.

Groundwater DO and ORP measurements in the monitoring wells located immediately downgradient from the two injection well transects generally indicated anaerobic conditions. As expected, the monitoring wells that had the most significant groundwater perchlorate, chlorate, and nitrate concentration reductions were observed to also have DO readings in groundwater that generally measured less than 1 mg/L, and ORP readings were negative. For example, groundwater samples collected from PC-91 during this reporting period regularly indicated perchlorate, chlorate, and nitrite concentrations not detected above the sample detection limits and average DO and ORP readings of 0.57 mg/L and –205.2 mV, respectively. In addition, groundwater in several of the wells located within the paleochannel such as PC-94, SWFTS-MW01, SWFTS-MW09A/B, and SWFTS-MW10A had unusually high ORP readings during this reporting period, averaging approximately 160 mV. Despite these elevated ORP readings, DO concentrations in groundwater at these monitoring wells still generally measured less than 1 mg/L and commonly measured less than 0.5 mg/L during this reporting period. Overall, DO readings provide a general indication of the reducing conditions in groundwater between the injection well transects and downgradient of the injection well transects during this reporting period, while ORP readings do not always correlate.

DO concentrations in groundwater samples collected from the majority of upgradient monitoring wells were similar to previous years and generally indicative of aerobic conditions. During the previous 2020 reporting period, groundwater at upgradient well SWFTS-MW12 exhibited anaerobic conditions indicated by lower DO concentrations generally measuring less than 0.5 mg/L and consistently negative ORP readings. In contrast, during this reporting period, DO concentrations were generally above 0.5 mg/L and positive ORP readings were observed for the first time since the fifth injection event, when injectate solution arrived at this upgradient monitoring well. The trend towards aerobic conditions at this upgradient monitoring well is consistent with the gradual consumption of carbon substrate and rebound in perchlorate, chlorate, and nitrate concentrations observed during the second half of this reporting period, as previously explained in Sections 4.3.1 through 4.3.4.

Overall, DO readings provide a general indication of the reducing conditions in groundwater following carbon substrate injections, with groundwater from monitoring wells that showed the most significant and consistent perchlorate biodegradation also appearing to be consistently reducing throughout the treatability study. ORP readings fluctuated and did not always correlate well with DO measurements. However, both DO and ORP will continue to be monitored as water quality parameters during future groundwater sampling events.

4.3.5.1.2 pH

In general, pH values observed in groundwater samples collected from monitoring wells located between and downgradient from the injection well transects ranged from 6.20 to 7.72 standard units (SU) and averaged 6.95 SU, which is conducive to most microorganisms. Biological activity often results in a reduction in pH in groundwater. However, the presence of natural gypsum (calcium sulfate) in the aquifer likely serves as a pH buffer. The buffering capacity of the aquifer minimizes pH changes during biological activity, thereby making this groundwater a favorable candidate for long-term carbon substrate injections for ISB.

4.3.5.2 Sulfate and Sulfide

Sulfate and sulfide are secondary parameters that are generally monitored during ISB applications to evaluate sulfate as an electron acceptor and potential carbon substrate consumer. Commonly, sulfate reduction occurs only under very reducing conditions and after nitrate, chlorate, and perchlorate biodegradation has occurred. Sulfate biodegradation is not desirable for various reasons, primarily that it results in: 1) unnecessary consumption of carbon substrate; 2) overproduction of sulfate-reducing microorganisms that could overtake perchlorate-reducing microorganisms and cause microbial toxicity under certain conditions; 3) the formation of hydrogen sulfide; and 4) loss of hydraulic permeability.

Sulfate reductions appear to have stabilized in groundwater samples collected from monitoring wells located between the injection well transects and farther downgradient. During this reporting period, sulfate concentrations in groundwater samples collected from the four monitoring wells located in between the injection well transects reduced by an average of 29 percent, which is similar to the overall average decreases of 32 percent observed in 2020 for groundwater samples collected from the same set of monitoring wells. Sulfate concentrations detected in groundwater samples collected from downgradient monitoring wells indicate an overall average decrease of approximately 20 percent when compared to baseline, which again is similar to the average decrease of 21 percent observed during the previous reporting period. Groundwater samples collected from only one monitoring well (PC-91) indicated notable sulfate reduction. Sulfate concentrations observed in groundwater samples collected from PC-91 indicated a significant decrease in sulfate concentration from 650 mg/L prior to the seventh injection event to 2.3 mg/L immediately following the seventh injection event. This correlates to the arrival of the injectate solution as indicated by an increased TOC concentration of 530 mg/L in the groundwater sample collected from PC-91 during that same sampling event. Sulfate concentrations generally remained below 100 mg/L for the remainder of the 2021 reporting period. It should be noted that the average decrease in sulfate concentrations in groundwater samples collected from upgradient monitoring wells during this reporting period was 13 percent.

Lastly, the groundwater sample collected from upgradient monitoring well SWFTS-MW12 in December 2021 indicated that sulfate had returned to the baseline concentration of 2,600 mg/L, which is consistent with the increasing trends in perchlorate, chlorate, nitrate, and DO concentrations at the end of the 2021 reporting period in the vicinity of this upgradient location.

In general, sulfide was not detected in groundwater samples from the majority of monitoring wells within the treatability study area. Sulfide was detected at low concentrations (generally less than 2 mg/L) in groundwater samples collected from three of the 34 monitoring wells, namely PC-91, SWFTS-MW14, and SWFTS-MW18. The highest sulfide concentration during the 2021 reporting period was 4 mg/L in the groundwater sample collected from PC-91 during the June 2021 sampling event. Sulfide concentrations in the groundwater sample from PC-91 decreased to 1 mg/L during the subsequent July 2021 sampling event.

In conclusion, the limited sulfate reduction and sulfide production observed in this treatability study are consistent with the results from previous years and suggest the potential negative impacts of sulfate biodegradation in this high sulfate environment can be minimized and/or controlled during implementation of perchlorate bioremediation. As stated in previous reports, the employment of the slow-release carbon substrate, EVO, is likely to be one reason for the limited sulfate reduction, because EVO comprises long-chain fatty acids that adsorb to the soil

grains and gradually hydrolyze to provide the type of organic carbon (such as triglycerides followed by acetate and hydrogen) that is then used by microorganisms in their growth and respiration process. This gradual hydrolytic process does not appear to produce strongly reducing conditions and therefore, limits sulfate degradation. Secondly, the groundwater flow rates in this setting are relatively high, a hydraulic phenomenon that may not provide sufficient residence time for sulfate biodegradation to prosper. Sulfate and sulfide will continue to be monitored through the study extension.

4.3.5.3 Metals and Inorganic Data Analyses

Under anaerobic conditions, metals such as arsenic, iron, and manganese can be reduced, mobilized, and precipitated out into the aquifer, a phenomenon that can sometimes increase metals concentrations and/or decrease hydraulic permeability in the aquifer. Accordingly, dissolved metals and ferrous iron were analyzed during baseline sampling and periodically during the treatability study to monitor metals mobilization. Because the study extension is focused on long-term O&M components to an ISB system, the frequency of metals analysis was reduced to a semi-annual; accordingly, two sampling events that included metals analysis were conducted during this reporting period[3]. The bulleted summary below provides an overview of key observations related to dissolved metals and ferrous iron.

- Arsenic is sometimes released from minerals in the saturated subsurface when reducing conditions are created following the injection of a carbon substrate. However, in many cases, these transient increases of arsenic ultimately precipitate out as arsenic sulfide over time. Groundwater samples collected from monitoring wells located between the injection well transects continue to indicate arsenic concentrations less than or near baseline (pre-injection) concentrations and all were below 63 μg/L following the seventh and eighth injection events. Laboratory results from groundwater samples collected from two of the monitoring wells immediately downgradient from the second transect, namely SWFTS-MW18 and SWFTS-MW20, indicated arsenic concentrations of 210 μg/L and 160 μg/L, respectively. SWFTS-MW18 and SWFTS-MW20 were the only two downgradient locations with groundwater dissolved arsenic concentrations greater than the maximum upgradient concentration of 130 μg/L during this reporting period. It should be noted that TOC concentrations also increased to greater than 4.0 mg/L in groundwater samples collected from these two monitoring wells during this reporting period, which is more than twice the baseline concentrations observed at these monitoring wells. These elevated dissolved arsenic concentrations in groundwater from SWFTS-MW18 and SWFTS-MW20 are likely to be transient, similar to those observed at SWFTS-MW14 in 2018, when dissolved arsenic in groundwater increased to 180 μg/L before decreasing considerably in subsequent years. In addition, groundwater concentrations in samples collected from monitoring wells located farther downgradient from SWFTS-MW18 and SWFTS-MW20 remain at or below their baseline concentration for dissolved arsenic, which suggests that arsenic is not mobilizing in significant quantities to farther downgradient locations or migrating outside of the treatability study area. An additional observation is the significant decrease in dissolved arsenic concentrations in groundwater samples collected from PC-91, where the dissolved arsenic concentration decreased from 130 μg/L in October 2020 to 3.9 μg/L in December 2021. The decrease in dissolved arsenic concentrations in groundwater samples collected from PC-91 is likely attributed to the reduction of sulfate and production of sulfide discussed in Section 4.3.5.2 resulting in precipitation of arsenic as a sulfide mineral.
- Dissolved iron concentrations in groundwater were periodically evaluated due to the potential for iron to undergo reduction and mobilization under anaerobic conditions and precipitate out in the subsurface,

[3] In accordance with recommendations included in the 2020 Annual Progress Report, which was approved by NDEP on November 17, 2021, the frequency of dissolved metals analysis will be reduced from semi-annual to annual during the 2022 reporting period.

which could decrease the hydraulic permeability in the aquifer. Pre-injection baseline dissolved iron concentrations ranged from less than 0.050 mg/L to 15 mg/L, but were typically less than 1.5 mg/L. During this reporting period, dissolved iron concentrations in groundwater continue to be generally less than 1.5 mg/L except at PC-91 and SWFTS-MW-14. Dissolved iron concentrations in groundwater samples collected from PC-91 were measured at 5.1 mg/L and 3.9 mg/L following the seventh and eighth injection events, respectively, while dissolved iron concentrations in groundwater collected from SWFTS-MW14 measured 4.6 mg/L in December 2021 following the eighth injection event. All dissolved iron concentrations measured during this reporting period were below the maximum concentration of 15 mg/L observed during the baseline sampling event. In general, iron precipitation has not been an issue during implementation of the treatability study because of relatively low baseline iron concentrations in both soil and groundwater.

- Manganese can also undergo reduction and mobilization under anaerobic conditions and precipitate out in the subsurface, potentially decreasing the hydraulic permeability in the aquifer. During this reporting period, dissolved manganese concentrations in groundwater remained below 5 mg/L throughout the study area.
- Dissolved phosphorus concentrations in groundwater were generally below the sample detection limit, with the exception of the groundwater collected from PC-91, where phosphorus measured 0.6 mg/L following the eighth injection event. These low dissolved phosphorus concentrations indicate that the phosphorus injected as part of the carbon substrate solution was likely used as a nutrient, adsorbed to the soil, and/or combined with cations such as calcium rather than increasing its concentration in groundwater. It should be noted that baseline phosphorus concentrations ranged from less than 0.10 to 0.77 mg/L.

4.3.5.4 Methane

Methanogenic conditions (signified by biological methane production) require highly reducing conditions that are generally not warranted for perchlorate biodegradation. However, methane concentrations often increase in groundwater following the injection of a carbon substrate, particularly in groundwater at monitoring locations close to injection locations. It should be noted that any methane that is biologically generated should be rapidly oxidized to carbon dioxide in the sandy vadose zone overlying the saturated alluvium.

Methane was analyzed during the December 2021 sampling event, with results indicating detections of methane at most monitoring wells located between or immediately downgradient from the injection well transect. The highest methane concentration was detected in the groundwater sample collected from PC-91 in December 2021, where methane reached 12,000 μg/L immediately following the eighth injection event. Similar methane concentrations have been observed during previous reporting periods. As discussed in Sections 4.3.1, 4.3.2, and 4.3.5.2, groundwater samples collected from PC-91 exhibited significant decreases in perchlorate, chlorate, and sulfate during this reporting period. Groundwater from PC-91 also indicated extremely low ORP measurements during this reporting period as low as – 320.9 mVs, which is indicative of methanogenic conditions. Methane concentrations also increased when compared to 2020 concentrations in groundwater samples collected from several monitoring wells located between or immediately downgradient of the injection well transects, including SWFTS-MW05A/B, SWFTS-MW16, SWFTS-MW18, SWFTS-MW20, and SWFTS-MW21. In general, laboratory results indicating an increase in groundwater methane concentrations also indicated continued reductions of perchlorate and chlorate concentrations. Therefore, while methanogenic conditions are not generally targeted for perchlorate biodegradation, it does appear that this end-product could be a parameter to consider as an indicator of successful biodegradation at this site.

4.4 MICROBIAL EVALUATION

Microbial sampling was included in the effectiveness monitoring program to continue examination of the microbial response to carbon substrate additions at key locations. In December 2021, Bio-traps® were deployed at four locations, namely, SWFTS-MW07A (upgradient monitoring well), SWFTS-IW02A (injection well), SWFTS-MW14 (monitoring well between the injection well transects), and SWFTS-MW09B (downgradient monitoring well). The Bio-traps® were left in-place for approximately 30 days and then retrieved and shipped to Microbial Insights for analyses of PLFA and the perchlorate reductase enzyme. Complete analytical results for the microbial analyses performed during the treatability study are presented in Appendix E, Table E.4. Microbial laboratory data reports are provided in Appendix G.

The PLFA analysis, which is used to estimate the population of the variable biomass, is generally consistent with 2020 results. The PLFA analysis indicated that the Bio-trap® from upgradient monitoring well SWFTS-MW07A had lower total biomass of 2.74 x 10^4 bacterial cells per bead compared to 7.37 x 10^4 bacterial cells per bead observed the previous year, which in relative exponential terms is a very similar microbial population. The Bio-Trap® from the injection well, SWFTS-IW02A, had the highest total biomass at 4.75 x 10^6 bacterial cells per bead. These results are indicative of heightened microbial response in the vicinity of the injection wells due to the addition of carbon substrate. The total biomass numbers were also elevated in the Bio-trap® collected from SWFTS-MW14, which is located between the injection well transects, with a detection of 2.65 x 10^4 bacterial cells per bead. Lastly, microbial cell numbers in the Bio-trap® from SWFTS-MW09B were not detected above the detection limit of 1.66 x 10^4 bacterial cells per bead. As previously noted, groundwater samples collected from SWFTS-MW09B indicate a slower response to carbon substrate injections. Additionally, the screened interval for monitoring SWFTS-MW09B is only 5 feet and extends below the maximum depth treated within the upgradient injection well transect.

PLFA analysis on community structure indicated that over 50 percent of the bacterial population belonged to the Proteobacteria structural group in the three Bio-Traps® collected from SWFTS-IW02A, SWFTS-MW07A, and SWFTS-MW14. At SWFTS-MW14, 100 percent of the microbial community belonged to the Proteobacteria structural group. Proportions of Proteobacteria are of interest because they are one of the largest groups of bacteria and represent a wide variety of anaerobic and aerobic microorganisms. Proteobacteria are generally capable of adapting quickly to changes in the environment and grow opportunistically when food (a carbon source) is available. The Bio-trap® collected from SWFTS-MW09B could not be analyzed for this group and other bacterial community groups because the overall biomass count was below detection limits. The only Bio-trap® that had detectable Firmicutes was from SWFTS-IW02A, where the percentage of these fermenting microorganisms was 12 percent and indicative of microorganism populations that have the ability to ferment complex organic compounds such as EVO and its immediate by-products. This microbial shift in some vicinities between Proteobacteria and Firmicutes is expected in active groundwater remedial environments and is indicative of the combined ability to ferment and make available simple carbon compounds that are then utilized by other communities for the direct respiration of perchlorate and other electron acceptors that reside in the system.

The percentage of General (Nsats) was below 30 percent, which supports the above conclusion regarding the gradual increase in diversity of the microbial population, as high proportions of Nsats generally indicate less diverse populations. Nsats were absent at SWFTS-MW14, which is indicative of community structural changes over time to cater to specific microorganisms as discussed below for specific perchlorate reducers.

Bio-Traps® from all wells indicated a very low presence or absence of sulfate-reducing bacteria (SRB)/Actinomycetes. A low fraction of SRB/Actinomycetes of 1.69 percent was detected in the Bio-trap® from SWFTS-IW02A. Eukaryotes (organisms such as fungi, protozoa, and diatoms) and metal reducing microorganisms were also present at negligible proportions (less than 3 percent) in the Bio-trap® from SWFTS-IW02A.

Slowed growth ratios are an indication or measure of the availability of carbon substrate, and ratios for decreased permeability are an indication or measure of toxicity. Results for slowed growth ratios and decreased permeabilities are sometimes best studied in Bio-traps® installed in strategic wells over time as the results can be inconsistent. The ratio for slowed growth decreased considerably in the Bio-trap® collected from injection well SWFTS-IW02A from 1.19 during the 2020 reporting period to 0.3 during the 2021 reporting period, which indicates an abundance of a carbon substrate as a source of food for microorganisms. The ratio of slowed growth increased considerably in the Bio-trap® from monitoring well SWFTS-MW14 from 0.3 during the 2020 reporting period to 0.85 during the 2021 reporting period, an increase indicating a reduced abundance of carbon substrate. During the 2021 reporting period, the ratios for decreased permeability ranged from 0 to 0.40, which indicates a low toxicity environment for native microorganisms. These ratios will continue to be monitored during the treatability study to evaluate the overall microbial response to carbon substrate injections and contaminant decreases in the area.

Lastly, the perchlorate reductase gene was detected at a count greater than 10^3 cells per bead in three of the four Bio-Traps® collected during the reporting period. The highest occurrences of the perchlorate reductase gene were observed in the Bio-traps® collected from SWFTS-IW02A and SWFTS-MW14, which measured 6.98 x 10^4 cells per bead and 2.91 x10^5 cells per bead, respectively. Therefore, although the overall microbial biomass numbers decreased and the ratio of slowed growth increased at SWFTS-MW14 in 2021, it is likely that microorganisms in this vicinity are specialized in sufficient numbers to have developed the sole or major ability to biodegrade perchlorate. Bio-trap® data will continue to be collected and analyzed in 2022 to make additional inferences and links between microbial characteristics and degradation of perchlorate in this vicinity.

5.0 SUMMARY OF KEY FINDINGS AND FUTURE ACTIVITIES

This section presents the overall findings of the treatability study activities associated with Modification No. 6, results from the reporting period (January 2021 through December 2021), and recommendations for modifications to the ongoing treatability study extension.

5.1 SUMMARY OF KEY FINDINGS

Expanding on the information presented in Sections 2 through 4, this section presents a summary of the overall results and conclusions from the activities and data collected during the 2021 reporting period. Performance criteria tables were generated to evaluate the operations, maintenance, and monitoring results and include a summary of the performance criteria, metrics, confirmation methods, and study demonstration. These tables are presented in Appendix H.

As explained in Section 4.0, because the original study objectives showed that ISB was effective at remediating perchlorate- and chlorate-contaminated groundwater, the focus of this study extension is evaluation of long-term O&M of an ISB remedy. Despite the variety of O&M components, such as modifying the mixing/injection strategies (i.e., batch versus in-line mixing) and performing different maintenance techniques on injection wells, groundwater in this area continues to be amenable to biodegradation of perchlorate, chlorate, and nitrate. As demonstrated, the periodic injections of EVO and amendments continued to provide a sustained biologically active treatment zone with the reducing conditions required for effective and continual perchlorate and chlorate biodegradation in the groundwater. The main findings and conclusions below draw upon the various operations, maintenance, and monitoring tasks performed during this reporting period as part of the study extension.

Operations

- The ability of the formation to continue to accept substrate injections following eight injection events during the 5-year operation period indicates ISB is a practical and feasible long-term injection option for groundwater remediation in the alluvium at this site.
- Injections of carbon substrate continue to have a more prolonged potency over time, as demonstrated through the current injection frequency of approximately once every 8 months during this reporting period compared to the approximate 4 months at the beginning of the study.

Maintenance

- Common injection well maintenance techniques continue to be successfully implemented on injection wells to maintain injectability. Although recent groundwater level data indicated considerable water level fluctuations and changes to the gradient during the reporting period, these shifts correlate to substantial storm events and/or significant water releases to upgradient CoH ponds as opposed to injection activities and do not indicate detrimental biofouling of the aquifer. Such biofouling of the aquifer has not been observed within the treatability study area since the duration of the study beginning in 2017 and has not impacted the continued injection of carbon substrate.
- Completion of the limited well maintenance field activities during this reporting period resulted in increased injectability (in terms of reduced injection pressures and/or increased injection rates) for all four wells at which maintenance was performed during this reporting period (i.e., SWFTS-IW06B, SWFTS-IW13B, SWFTS-MW15, and SWFTS-MW19).
- Injectability of injection well SWFTS-IW13B was successfully restored during the February 2021 well maintenance event. As a result, injection well SWFTS-IW13B received its entire targeted injection quantity during the seventh and eighth injection events. Restoration of SWFTS-IW13B indicates that even

after an injection well is unable to accept injectate, the injection well can be incrementally restored and injectability can be sustained long-term.

Monitoring

- Nitrate, chlorate, and perchlorate continue to be degraded in groundwater throughout the study area during this reporting period.
- Although not an objective of Modification No. 6, the study extension continued to demonstrate the ability of ISB using a slow-release carbon substrate to achieve the groundwater perchlorate PRG of 15 µg/L in groundwater within the alluvium at multiple sample locations.
- DO concentrations and ORP readings provide some indication of the sustained reducing conditions in groundwater. Groundwater that showed the most significant and consistent perchlorate biodegradation is located where reducing conditions exist, as inferred from DO measurements and ORP readings (although ORP fluctuations have been observed in groundwater at many wells).
- Limited sulfate reduction continues to be observed in groundwater during the treatability study. The use of the slow-release carbon substrate, EVO, helps to prevent widespread sulfate reduction because it consists of long-chain fatty acids that very gradually hydrolyze and limit the amount of usable carbon for native microorganisms to use for biological deoxygenation, denitrification, and perchlorate/chlorate biodegradation. Secondly, as stated in previous reports, the groundwater flow rates in this setting are relatively high and may not provide sufficient residence time for sulfate biodegradation to occur. Limited sulfide production was also observed, indicating that microbial-based sulfate reduction was minimal.
- Secondary groundwater geochemical impacts, including arsenic, iron, manganese, and phosphorus mobilization, were either limited or transient and did not appear to create a noteworthy downgradient footprint of concern in groundwater.
- During each effectiveness monitoring event, water levels were measured prior to sampling and used to construct potentiometric surface maps. These maps indicate significant changes to the gradient occurred during this reporting period due to storm events and water releases to upgradient CoH ponds, as described in Section 4.2.
- Significant increases in upgradient perchlorate concentrations and hydrological changes associated with storm events and water releases to upgradient CoH ponds resulted in noticeable effects to concentrations in downgradient portions of the study area.

5.2 COST EVALUATION

This section of annual reports presents a general assessment of costs related to the O&M of the SWFTS ISB system. Preliminary cost evaluations were presented in the 2019 and 2020 Annual Progress Reports, which included lessons learned that reduced operation, maintenance, and monitoring costs. During the 2019 reporting period, costs were reduced by up to $230,000, with an additional $15,000 reduction in costs during the 2020 reporting period. Now that a streamlined operations, maintenance, and monitoring program has been implemented, no additional cost savings were recognized during the 2021 reporting period. The 2020 Annual Progress Report recommended a reduced sampling program, which was approved by NDEP on November 17, 2021. As a result, these cost savings will be recognized in the 2022 reporting period and are projected to be an approximate savings of $7,200.

5.3 FUTURE ACTIVITIES

Due to the ongoing developments within the treatability study area associated with the Cadence Sports Park, this treatability study will be concluded in December 2022. Since 2017, eight injection events and 36 groundwater sampling events have been conducted, which has resulted in a substantial data set that meets both the original

treatability study objectives as well as the objectives of Modification No. 6. As a result, the following activities are planned and will be implemented during 2022 as part of final year of the treatability study as previously discussed with NDEP:

Operations

- No additional injection operations will be performed. The eighth and final injection event for the treatability study was conducted in November 2021. Over the period of the treatability study extension, the injection frequency has been approximately 8 months. Rather than complete a ninth injection event during the 2022 reporting period, the final year of the treatability study will be focused on groundwater monitoring to evaluate long-term concentration trends more than 8 months following injection operations. This will provide additional data that will be valuable for understanding the minimum treatment threshold, injection event frequency, and carbon substrate longevity.
- It should be noted that the 2020 Annual Progress Report, which was approved by NDEP on November 17, 2021, recommended evaluating changes to the quantity of distribution water and elimination of phosphate in the injectate solution. Although these recommendations will not be able to be implemented prior to conclusion of the treatability study, sufficient data has been collected as part of other ISB treatability and pilot studies conducted at NERT to evaluate the effects of both distribution water quantities and the necessity of phosphate in the injectate solution.

Maintenance

- No additional maintenance activities will be performed due to the conclusion of injection activities.

Monitoring

- Despite injections being discontinued, groundwater sampling will continue to be performed through December 2022 to evaluate long-term concentration trends and monitor the return of contaminant concentrations and aquifer geochemistry towards baseline conditions. This information will be key to better understand the minimum long-term operational requirements for an ISB approach and can then be used in the forthcoming FS to better approximate the appropriate injection event spacing of a full-scale ISB remedy at NERT, if such technology is selected for implementation. The final year of groundwater sampling associated with the treatability study will include the following:
    - Quarterly groundwater sampling of all monitoring wells currently included in the groundwater sampling program, with each sampling event including the collection of groundwater samples for analysis of perchlorate, chlorate, nitrate, sulfate, TOC, and field parameters (DO, ORP, pH, temperature, turbidity, and conductivity). Additionally, ferrous iron and sulfide field screening will be performed on a semi-annual basis (June and December 2022), while metals will be analyzed on an annual basis (December 2022).
    - One final round of microbial sampling via the deployment of Bio-Traps® in the same four injection/monitoring wells to improve understanding of long-term microbial trends.
    - Monitoring the potentiometric surface within the treatability study area to evaluate groundwater flow patterns and gradients, which are indicative of the hydraulic properties of the formation.
- Because periodic injections of EVO and distribution water into injection wells were expected to result in a more complete coating of the soil grains following multiple injection events, the NDEP-approved *SWF Area Bioremediation Treatability Study Results Report* (Tetra Tech, 2019a) recommended soil sampling prior to conclusion of the treatability study to evaluate and better understand the phenomena associated with EVO movement and influence in the aquifer. As a result, a total of 20 soil borings will be installed to the upgradient, between, and downgradient of the injection well transects. Ten soil borings will be advanced to the alluvium-UMCf contact, which is approximately 40 ft bgs within the study area and ten soil borings will also be advanced approximately five feet into the UMCf. Up to five soil samples will be

collected from each soil boring and analyzed for calcium, TOC, volatile fatty acids, and microbial assays (perchlorate reductase and PLFA). Color, presence of remnant EVO, and olfactory sensing will also be noted for each soil boring.

Reporting

- Continue to submit progress reports to NDEP on a quarterly basis.
- In early 2023, prepare the 2022 Annual Progress Report, which will include a summary of 2022 activities and an update to all information presented herein. The 2022 Annual Progress Report will represent the last report prepared by NERT associated with the SWF Area Bioremediation Treatability Study.
- After completion of the above described activities, the results of all work performed during this treatability study will be evaluated in the forthcoming FS to determine if this technology should be incorporated into the final remedy for the NERT RI Study Area.

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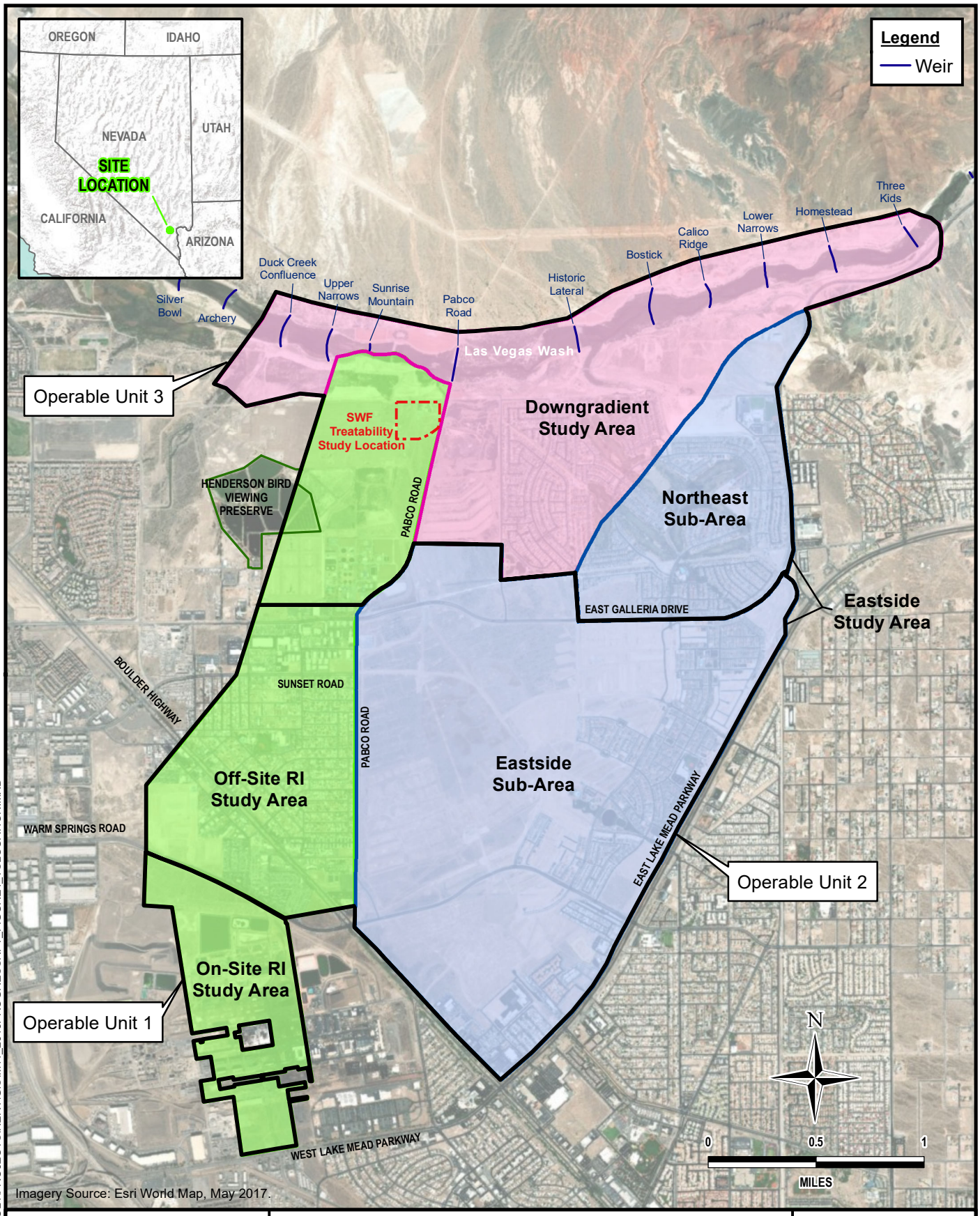
Figures



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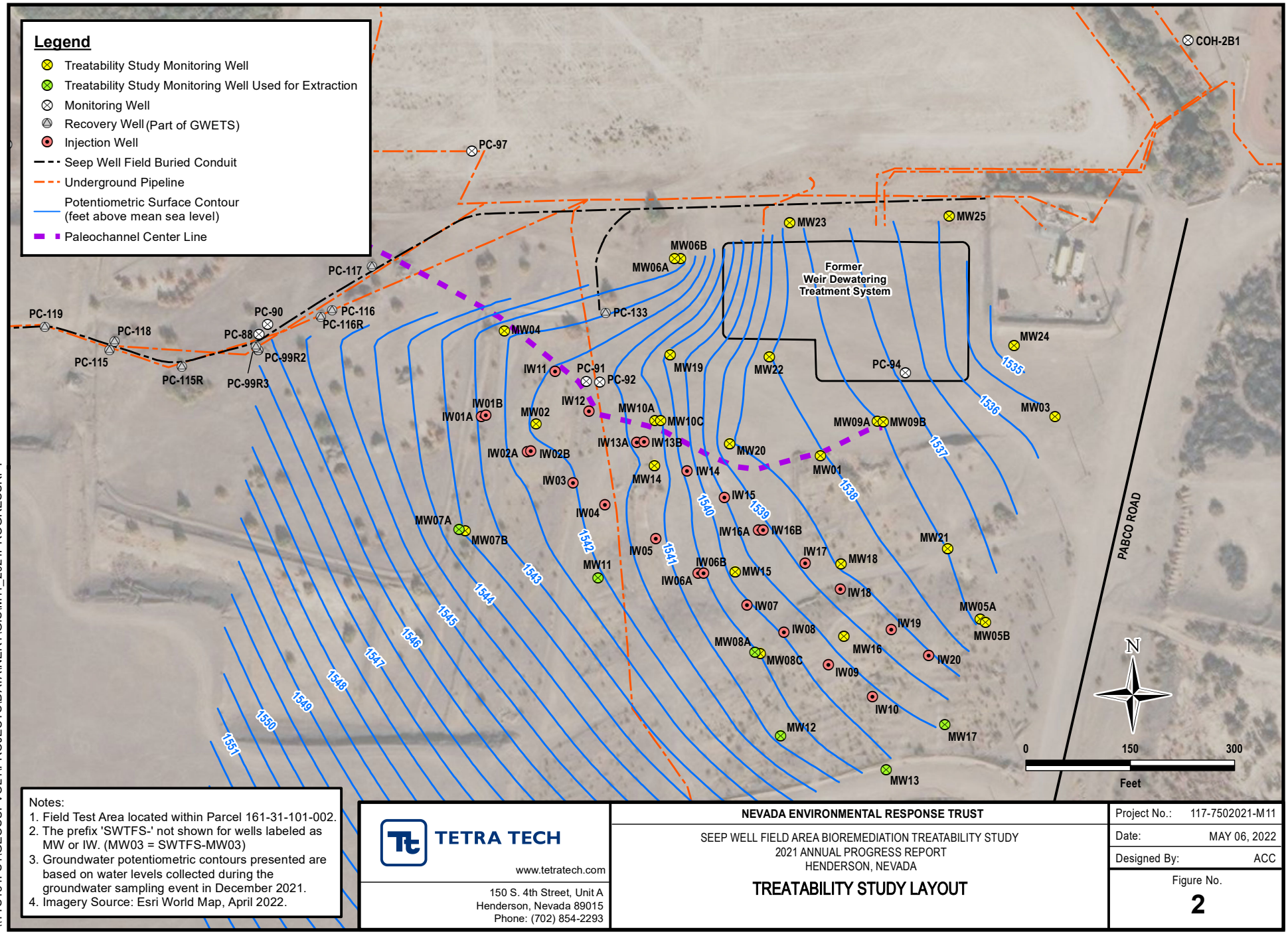
NEVADA ENVIRONMENTAL RESPONSE TRUST

SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

TREATABILITY STUDY LOCATION

PROJECT NO.:	117-7502021-M11
DATE:	APRIL 01, 2020
DESIGNED BY:	ACC

Figure No.
1



Notes:
1. Field Test Area located within Parcel 161-31-101-002.
2. The prefix 'SWTFS-' not shown for wells labeled as MW or IW. (MW03 = SWTFS-MW03)
3. Groundwater potentiometric contours presented are based on water levels collected during the groundwater sampling event in December 2021.
4. Imagery Source: Esri World Map, April 2022.

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SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

TREATABILITY STUDY LAYOUT

Project No.:	117-7502021-M11
Date:	MAY 06, 2022
Designed By:	ACC
Figure No.	2

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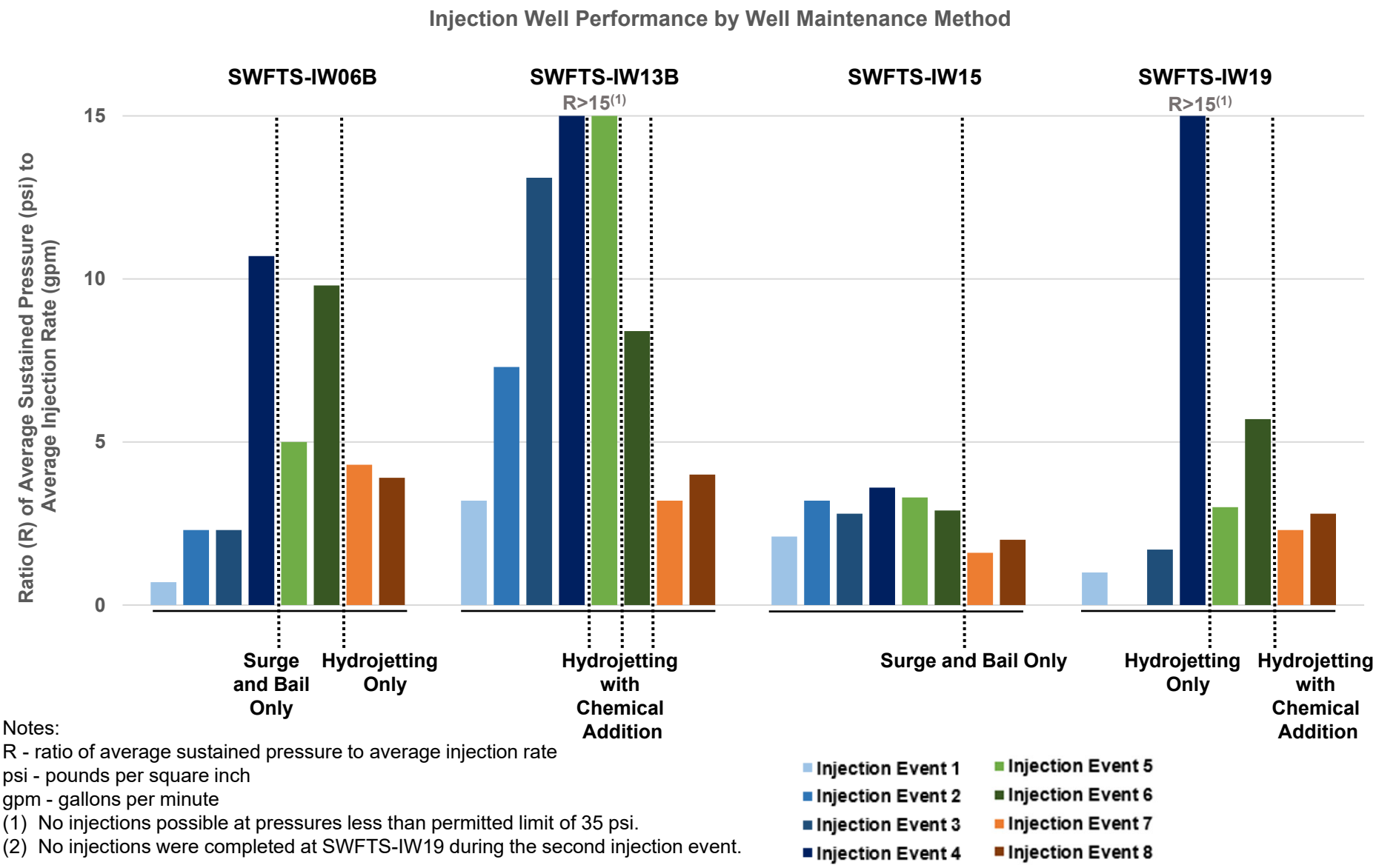

Notes:
R - ratio of average sustained pressure to average injection rate
psi - pounds per square inch
gpm - gallons per minute
(1) No injections possible at pressures less than permitted limit of 35 psi.
(2) No injections were completed at SWFTS-IW19 during the second injection event.

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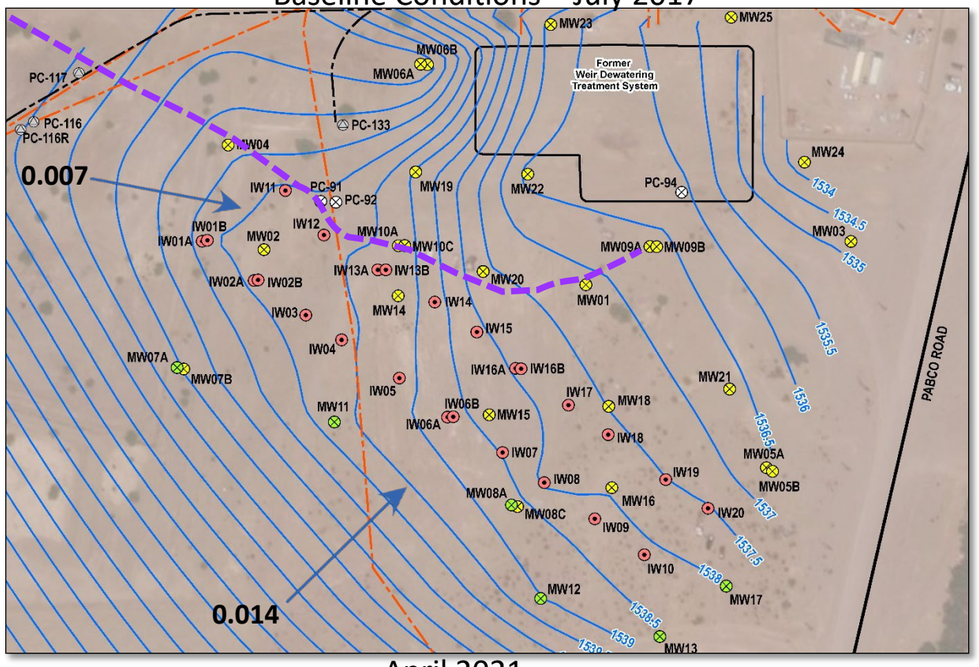
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

INJECTION WELL PERFORMANCE BY WELL MAINTENANCE METHOD

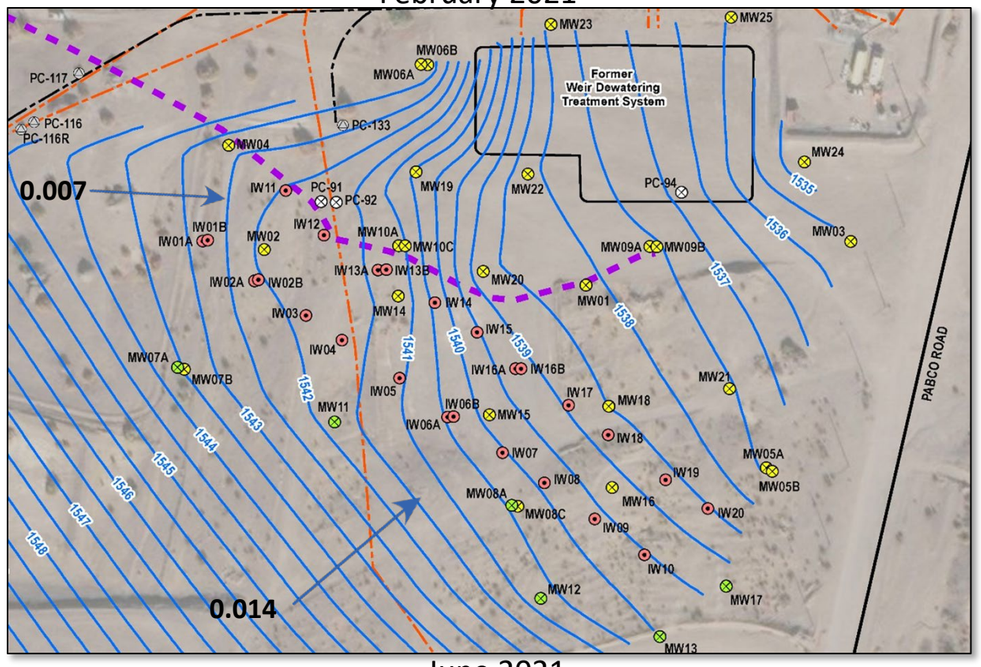
Project No.:	117-7502021-M11
Date:	MAY 10, 2022
Designed By:	JD
Figure No.	3

\\tts134fs1\SUP-Projects\520225_NERT\Seep Area Bio\2021 Annual Progress Report\Figures

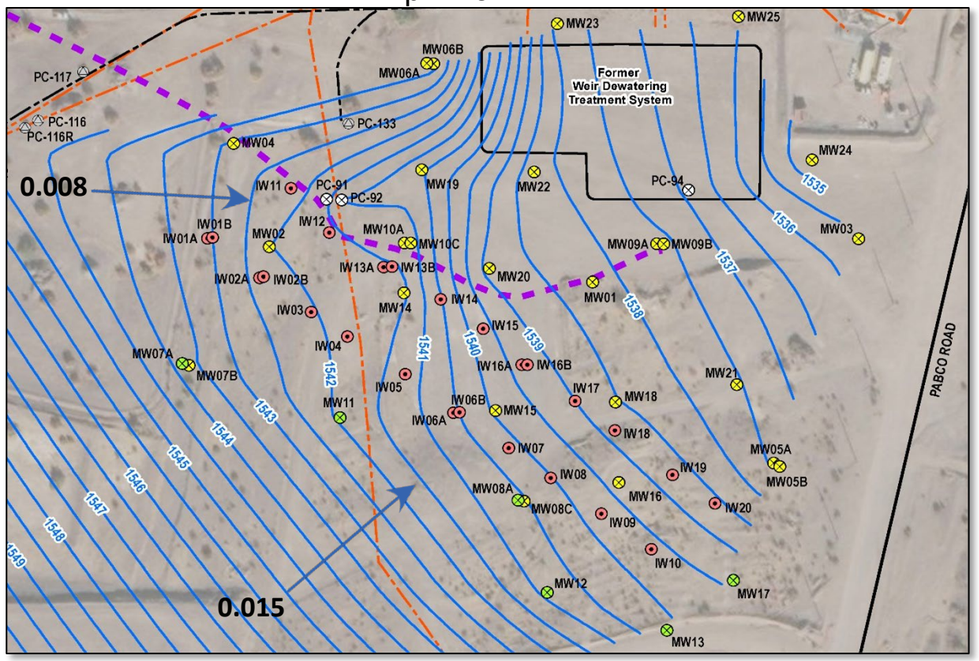
Baseline Conditions – July 2017



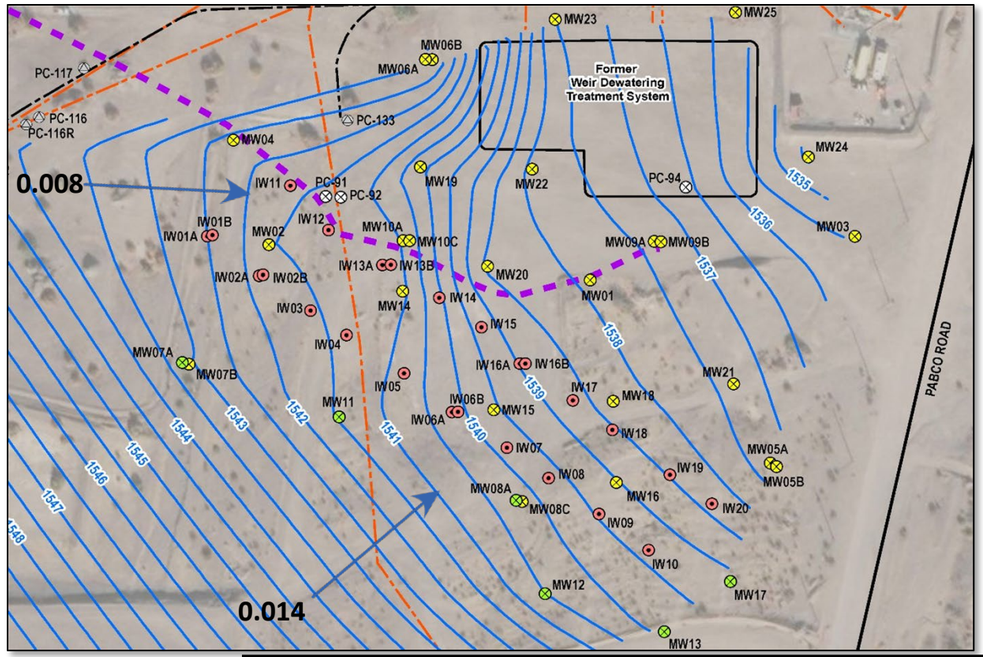
February 2021



April 2021



June 2021



Legend

- Treatability Study Monitoring Well
- Treatability Study Monitoring Well Used for Extraction
- Monitoring Well
- Recovery Well (Part of GWETS)
- Injection Well
- Seep Well Field Buried Conduit
- Underground Pipeline
- Potentiometric Surface Contour (feet above mean sea level)
- Paleochannel Center Line
- 0.008 Hydraulic Gradient (feet per foot)

N

0 150 300

Feet

Notes:

1. Baseline conditions presented from July 2017 are representative of pre-injection conditions.
2. Injection events have occurred periodically from 2017 to 2021. Images presented in this figure represent groundwater sampling events that have occurred during the 2021 reporting period following the seventh and eighth injection events performed in February/March 2021 and November 2021.

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SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

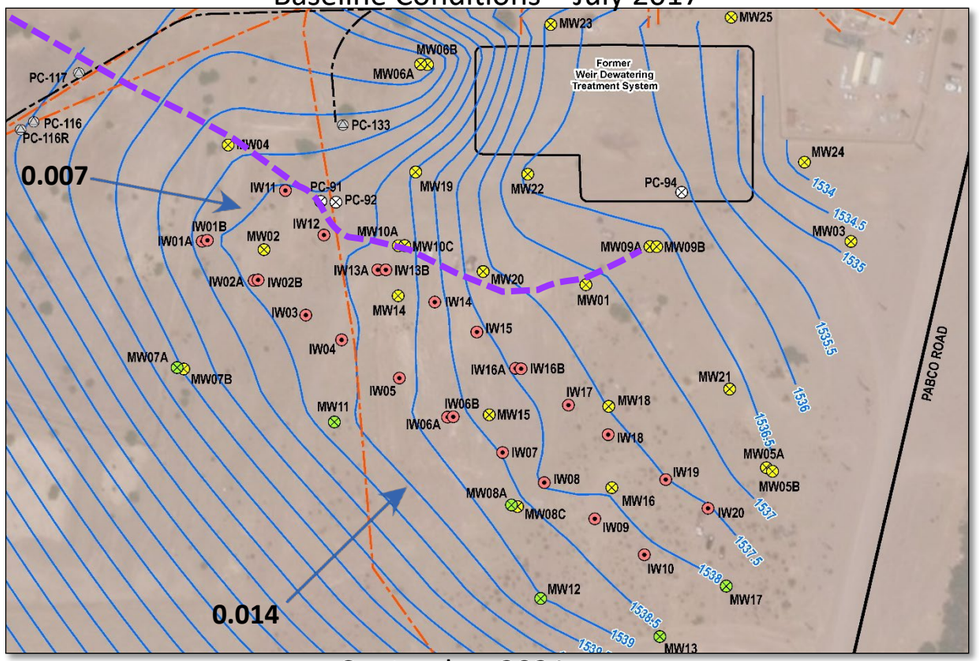
GROUNDWATER POTENTIOMETRIC SURFACE – FEBRUARY 2021 TO JUNE 2021

Project No.:	117-7502021-M11
Date:	May 23, 2022
Designed By:	JD

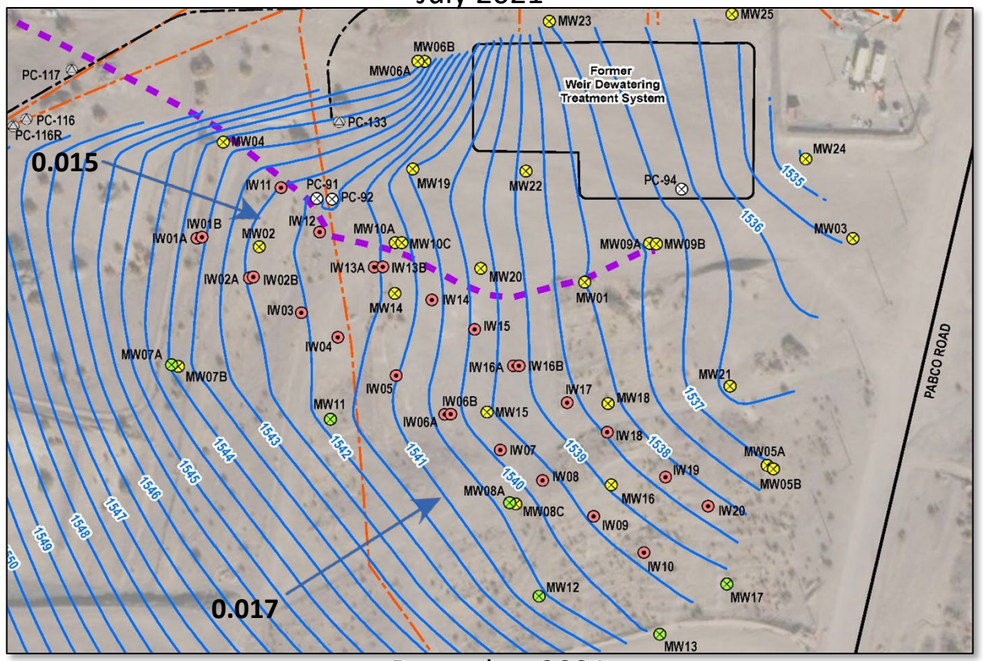
Figure No. **4A**

\\ts134fs1\GEOSUPVOL1\PROJECTS\DATA\NERTM11\ppt. Figs\2020\Annual Report EVS Figures 2020_v1.pptx

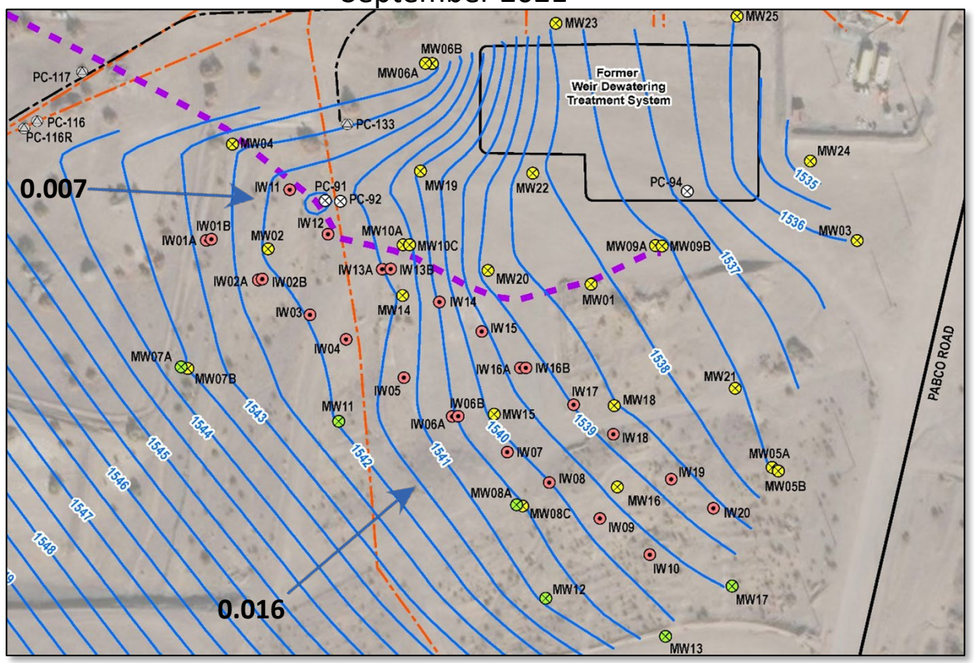
Baseline Conditions – July 2017



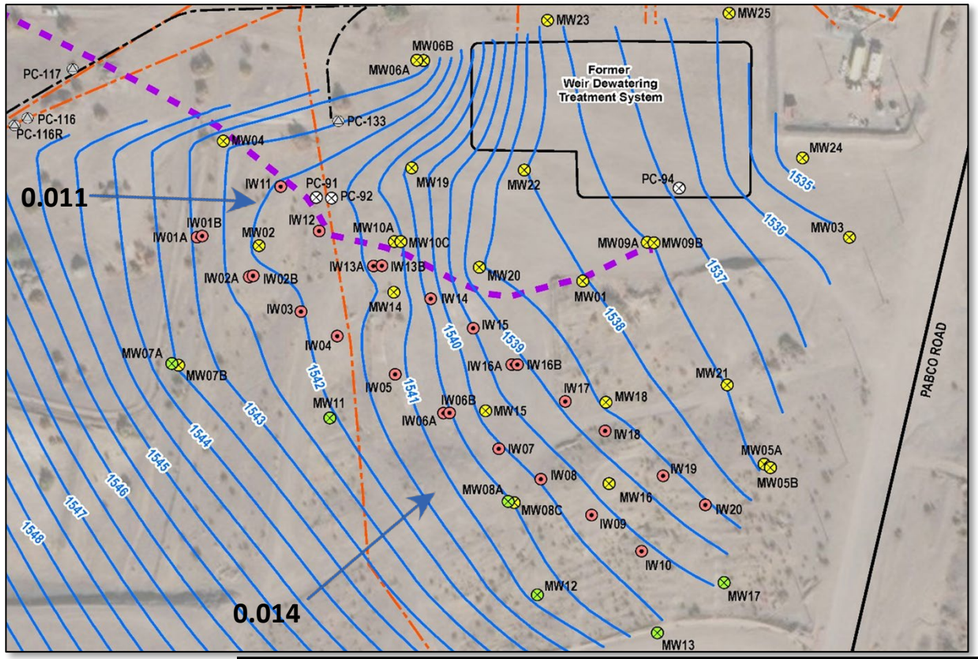
July 2021



September 2021



December 2021



Legend

- Treatability Study Monitoring Well
- Treatability Study Monitoring Well Used for Extraction
- Monitoring Well
- Recovery Well (Part of GWETS)
- Injection Well
- Seep Well Field Buried Conduit
- Underground Pipeline
- Potentiometric Surface Contour (feet above mean sea level)
- Paleochannel Center Line
- 0.008 Hydraulic Gradient (feet per foot)

N

0 150 300

Feet

Notes:

1. Baseline conditions presented from July 2017 are representative of pre-injection conditions.
2. Injection events have occurred periodically from 2017 to 2021. Images presented in this figure represent groundwater sampling events that have occurred during the 2021 reporting period following the seventh and eighth injection events performed in February/March 2021 and November 2021.

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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

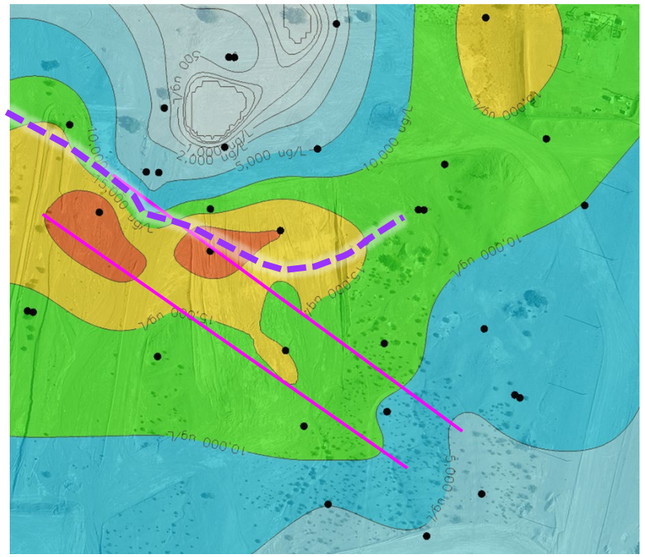
GROUNDWATER POTENTIOMETRIC SURFACE – JULY 2021 TO DECEMBER 2021

Project No.:	117-7502021-M11
Date:	May 23, 2022
Designed By:	JD

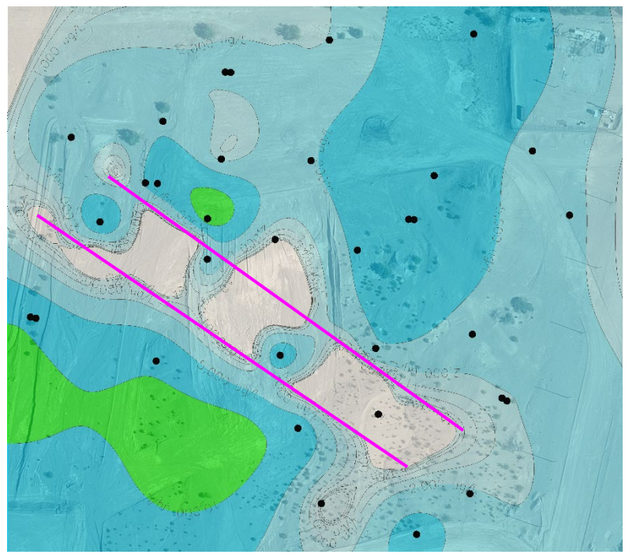
Figure No. **4B**

\\ts134fs1\GEOSUPVOL1\PROJECTS\DATA\NERTM11\ppt. Figs\2020\Annual Report EVS Figures 2020_v1.pptx

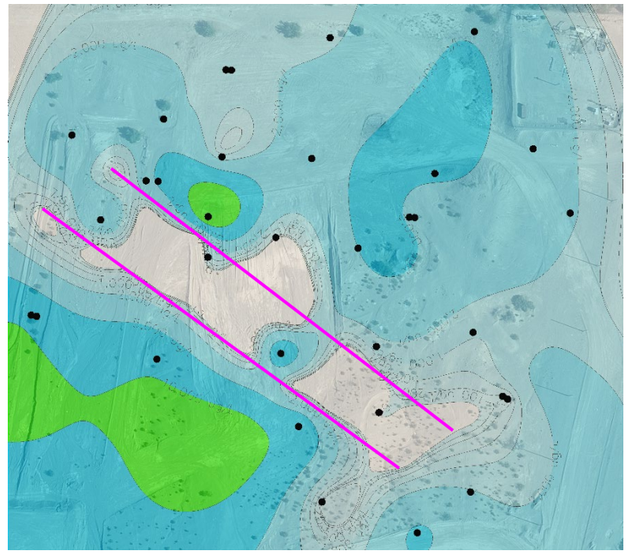
Baseline Conditions



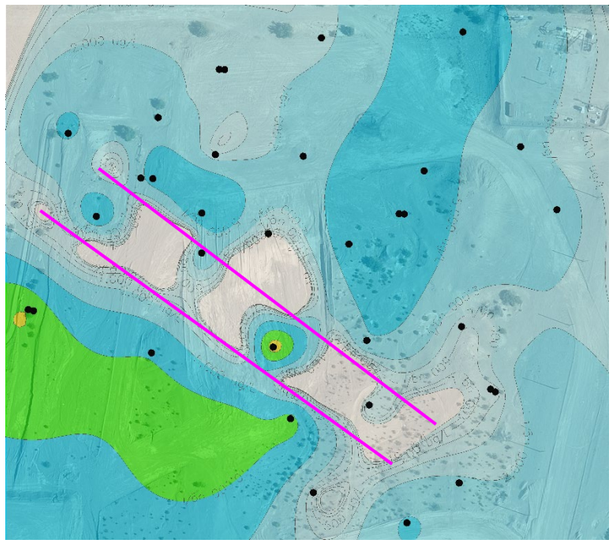
February 2021
Thirty-three Weeks After Injection Event 6



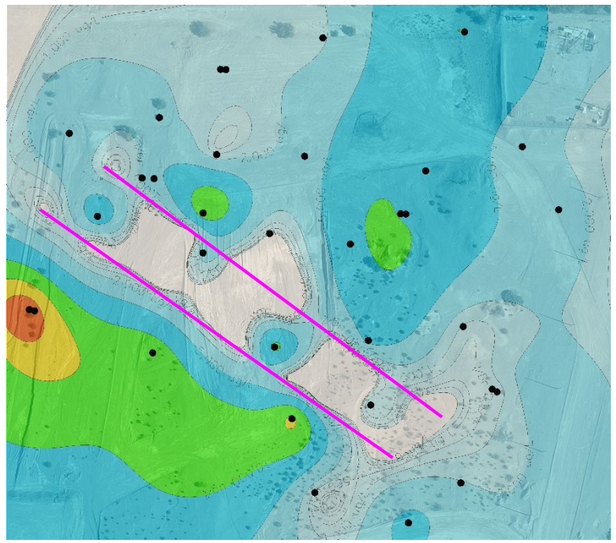
April 2021
Two Weeks After Injection Event 7



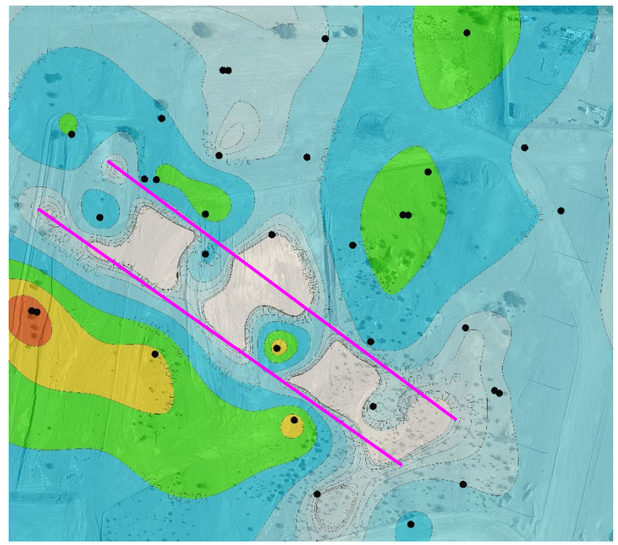
June 2021
Eleven Weeks After Injection Event 7



July 2021
Nineteen Weeks After Injection Event 7



September 2021
Twenty-seven Weeks After Injection Event 7



Perchlorate in groundwater (µg/L)

27,000
25,000
20,000
15,000
10,000
5,000
2,000
1,000
500
100
15

Sample locations

Injection Well Transect Lines

Approximate Paleochannel Centerline

N

0 200 400
Feet

Notes:

1. Each image represents a horizontal slice at 1522 feet amsl (above mean sea level) through the interpolated perchlorate concentration plume. Concentrations represented at monitoring well clusters may vary from reported concentrations based on screen elevations.
2. Baseline concentrations presented from July 2017 are representative of pre-injection conditions.
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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE
SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

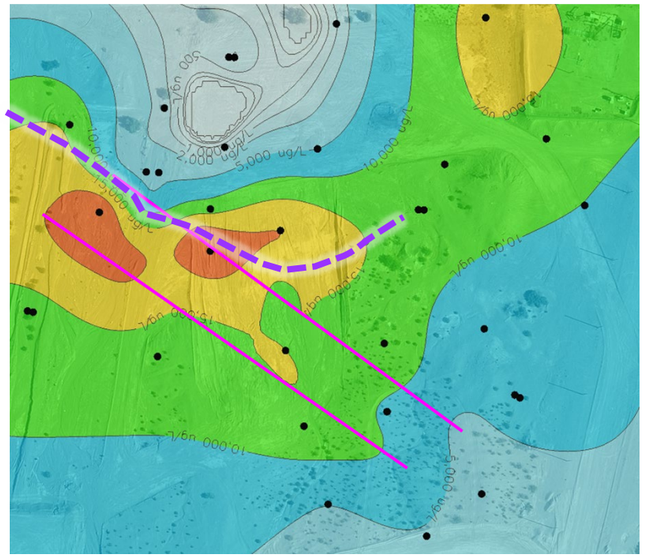
PERCHLORATE DISTRIBUTION IN GROUNDWATER – JANUARY 2021 TO SEPTEMBER 2021

Project No.:	117-7502021-M11
Date:	May 27, 2022
Designed By:	CKG

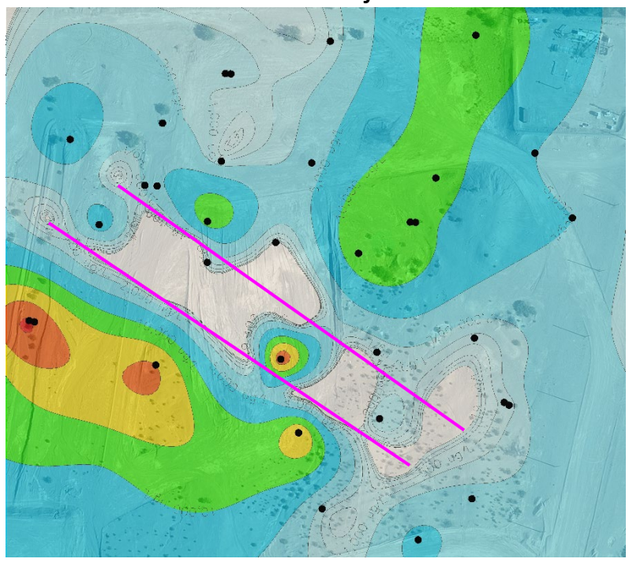
Figure No.
5A

\\tts134fs1\GEOSUP\COL1\PROJECTS\DATA\NERT\M11\ppt_Figs\2020\Annual Report EVS Figures 2020_v1.5.pptx

Baseline Conditions



December 2021
Two Weeks After Injection Event 8



Perchlorate in groundwater (µg/L)

27,000
25,000
20,000
15,000
10,000
5,000
2,000
1,000
500
100
15

Sample locations

Injection Well Transect Lines

Approximate Paleochannel Centerline

N

0 200 400
Feet

Notes:
1. Each image represents a horizontal slice at 1522 feet amsl (above mean sea level) through the interpolated perchlorate concentration plume. Concentrations represented at monitoring well clusters may vary from reported concentrations based on screen elevations.
2. Baseline concentrations presented from July 2017 are representative of pre-injection conditions.
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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE
SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

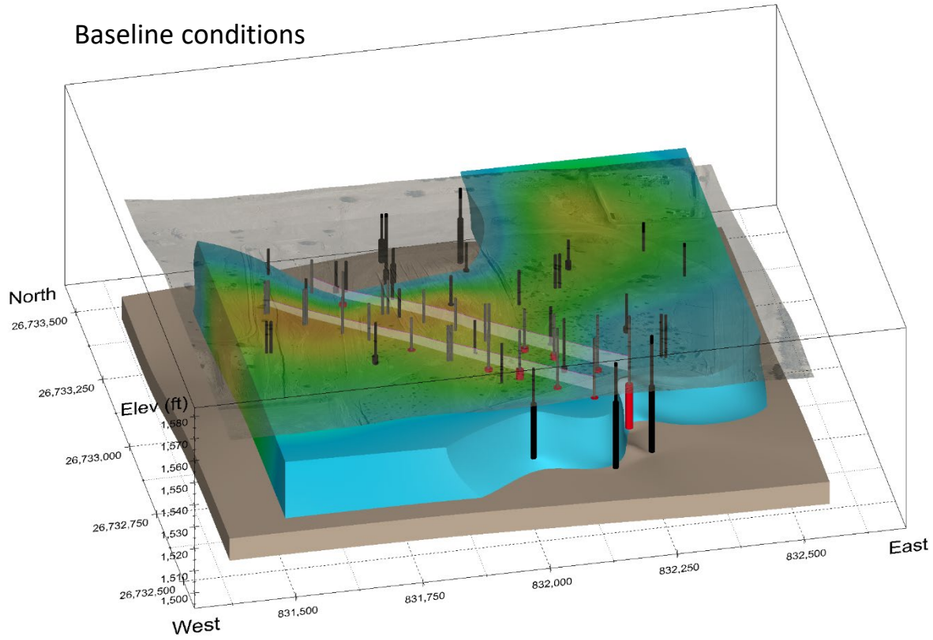
PERCHLORATE DISTRIBUTION IN GROUNDWATER – DECEMBER 2021

Project No.:	117-7502021-M11
Date:	May 27, 2022
Designed By:	CKG

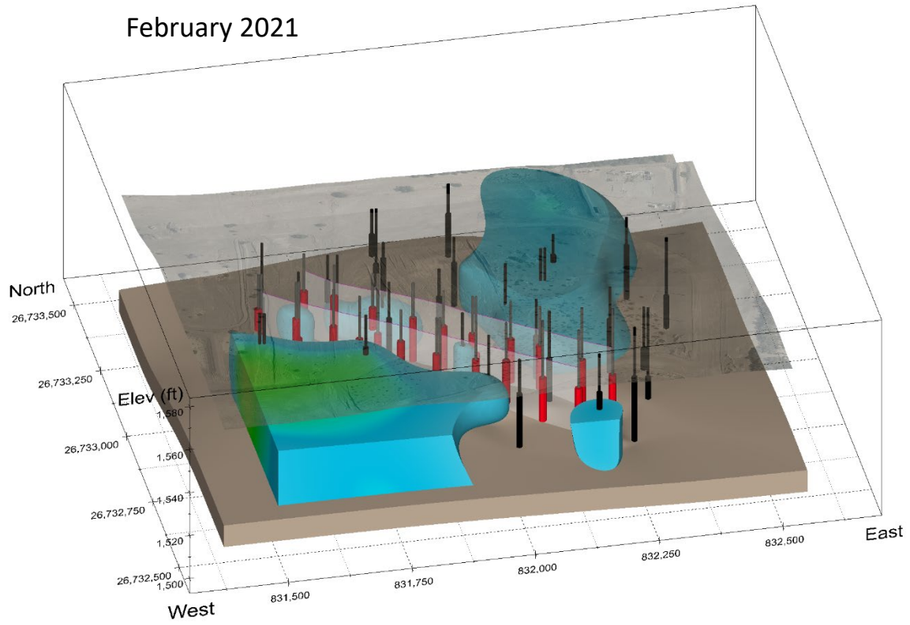
Figure No.
5B

\\ts134fs1\GEOSUP\VOL1\PROJECTS\DATAINERT\M11\ppt_Figs\2020\Annual Report EVS Figures 2020_v1.5.pptx

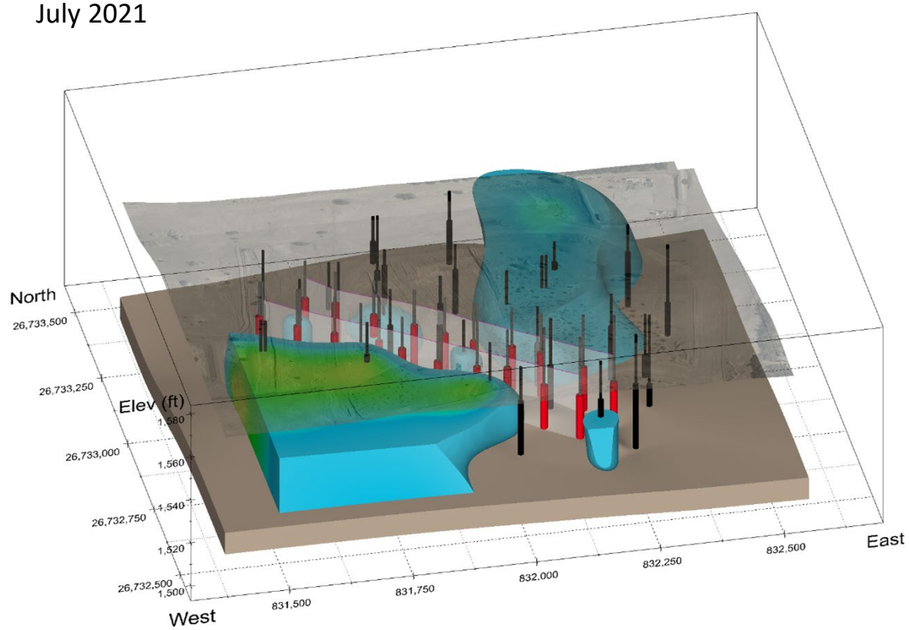
Baseline conditions



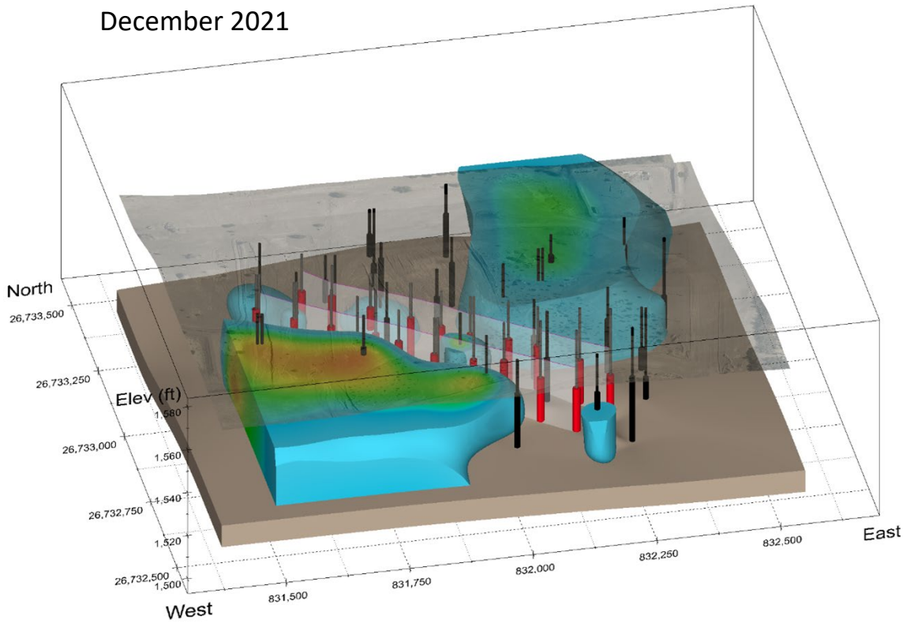
February 2021



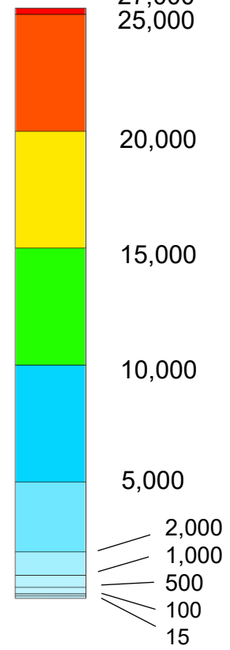
July 2021



December 2021

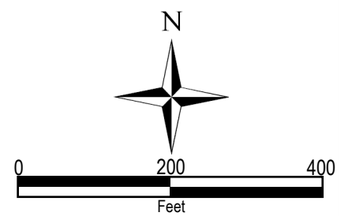


Perchlorate in groundwater (µg/L)



Sample locations are shown in black.

Injection wells are Shown in red.



Notes:

1. Each image represents the interpolated perchlorate concentration plume where concentrations exceed 5,000 µg/L.
2. Baseline concentrations presented from July 2017 are representative of pre-injection conditions.
3. Injection events have occurred periodically from 2017-2021. Images presented in this figure represent groundwater sampling events that have occurred during the 2021 reporting period following the seventh and eighth injection events performed in February/March 2021 and November 2021.

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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

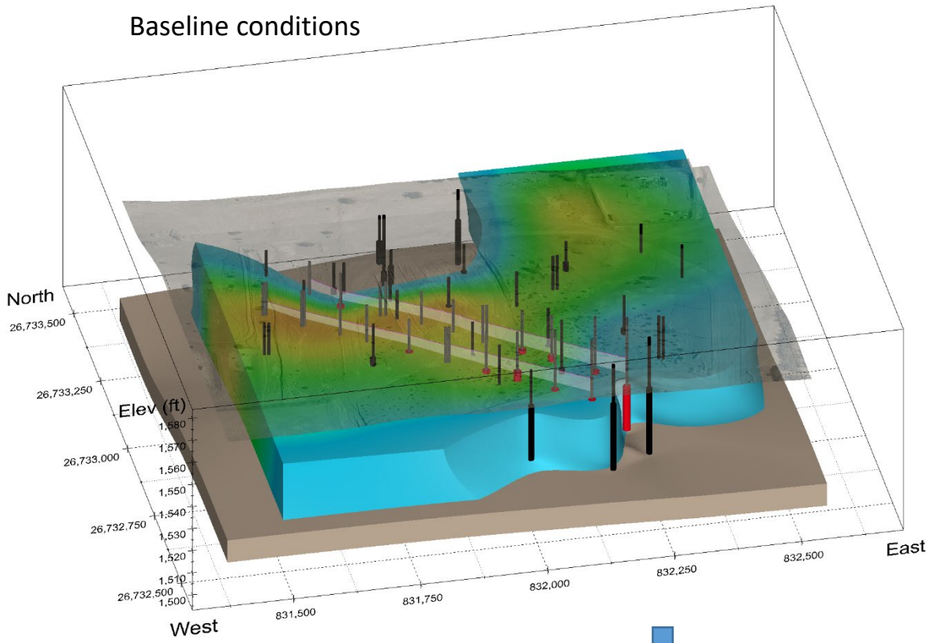
3D VISUALIZATION OF PERCHLORATE DISTRIBUTION IN GROUNDWATER FOR CONCENTRATIONS GREATER THAN 5,000 µg/L

Project No.:	117-7502019-M11
Date:	May 27, 2022
Designed By:	CKG

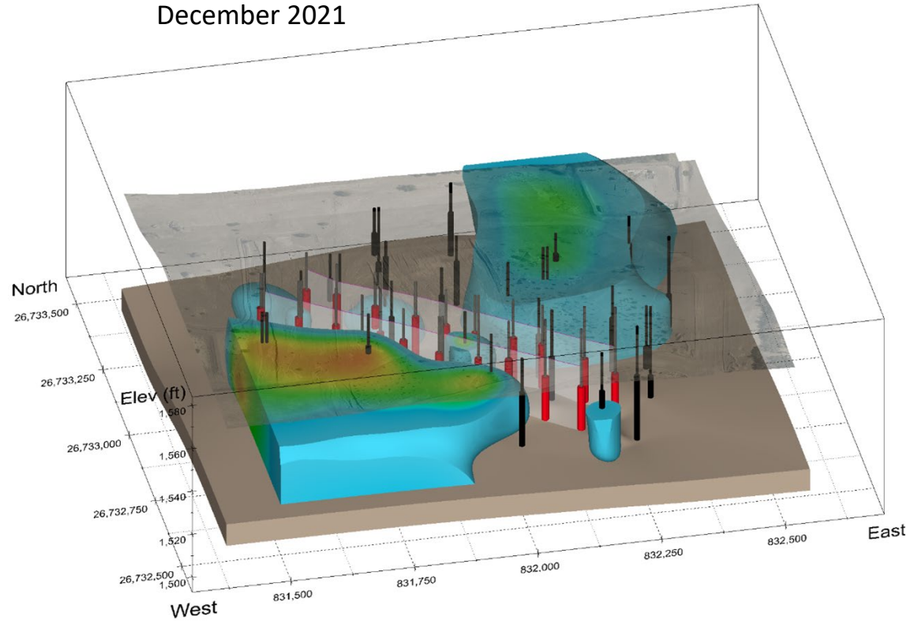
Figure No.
5C

\\tts134fs1\GEOSUPVOL1\PROJECTS\DATAINERT\M11\ppt_Figs\2020\Annual Report EVS Figures 2020_v1.5.pptx

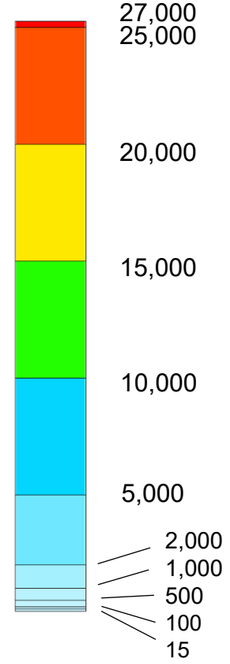
Baseline conditions



December 2021

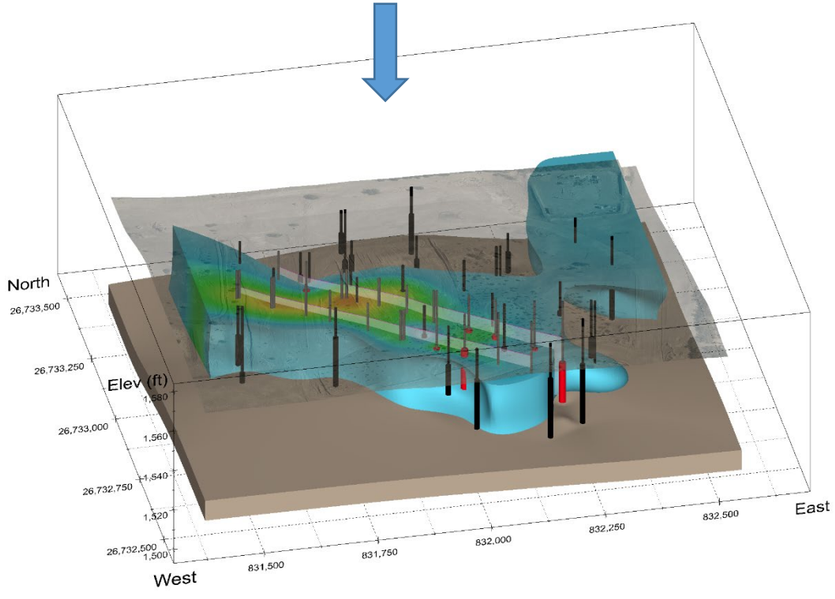


Perchlorate in groundwater (µg/L)



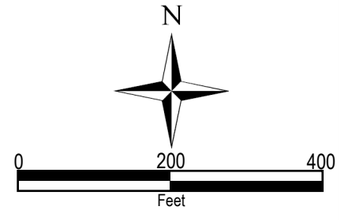
Baseline - December 2021

Visualization of Perchlorate Treated through December 2021



Sample locations are shown in black.

Injection wells are Shown in red.



Notes:

1. Each image represents the interpolated perchlorate concentration plume where concentrations exceed 5,000 µg/L.
2. Baseline concentrations presented from July 2017 are representative of pre-injection conditions.
3. Injection events have occurred periodically from 2017-2021. Images presented in this figure represent groundwater sampling events that have occurred during the 2021 reporting period following the seventh and eighth injection events performed in February/March 2021 and November 2021.

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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

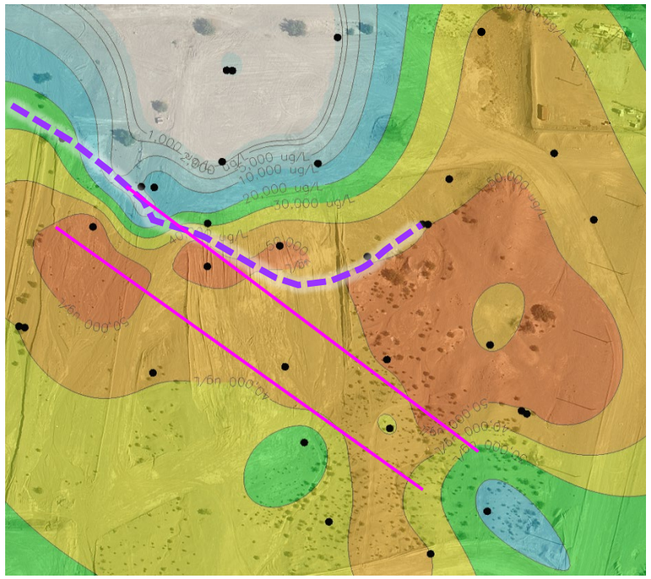
SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

3D VISUALIZATION OF TREATED PERCHLORATE GREATER THAN 5,000 µg/L DURING TREATABILITY STUDY

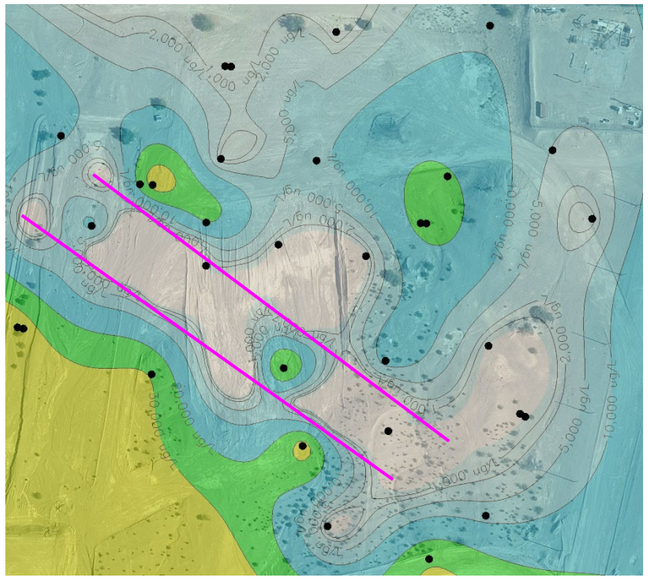
Project No.:	117-7502021-M11
Date:	May 27, 2022
Designed By:	CKG
Figure No.	**5D**

\\tts134fs1\GEOSUPVOL1\PROJECTS\DATA\NERTM\11ppt_Figs\2020\Annual Report EVS Figures 2020_v1.5.pptx

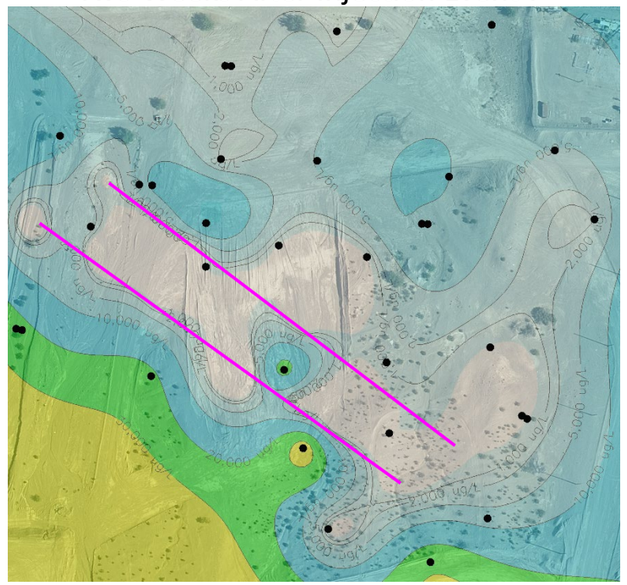
Baseline Conditions



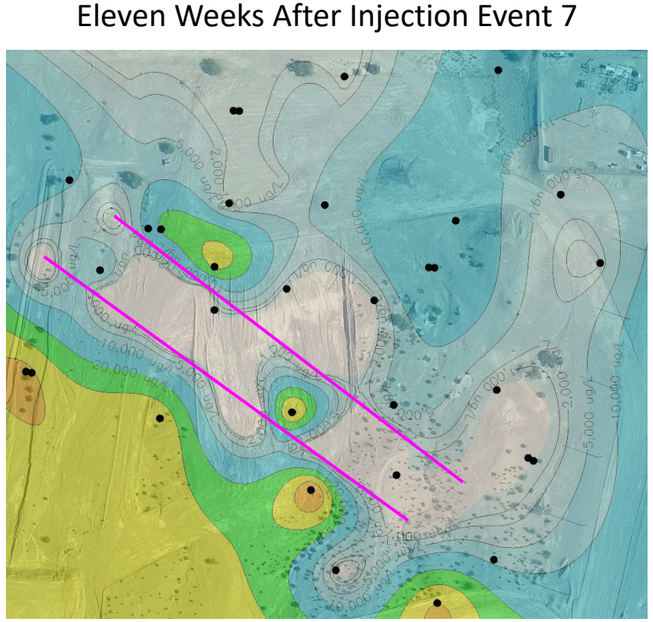
February 2021
Thirty-three Weeks After Injection Event 6



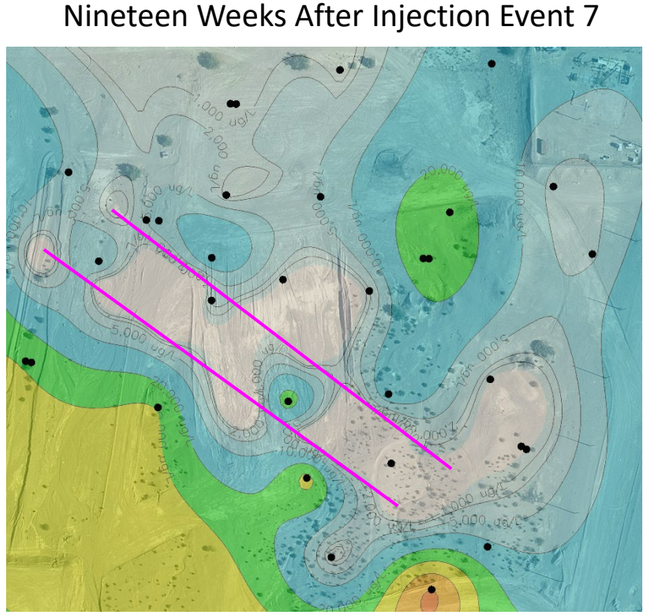
April 2021
Two Weeks After Injection Event 7



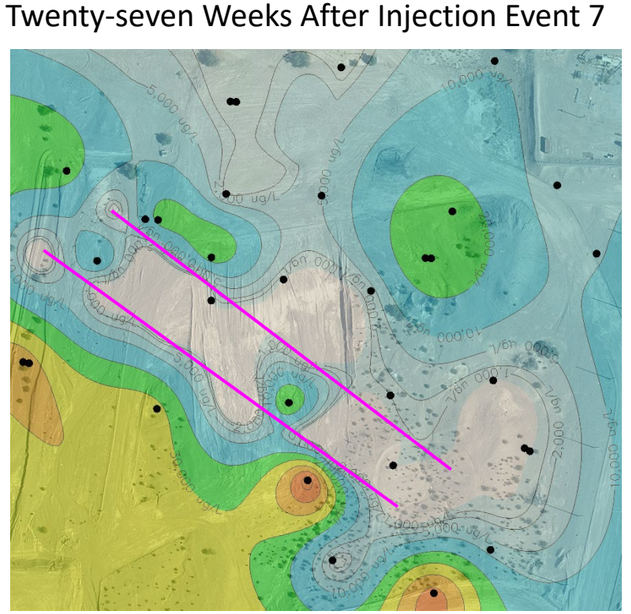
June 2021
Eleven Weeks After Injection Event 7



July 2021
Nineteen Weeks After Injection Event 7



September 2021
Twenty-seven Weeks After Injection Event 7



Chlorate in groundwater (µg/L)

60,000
50,000
40,000
30,000
20,000
10,000
5,000
2,000
1,000
100

Sample locations

Injection Well Transect Lines

Approximate Paleochannel Centerline

N

0 200 400
Feet

Notes:

1. Each image represents a horizontal slice at 1522 feet amsl (above mean sea level) through the interpolated chlorate concentration plume. Concentrations represented at monitoring well clusters may vary from reported concentrations based on screen elevations.
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3. Injection events have occurred periodically from 2017-2021. Images presented in this figure represent groundwater sampling events that have occurred during the 2021 reporting period following the seventh and eighth injection events performed in February/March 2021 and November 2021.

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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

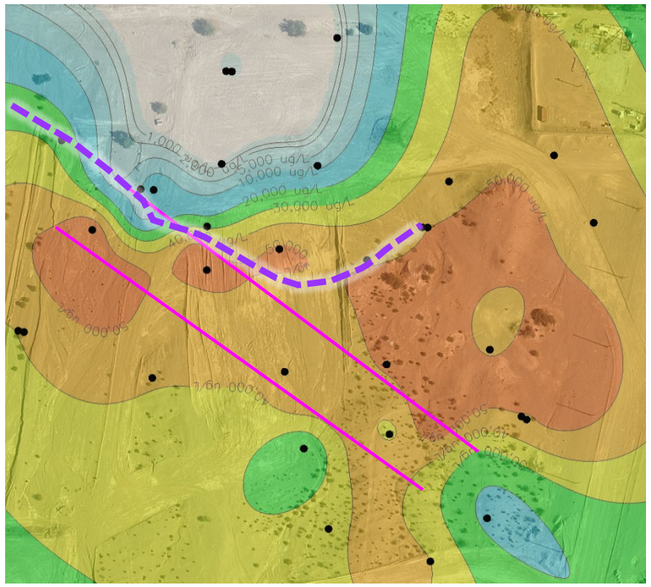
CHLORATE DISTRIBUTION IN GROUNDWATER – JANUARY 2021 TO SEPTEMBER 2021

Project No.:	117-7502021-M11
Date:	May 27, 2022
Designed By:	CKG

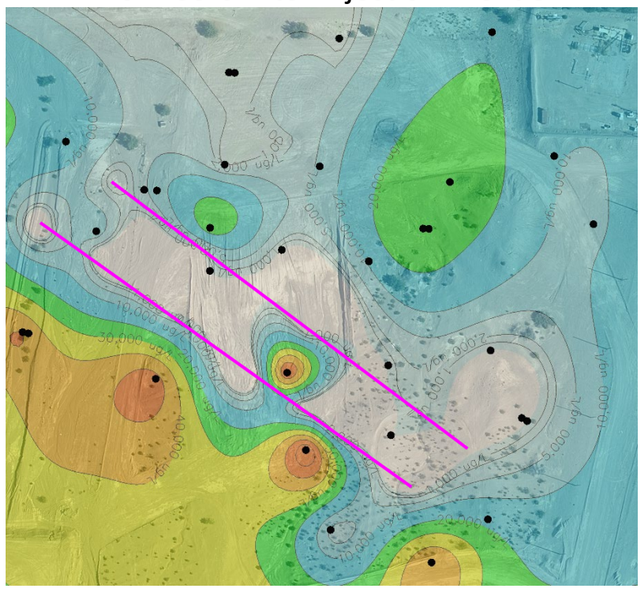
Figure No.
6A

\\tts134fs1\GEOSUP\OL1\PROJECTS\DATA\NERT\M11\ppt_Figs\2020\Annual Report EVS Figures 2020_v1.5.pptx

Baseline Conditions



December 2021
Two Weeks After Injection Event 8



Chlorate in groundwater (µg/L)

- 60,000
- 50,000
- 40,000
- 30,000
- 20,000
- 10,000
- 5,000
- 2,000
- 1,000
- 100

Sample locations

Injection Well Transect Lines

Approximate Paleochannel Centerline

N

0 200 400

Feet

Notes:

1. Each image represents a horizontal slice at 1522 feet amsl (above mean sea level) through the interpolated chlorate concentration plume. Concentrations represented at monitoring well clusters may vary from reported concentrations based on screen elevations.
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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

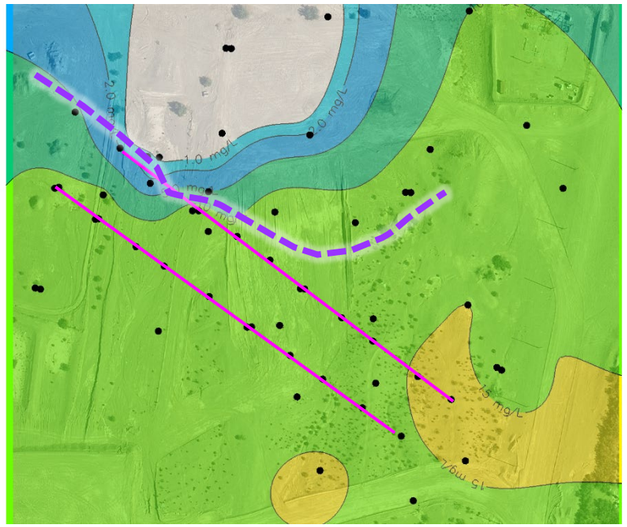
CHLORATE DISTRIBUTION IN GROUNDWATER – DECEMBER 2021

Project No.:	117-7502021-M11
Date:	May 27, 2022
Designed By:	CKG

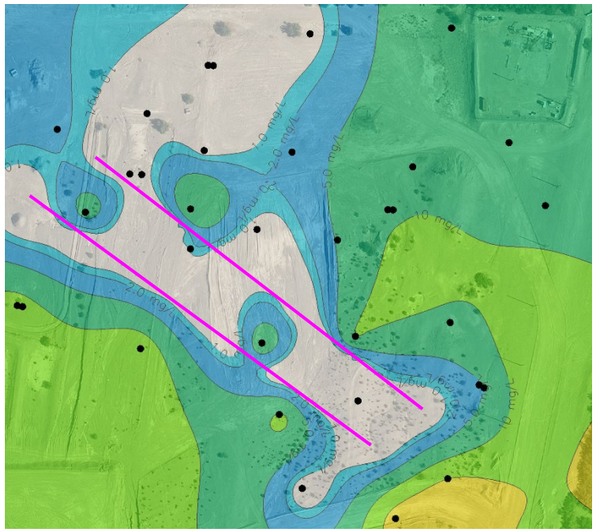
Figure No.
6B

\\tts134fs1\GEOSUP\OL1\PROJECTS\DATA\NERT\M11\ppt_Figs\2020\Annual Report EVS Figures 2020_v1.5.pptx

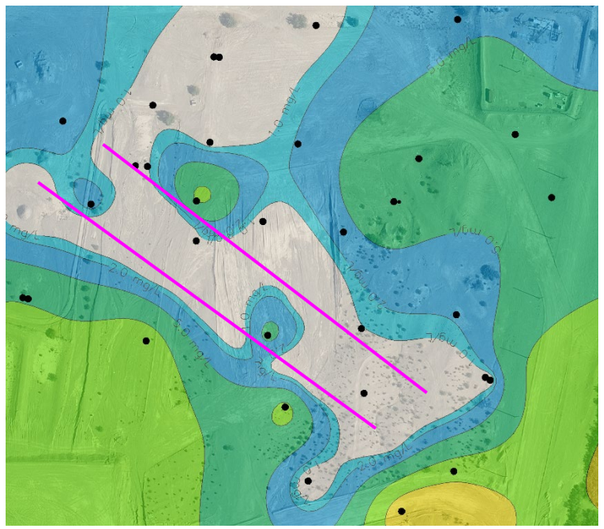
Baseline Conditions



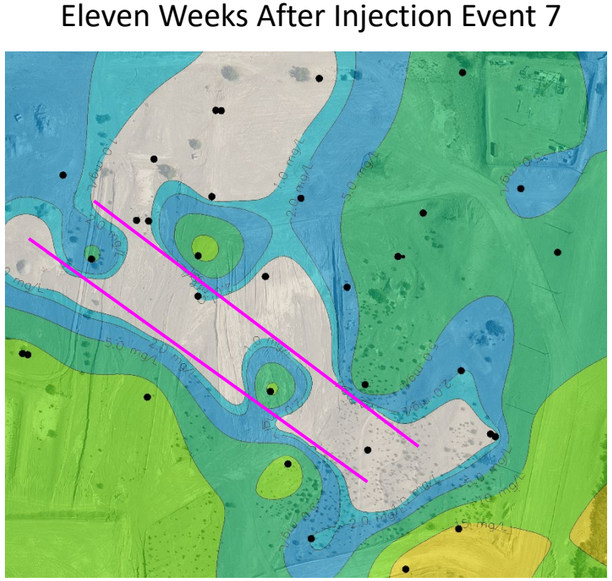
February 2021
Thirty-three Weeks After Injection Event 6



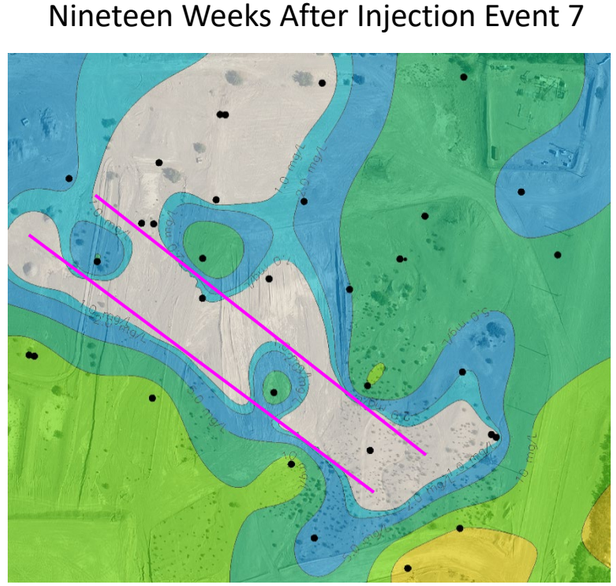
April 2021
Two Weeks After Injection Event 7



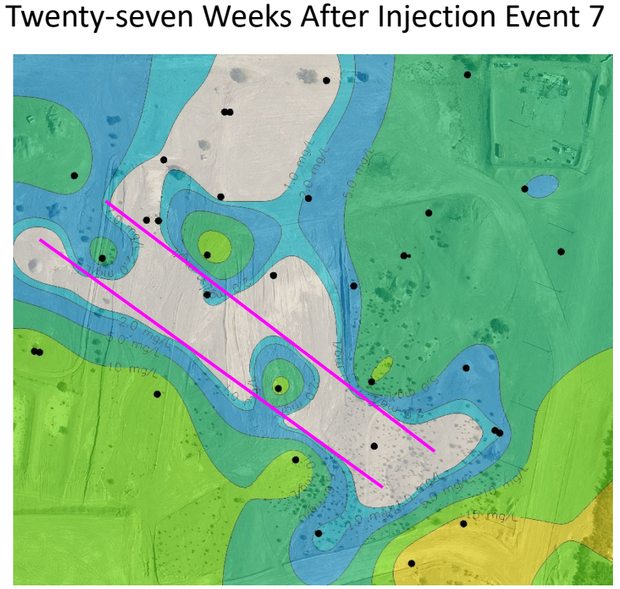
June 2021
Eleven Weeks After Injection Event 7

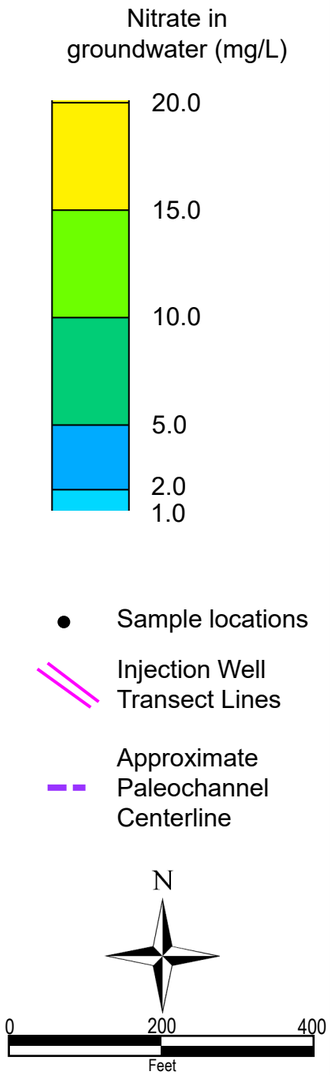


July 2021
Nineteen Weeks After Injection Event 7



September 2021
Twenty-seven Weeks After Injection Event 7





Notes:

1. Each image represents a horizontal slice at 1522 feet amsl (above mean sea level) through the interpolated nitrate concentration plume. Concentrations represented at monitoring well clusters may vary from reported concentrations based on screen elevations.
2. Baseline concentrations presented from July 2017 are representative of pre-injection conditions.
3. Injection events have occurred periodically from 2017-2021. Images presented in this figure represent groundwater sampling events that have occurred during the 2021 reporting period following the seventh and eighth injection events performed in February/March 2021 and November 2021.
4. .

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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE
SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

NITRATE DISTRIBUTION IN GROUNDWATER – JANUARY 2021 TO SEPTEMBER 2021

Project No.:	117-7502021-M11
Date:	May 27, 2022
Designed By:	CKG

Figure No.
7A

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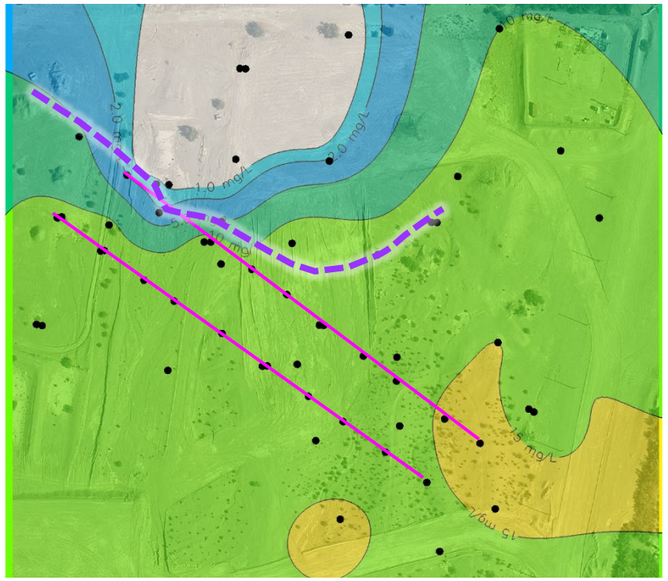
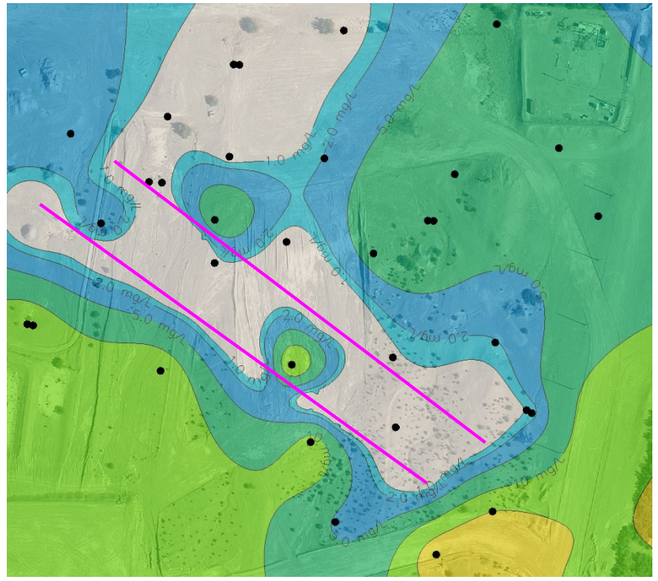
Baseline Conditions



December 2021
Two Weeks After Injection Event 8



Nitrate in groundwater (mg/L)

20.0
15.0
10.0
5.0
2.0
1.0

- Sample locations
- Injection Well Transect Lines
- Approximate Paleochannel Centerline

N

0 200 400
Feet

Notes:
1. Each image represents a horizontal slice at 1522 feet amsl (above mean sea level) through the interpolated nitrate concentration plume. Concentrations represented at monitoring well clusters may vary from reported concentrations based on screen elevations.
2. Baseline concentrations presented from July 2017 are representative of pre-injection conditions.
3. Injection events have occurred periodically from 2017-2021. Images presented in this figure represent groundwater sampling events that have occurred during the 2021 reporting period following the seventh and eighth injection events performed in February/March 2021 and November 2021.

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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE
SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

NITRATE DISTRIBUTION IN GROUNDWATER – DECEMBER 2021

Project No.:	117-7502021-M11
Date:	May 27, 2022
Designed By:	CKG

Figure No.
7B

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Appendix A
Injection Summary Tables and Field Logs

Injection Event 7

Table A.1 – Batch Injection Quantities
Injection Event 7 – February/March 2021

Table A.2 – Summary of Injection Activities
Injection Event 7 – February/March 2021

Table A.3 – Summary of Groundwater Extraction Activities
Injection Event 7 – February/March 2021

Table A.4 – Specific Gravity Calibration Measurements
Injection Event 7 – February/March 2021

Table A.5 – Specific Gravity Measurements
Injection Event 7 – February/March 2021

Cascade Field Logs from Injection Event 7

Cascade Photo Log from Injection Event 7

Table A.1
Batch Quantities
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Components	Batch					
	1A	2B	3A	4B	5A	6B
EVO (gallons)	2,917	2,878	2,446	2,788	2,712	2,958
Glycerin (gallons)	66	66	55	63	63	67
AquaPure (gallons)	21	21	18	20	20	20
Sodium Sulfite (lbs)	52	52	44	50	50	52
Water (gallons)	11,634	11,526	9,700	11,138	10,862	10,863
Total Injectate Solution (gallons)	14,638	14,491	12,219	14,009	13,657	13,908

Notes:
lbs - pounds
mL - milliliters

Table A.2
Summary of Injection Activities
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[1]	Average Flow Rate	Sustained Pressure[2]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
2/24/2021	SWFTS-IW01A	3:46 PM	5:10 PM	84	8.8	11.5	738.7	0
	SWFTS-IW01B	3:46 PM	5:10 PM	77	7.9	13	605.3	0
	SWFTS-IW02A	3:46 PM	5:10 PM	84	7.5	17	628.5	0
	SWFTS-IW02B	3:46 PM	5:10 PM	84	7.2	17.5	604.3	0
	SWFTS-IW03	3:46 PM	5:10 PM	84	7.9	14	665.5	0
	SWFTS-IW04	3:46 PM	5:10 PM	84	8.7	14	733.0	0
	SWFTS-IW05	3:46 PM	5:10 PM	84	7.6	14	639.4	0
	SWFTS-IW06A	3:46 PM	5:10 PM	84	5.5	18	462.8	0
	SWFTS-IW06B	3:46 PM	5:10 PM	84	2.8	17	234.1	0
	SWFTS-IW07	3:46 PM	5:10 PM	74	10.1	17	747.6	0
	SWFTS-IW08	3:46 PM	5:10 PM	84	10.1	23.5	852.6	0
	SWFTS-IW09	3:46 PM	5:10 PM	84	7.6	26	637.4	0
	SWFTS-IW10	3:46 PM	5:10 PM	84	5.2	26	435.2	0
					Daily Summary		**7,984.3**	**0**
2/25/2021	SWFTS-IW01A	8:23 AM	1:45 PM	217	8.2	11.5	1776.6	0
	SWFTS-IW01B	8:23 AM	3:59 PM	351	5.7	12.5	1993.9	0
	SWFTS-IW02A	8:23 AM	1:07 PM	179	7.7	15.5	1384.2	0
	SWFTS-IW02B	8:23 AM	12:25 PM	137	4.3	16	588.8	0
	SWFTS-IW03	8:23 AM	4:51 PM	403	6.5	13	2613.1	0
	SWFTS-IW04	8:23 AM	4:35 PM	387	6.1	13.5	2363.9	0
	SWFTS-IW05	8:23 AM	4:51 PM	403	6.4	13	2590.3	0
	SWFTS-IW06A	8:23 AM	4:35 PM	387	4.0	18	1549.2	0
	SWFTS-IW06B	8:23 AM	4:08 PM	360	2.1	17	772.1	0
	SWFTS-IW07	8:23 AM	4:52 PM	404	8.4	16.5	3379.2	0
	SWFTS-IW08	8:23 AM	4:52 PM	404	6.7	24	2715.8	0
	SWFTS-IW09	8:23 AM	4:52 PM	404	5.8	27	2344.3	0
	SWFTS-IW10	8:23 AM	4:52 PM	404	4.3	25	1735.8	0
	SWFTS-IW11	1:52 PM	4:52 PM	180	3.9	11.5	701.3	0
	SWFTS-IW12	1:15 PM	4:52 PM	217	4.1	13.5	894.3	0
	SWFTS-IW13A	4:50 PM	4:52 PM	2	4.3	20	8.6	0
	SWFTS-IW13B	4:50 PM	4:52 PM	2	2.2	20	4.4	0
	SWFTS-IW14	4:50 PM	4:52 PM	2	4.6	30	9.2	0
					Daily Summary		**27,424.9**	**0**
2/26/2021	SWFTS-IW03	9:50 AM	11:10 AM	80	8.3	12	660.1	0
	SWFTS-IW05	9:50 AM	11:10 AM	80	8.2	11.5	652.3	0
	SWFTS-IW08	9:50 AM	11:10 AM	80	5.7	21	456.1	0
	SWFTS-IW09	9:50 AM	11:10 AM	80	10.0	22	802.5	0
	SWFTS-IW10	9:50 AM	11:10 AM	80	7.1	26	564.6	0
	SWFTS-IW11	9:50 AM	11:10 AM	80	8.3	10	665.6	0
	SWFTS-IW12	9:50 AM	11:10 AM	80	8.3	11.5	662.6	0
	SWFTS-IW13A	9:50 AM	11:10 AM	80	5.4	12.5	431.6	0
	SWFTS-IW13B	9:50 AM	11:10 AM	80	1.8	17.5	142.3	0
	SWFTS-IW14	9:50 AM	11:10 AM	80	8.1	15.5	645.0	0
	SWFTS-IW15	9:50 AM	11:10 AM	80	8.4	18.5	669.9	0
	SWFTS-IW17	9:50 AM	11:10 AM	80	10.6	22	851.2	0
					Daily Summary		**7,204**	**0**

Table A.2
Summary of Injection Activities
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[1]	Average Flow Rate	Sustained Pressure[2]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
2/27/2021	SWFTS-IW02B	10:42 AM	12:15 PM	71	11.5	13.5	819.1	0
	SWFTS-IW03	10:42 AM	10:55 AM	13	6.6	19	86.1	0
	SWFTS-IW05	10:42 AM	10:57 AM	15	9.5	25	142.0	0
	SWFTS-IW09	10:42 AM	11:22 AM	40	6.0	27	240.1	0
	SWFTS-IW10	10:42 AM	1:47 PM	185	7.0	26.5	1289.0	0
	SWFTS-IW11	10:42 AM	2:08 PM	206	12.9	12	2657.1	0
	SWFTS-IW12	10:42 AM	3:42 PM	300	12.0	13	3599.3	0
	SWFTS-IW13A	10:42 AM	3:30 PM	288	5.5	14	1572.1	0
	SWFTS-IW13B	10:42 AM	3:47 PM	305	3.6	27	1099.6	0
	SWFTS-IW14	10:42 AM	3:25 PM	283	11.9	17	3370.0	0
	SWFTS-IW15	10:42 AM	3:47 PM	305	11.8	17.5	3588.5	0
	SWFTS-IW16A	11:34 AM	2:48 PM	194	10.4	20.5	2012.1	0
	SWFTS-IW16B	11:34 AM	3:20 PM	226	8.9	25	2012.1	0
	SWFTS-IW17	10:42 AM	3:47 PM	305	10.2	24	3101.6	0
	SWFTS-IW18	2:07 PM	3:47 PM	100	7.5	21	745.5	0
	SWFTS-IW19	12:39 PM	3:47 PM	188	5.9	23.5	1117.4	0
	SWFTS-IW20	12:39 PM	3:47 PM	188	5.2	22	978.0	0
					Daily Summary		**28,429.5**	**0**
2/28/2021	SWFTS-IW11	2:28 PM	3:03 PM	35	10.6	9	371.4	0
	SWFTS-IW12	2:28 PM	3:08 PM	40	12.4	9	495.5	0
	SWFTS-IW13B	9:15 AM	10:59 AM	104	7.4	27.5	766.1	0
	SWFTS-IW14	2:28 PM	3:00 PM	32	11.6	14	371.4	0
	SWFTS-IW15	9:15 AM	10:05 AM	50	15.4	16.5	772.2	0
	SWFTS-IW17	9:15 AM	9:24 AM	9	7.9	24	71.1	0
	SWFTS-IW18	9:15 AM	2:12 PM	297	14.4	28	4285.1	0
	SWFTS-IW19	9:15 AM	2:16 PM	301	13.0	31	3913.0	0
	SWFTS-IW20	9:15 AM	2:00 PM	285	11.6	30	3298.1	0
					Daily Summary		**14,343.7**	**0**
2/28/2021	SWFTS-IW11	3:23 PM	5:00 PM	97	12.6	9	0	1,223.2
	SWFTS-IW12	3:23 PM	5:00 PM	97	13.3	9	0	1,290.7
	SWFTS-IW13A	3:23 PM	5:00 PM	97	5.7	12	0	557.4
	SWFTS-IW13B	3:23 PM	5:00 PM	97	5.1	20	0	490.0
	SWFTS-IW14	3:23 PM	5:00 PM	97	12.7	16	0	1,230.8
	SWFTS-IW15	3:23 PM	5:00 PM	97	12.2	14	0	1,183.2
	SWFTS-IW16A	3:23 PM	5:00 PM	97	10.0	18.5	0	969.8
	SWFTS-IW16B	3:23 PM	5:00 PM	97	9.9	20	0	959.8
	SWFTS-IW17	3:23 PM	5:00 PM	97	10.4	17	0	1,010.2
	SWFTS-IW18	3:23 PM	5:00 PM	97	9.4	19.5	0	915.9
	SWFTS-IW19	3:23 PM	5:00 PM	97	9.4	20	0	913.2
	SWFTS-IW20	3:23 PM	5:00 PM	97	6.6	20	0	644.1
					Daily Summary		**0**	**11,388.2**
3/1/2021	SWFTS-IW07	3:47 PM	4:45 PM	58	11.0	14	0	636.5
	SWFTS-IW08	3:47 PM	4:45 PM	58	4.7	10	0	269.8
	SWFTS-IW09	3:47 PM	4:45 PM	58	9.8	23	0	568.4
	SWFTS-IW11	8:37 AM	2:32 PM	222	14.2	10.5	0	3,152.1
	SWFTS-IW12	8:37 AM	3:15 PM	272	14.9	19	0	4,053.3
	SWFTS-IW13A	8:37 AM	12:06 PM	209	7.8	15	0	1,631.2
	SWFTS-IW13B	8:37 AM	12:19 PM	222	7.7	22	0	1,699.2
	SWFTS-IW14	8:37 AM	2:50 PM	227	13.9	17	0	3,144.2
	SWFTS-IW15	8:37 AM	11:59 AM	202	14.6	16	0	2,942.3
	SWFTS-IW16A	8:37 AM	2:12 PM	118	10.3	19	0	1,218.3
	SWFTS-IW16B	8:37 AM	2:20 PM	126	9.7	20	0	1,228.1
	SWFTS-IW17	8:37 AM	1:20 PM	283	11.9	20	0	3,364.9
	SWFTS-IW18	8:37 AM	1:27 PM	290	11.1	21	0	3,209.0
	SWFTS-IW19	8:37 AM	1:36 PM	299	10.7	24	0	3,211.8
	SWFTS-IW20	8:37 AM	4:45 PM	244	11.9	21	0	2,912.5
					Daily Summary		**0**	**33,241.6**

Table A.2
Summary of Injection Activities
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[1]	Average Flow Rate	Sustained Pressure[2]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
3/2/2021	SWFTS-IW06A	8:12 AM	5:00 PM	528	6.6	16	0	3,477.3
	SWFTS-IW06B	8:12 AM	5:00 PM	528	6.0	22	0	3,186.2
	SWFTS-IW07	8:12 AM	5:00 PM	528	11.7	14	0	6,192.8
	SWFTS-IW08	8:12 AM	5:00 PM	528	11.7	16	0	6,182.4
	SWFTS-IW09	8:12 AM	5:00 PM	528	11.7	22	0	6,173.8
	SWFTS-IW10	9:38 AM	5:00 PM	442	12.0	21	0	5,302.1
	SWFTS-IW20	8:12 AM	9:20 AM	68	12.0	20	0	818.0
					Daily Summary		**0**	**31,332.6**
3/3/2021	SWFTS-IW01A	7:47 AM	3:30 PM	463	7.4	13	0	3,435.1
	SWFTS-IW01B	7:47 AM	3:30 PM	463	7.0	12.5	0	3,262.2
	SWFTS-IW02A	7:47 AM	3:30 PM	463	7.9	16	0	3,649.1
	SWFTS-IW02B	7:47 AM	3:30 PM	463	6.9	15	0	3,181.0
	SWFTS-IW03	7:47 AM	3:30 PM	463	12.5	14.5	0	5,780.3
	SWFTS-IW04	7:47 AM	3:30 PM	463	12.6	13	0	5,836.7
	SWFTS-IW05	7:47 AM	3:30 PM	463	11.1	15.5	0	5,156.6
					Daily Summary		**0**	**30,301**
3/8/2021	SWFTS-IW01A	8:52 AM	5:00 PM	488	7.5	18	0	3,661.2
	SWFTS-IW01B	8:52 AM	5:00 PM	488	7.6	22	0	3,729.1
	SWFTS-IW02A	8:52 AM	5:00 PM	488	7.0	23	0	3,419.5
	SWFTS-IW02B	8:52 AM	5:00 PM	488	6.5	23	0	3,183.0
	SWFTS-IW03	8:52 AM	5:00 PM	488	6.9	21	0	3,361.2
	SWFTS-IW04	8:52 AM	5:00 PM	488	9.5	15.5	0	4,612.9
	SWFTS-IW05	8:52 AM	5:00 PM	488	8.9	23.5	0	4,351.0
					Daily Summary		**0**	**26,318**
3/9/2021	SWFTS-IW01A	7:47 AM	9:57 AM	130	8.9	18	0	1,154.1
	SWFTS-IW01B	7:47 AM	10:10 AM	143	8.8	23	0	1,259.0
	SWFTS-IW02A	7:47 AM	11:05 AM	198	8.5	24	0	1,681.1
	SWFTS-IW02B	7:47 AM	1:21 PM	334	7.1	25	0	2,386.0
	SWFTS-IW03	7:47 AM	5:10 PM	563	9.0	22	0	5,071.1
	SWFTS-IW04	7:47 AM	12:38 PM	291	9.2	19	0	2,675.0
	SWFTS-IW05	7:47 AM	5:10 PM	563	9.0	27	0	5,064.1
	SWFTS-IW06A	10:13 AM	5:10 PM	417	9.6	18	0	4,016.0
	SWFTS-IW06B	10:13 AM	12:45 PM	152	7.8	25.5	0	1,189.0
	SWFTS-IW07	11:14 AM	5:10 PM	356	9.8	14	0	3,504.8
	SWFTS-IW08	12:39 PM	5:10 PM	271	9.7	19	0	2,624.4
	SWFTS-IW09	12:48 PM	5:10 PM	262	8.7	18.5	0	2,288.1
	SWFTS-IW10	1:26 PM	5:10 PM	224	9.0	21	0	2,011.5
					Daily Summary		**0**	**34,924**

Table A.2
Summary of Injection Activities
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[1]	Average Flow Rate	Sustained Pressure[2]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
3/10/2021	SWFTS-IW03	7:40 AM	2:11 PM	391	8.4	19	0	3,287.0
	SWFTS-IW05	7:40 AM	1:19 PM	339	8.6	24.5	0	2,928.1
	SWFTS-IW06A	7:40 AM	10:13 AM	153	8.3	19	0	1,263.7
	SWFTS-IW07	7:22 AM	5:10 PM	588	11.0	17	0	6,471.0
	SWFTS-IW08	7:22 AM	5:10 PM	588	10.9	23.5	0	6,383.2
	SWFTS-IW09	7:22 AM	5:10 PM	588	10.7	24.5	0	6,297.5
	SWFTS-IW10	7:22 AM	5:10 PM	588	9.0	24.5	0	5,286.3
	SWFTS-IW11	10:29 AM	5:10 PM	401	7.7	23.5	0	3,067.8
	SWFTS-IW12	1:21 PM	5:10 PM	229	7.5	17	0	1,717.3
	SWFTS-IW13A	2:19 PM	5:10 PM	171	12.6	17	0	2,152.3
	SWFTS-IW13B	2:19 PM	5:10 PM	171	12.9	24	0	2,200.3
					Daily Summary		**0**	**41,055**
3/11/2021	SWFTS-IW07	12:18 PM	1:22 PM	64	10.9	20	0	695.0
	SWFTS-IW08	12:18 PM	3:18 PM	180	11.3	19	0	2,040.2
	SWFTS-IW09	12:18 PM	3:31 PM	193	11.3	24.5	0	2,172.0
	SWFTS-IW10	12:18 PM	4:47 PM	269	11.3	25	0	3,042.9
	SWFTS-IW11	12:20 PM	4:47 PM	267	8.8	23	0	2,362.6
	SWFTS-IW12	12:20 PM	4:47 PM	267	9.1	14	0	2,426.5
	SWFTS-IW13A	12:20 PM	4:47 PM	267	13.8	19	0	3,674.8
	SWFTS-IW13B	12:20 PM	4:47 PM	267	13.6	28	0	3,622.8
	SWFTS-IW14	1:28 PM	4:47 PM	199	9.0	5	0	1,795.3
	SWFTS-IW15	3:19 PM	4:47 PM	88	9.2	16	0	813.2
	SWFTS-IW16A	3:33 PM	4:47 PM	74	11.9	22	0	880.8
	SWFTS-IW16B	3:33 PM	4:47 PM	74	11.8	26	0	870.9
					Daily Summary		**0**	**24,397**
3/12/2021	SWFTS-IW10	8:24 AM	11:54 AM	210	8.8	21	0	1,857.0
	SWFTS-IW11	8:17 AM	4:45 PM	508	7.9	25.5	0	4,013.7
	SWFTS-IW12	8:17 AM	4:45 PM	508	8.7	17	0	4,404.7
	SWFTS-IW13A	8:17 AM	9:24 AM	67	11.0	15	0	734.0
	SWFTS-IW13B	8:17 AM	9:24 AM	67	11.0	22	0	738.1
	SWFTS-IW14	8:17 AM	4:45 PM	508	8.5	16	0	4,336.2
	SWFTS-IW15	8:17 AM	4:45 PM	508	8.6	23	0	4,360.4
	SWFTS-IW16A	8:24 AM	4:45 PM	501	8.5	30	0	4,267.1
	SWFTS-IW16B	8:24 AM	4:45 PM	501	8.3	27	0	4,167.1
	SWFTS-IW18	9:29 AM	4:45 PM	436	8.3	24	0	3,615.2
	SWFTS-IW19	11:55 AM	4:45 PM	290	8.1	21	0	2,347.9
					Daily Summary		**0**	**34,841**
3/13/2021	SWFTS-IW11	7:39 AM	2:02 PM	383	9.6	25	0	3,681.0
	SWFTS-IW12	7:39 AM	4:45 PM	546	8.6	16	0	4,670.8
	SWFTS-IW14	7:39 AM	4:45 PM	546	8.6	19.5	0	4,695.1
	SWFTS-IW15	7:39 AM	4:45 PM	546	8.5	20	0	4,659.5
	SWFTS-IW16A	7:34 AM	10:48 AM	194	7.3	29	0	1,413.9
	SWFTS-IW16B	7:34 AM	11:01 AM	207	7.4	24	0	1,524.0
	SWFTS-IW17	7:34 AM	4:45 PM	551	6.0	24	0	3,295.9
	SWFTS-IW18	7:34 AM	4:45 PM	551	6.0	22	0	3,309.2
	SWFTS-IW19	10:50 AM	4:45 PM	355	10.9	18.5	0	3,854.9
	SWFTS-IW20	11:03 AM	4:45 PM	342	10.9	18	0	3,718.9
					Daily Summary		**0**	**34,823**
3/14/2021	SWFTS-IW12	7:56 AM	12:20 PM	264	10.7	11.5	0	2,812.6
	SWFTS-IW14	7:56 AM	11:17 AM	201	11.4	15	0	2,298.0
	SWFTS-IW15	7:56 AM	11:53 AM	237	10.7	16	0	2,541.0
	SWFTS-IW17	7:56 AM	4:45 PM	529	9.5	30	0	5,043.9
	SWFTS-IW18	7:56 AM	4:45 PM	529	9.6	30	0	5,054.8
	SWFTS-IW19	7:56 AM	4:45 PM	529	12.4	23	0	6,534.6
	SWFTS-IW20	7:56 AM	4:45 PM	529	12.8	22	0	6,772.7
					Daily Summary		**0**	**31,058**

Table A.2
Summary of Injection Activities
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[1]	Average Flow Rate	Sustained Pressure[2]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
3/15/2021	SWFTS-IW17	9:00 AM	10:40 AM	100	11.7	25	0	1,170.0
	SWFTS-IW18	9:00 AM	11:12 AM	132	13.0	27	0	1,716.9
	SWFTS-IW19	9:00 AM	4:17 PM	247	9.4	19	0	2,331.9
	SWFTS-IW20	9:00 AM	12:50 PM	230	12.1	22	0	2,786.4
					Daily Summary		**0**	**8,005**
3/16/2021	SWFTS-IW17	9:00 AM	10:00 AM	60	0.2	0	0	10.0
					Daily Summary		**0**	**10**
					Injection Event Summary		**85,386**	**341,694**

Notes:
gpm - gallons per minute
min - minutes
gal - gallons
psi - pounds per square inch

[1]Injection duration indicates the total minutes of active injection per day, accounting for any downtime in injections that may have occurred throughout the day. Therefore, injection duration may be less than the difference in daily injection start and stop times indicated.

[2]Sustained pressure reported represents the highest pressure recored during the injection interval indicated.

Table A.3
Summary of Groundwater Extraction Activities
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Date	Extraction Well	Start Time	Stop Time	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				gpm	gal	gal
2/23/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	11:12	17:15	2.0	717.9	717.9
	SWFTS-MW11	11:20	17:15	9.6	3421.7	3,421.7
	SWFTS-MW12	11:00	17:15	8.4	3137.3	3,137.3
	SWFTS-MW13	12:30	17:15	17.3	4921.7	4,921.7
	SWFTS-MW17	8:45	17:15	19.6	9983.1	9,983.1
2/25/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	12:38	17:28	2.0	572.5	1,290.3
	SWFTS-MW11	12:25	17:28	9.7	2,952.9	6,374.6
	SWFTS-MW12	12:25	17:28	8.0	2,428.2	5,565.5
	SWFTS-MW13	12:25	17:28	19.9	6,034.6	10,956.3
	SWFTS-MW17	12:25	17:28	24.8	7,508.9	17,492.0
2/26/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	10:30	17:09	1.2	465.0	1,755.4
	SWFTS-MW11	10:49	17:10	4.9	1860.6	8,235.2
	SWFTS-MW12	10:30	17:12	4.8	1928.7	7,494.2
	SWFTS-MW13	10:45	13:27	15.4	2490.0	13,446.3
	SWFTS-MW13	16:10	17:09	19.9	1172.0	14,618.4
	SWFTS-MW17	10:45	17:09	11.8	4522.2	22,014.1
2/27/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	14:57	17:25	1.9	284.5	2,039.8
	SWFTS-MW11	14:56	17:25	9.8	1,457.2	9,692.4
	SWFTS-MW12	14:56	17:25	9.6	1,436.0	8,930.2
	SWFTS-MW13	14:57	17:25	19.9	2,939.7	17,558.1
	SWFTS-MW17	14:56	17:25	14.2	2,119.2	24,133.3
2/28/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	7:18	11:52	1.9	510.0	2,549.8
	SWFTS-MW11	7:18	11:52	9.9	2700.0	12,392.4
	SWFTS-MW12	7:18	17:00	4.1	2392.0	11,322.2
	SWFTS-MW13	7:18	11:52	20.1	5510.0	23,068.1
	SWFTS-MW17	7:18	17:00	11.7	6821.0	30,954.3
2/28/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	15:52	17:00	2.5	170.8	2,720.7
	SWFTS-MW11	15:52	17:00	12.4	844.9	13,237.2
	SWFTS-MW12	15:52	17:00	12.7	866.7	12,188.9
	SWFTS-MW13	15:35	17:00	21.1	1,797.3	24,865.4
	SWFTS-MW17	15:35	17:00	25.9	2,202.4	33,156.7

Table A.3
Summary of Groundwater Extraction Activities
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Date	Extraction Well	Start Time	Stop Time	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				gpm	gal	gal
3/1/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	8:02	17:00	1.9	1,021.4	3,571.3
	SWFTS-MW11	8:07	17:00	9.7	5,194.9	17,587.3
	SWFTS-MW12	8:02	17:00	9.3	4,977.7	16,299.9
	SWFTS-MW13	7:47	17:00	17.5	9,658.4	32,726.4
	SWFTS-MW17	8:02	17:00	25.0	13,457.7	44,412.0
3/2/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	7:28	13:21	1.9	682.3	4,253.6
	SWFTS-MW11	7:32	13:21	9.7	3384.34	20,971.6
	SWFTS-MW12	7:44	13:21	9.6	3232.8	19,532.7
	SWFTS-MW13	7:44	14:08	17.3	6635.85	39,362.3
	SWFTS-MW17	7:39	17:05	23.3	13168.8	57,580.8
3/2/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	13:53	17:05	2.5	474.66	4,728.2
	SWFTS-MW11	13:53	17:05	9.4	1810.65	22,782.3
	SWFTS-MW12	13:53	17:05	9.7	1856.6	21,389.3
	SWFTS-MW13	13:53	17:05	18.6	3568.75	42,931.0
	SWFTS-MW17	-	-	-	-	57580.8
3/3/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	7:25	16:00	2.0	1,049.4	5,303.0
	SWFTS-MW11	7:25	16:00	9.1	4,690.3	25,661.9
	SWFTS-MW12	7:25	16:00	8.5	4,397.9	23,930.6
	SWFTS-MW13	8:47	16:00	22.0	9,505.3	48,867.5
	SWFTS-MW17	7:25	16:00	23.4	12,050.7	69,631.5
3/8/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	10:15	17:00	2.2	887.04	6,190.0
	SWFTS-MW11	10:15	17:00	9.8	3951.56	29,613.5
	SWFTS-MW12	10:15	17:00	9.3	3773.7	27,704.3
	SWFTS-MW13	10:15	17:00	18.0	7270.46	56,138.0
	SWFTS-MW17	10:15	17:00	22.5	9093.26	78,724.8
3/9/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	7:57	17:10	2.2	1,240.3	7,430.3
	SWFTS-MW11	7:37	17:10	9.6	5,527.4	35,140.8
	SWFTS-MW12	7:57	17:10	9.7	5,364.2	33,068.5
	SWFTS-MW13	7:37	17:10	19.9	11,399.2	67,537.2
	SWFTS-MW17	7:57	17:10	25.9	14,302.8	93,027.6

Table A.3
Summary of Groundwater Extraction Activities
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Date	Extraction Well	Start Time	Stop Time	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				gpm	gal	gal
3/10/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	7:45	17:10	2.3	1309.17	8,739.5
	SWFTS-MW11	8:25	17:10	9.9	5183.36	40,324.2
	SWFTS-MW12	7:45	17:10	9.5	5372.9	38,441.4
	SWFTS-MW13	7:45	17:10	19.7	11103.5	78,640.7
	SWFTS-MW17	7:45	17:10	24.7	13928.9	106,956.5
3/11/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	12:32	17:10	2.4	656.9	9,396.3
	SWFTS-MW11	12:32	17:10	9.8	2,718.8	43,043.0
	SWFTS-MW12	12:32	17:10	9.3	2,571.8	41,013.2
	SWFTS-MW13	8:11	17:10	19.8	10,671.6	89,312.3
	SWFTS-MW17	8:11	17:10	24.9	13,419.9	120,376.4
3/12/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	8:14	17:01	2.3	1234.28	10,630.6
	SWFTS-MW11	8:14	17:01	9.7	5133.58	48,176.5
	SWFTS-MW12	8:14	17:01	9.0	4717.5	45,730.7
	SWFTS-MW13	8:09	17:01	19.8	10520	99,832.3
	SWFTS-MW17	8:09	17:01	25.3	13444	133,820.4
3/13/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	7:46	17:02	2.3	1,274.8	11,905.4
	SWFTS-MW11	8:04	17:02	9.7	5,205.6	53,382.2
	SWFTS-MW12	7:46	17:02	8.9	4,961.9	50,692.6
	SWFTS-MW13	7:46	17:02	19.0	10,565.0	110,397.3
	SWFTS-MW17	7:46	17:02	24.5	13,603.8	147,424.2
3/14/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	8:15	12:54	2.1	581.73	12,487.2
	SWFTS-MW11	8:15	13:54	7.8	2659.1	56,041.3
	SWFTS-MW12	8:15	12:54	8.5	2362.4	53,055.0
	SWFTS-MW13	8:30	13:54	15.2	4940.09	115,337.4
	SWFTS-MW17	8:15	13:54	20.8	7044.53	154,468.7
3/15/2021	SWFTS-MW07A	-	-	-	-	-
	SWFTS-MW08A	-	-	-	-	12,487.2
	SWFTS-MW11	-	-	-	-	56,041.3
	SWFTS-MW12	-	-	-	-	53,055.0
	SWFTS-MW13	8:25	8:40	17.4	260.4	115,597.7
	SWFTS-MW17	8:25	8:40	22.9	344.0	154,812.7
					EVENT TOTAL	**391,993.8**

Notes:
gpm - gallons per minute
gal - gallons

Table A.4
Specific Gravity Calibration Measurements
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Standard Dilution	EOS_{PRO}	Emulsified Vegetable Oil Concentration	Hydrometer Readings (Calibrated for 60°F)					Sample Temperature (°F)					Temperature Corrected Specific Gravity						
Parts EOS_{PRO} and Amendments[1] to Parts Extracted Groundwater	% by weight	% by weight	Dup-1	Dup-2	Dup-3	Dup-4	Dup-5	Dup-1	Dup-2	Dup-3	Dup-4	Dup-5	Dup-1	Dup-2	Dup-3	Dup-4	Dup-5	Average	SD
1:0 - EOS_{PRO} Only - Delivery 1	100.0%	59.8%	0.961	0.960	0.960	0.960	0.960	78	78	78	78	78.5	0.963	0.962	0.962	0.962	0.962	0.962	0.0004
1:2 - EOS_{PRO} standard	33.3%	19.9%	0.986	0.986	0.986	0.984	NM	84	84	84	84	NM	0.989	0.989	0.989	0.987	NM	0.988	0.001
1:4 - EOS_{PRO} standard	20.0%	12.0%	0.993	0.993	0.992	0.993	NM	83	83	83	83	NM	0.996	0.996	0.995	0.996	NM	0.996	0.001
1:6 - EOS_{PRO} standard	14.3%	8.5%	0.995	0.995	0.995	0.995	NM	84	84	84	84	NM	0.998	0.998	0.998	0.998	NM	0.998	0.0000
0:1 - Extracted Groundwater Only	0.0%	0.0%	1.004	1.004	1.003	1.004	1.003	81.5	79.5	79	79	79	1.007	1.006	1.005	1.006	1.005	1.006	0.001
0:1 - Ammended Groundwater	0.0%	0.0%	1.006	1.006	1.005	1.005	1.005	84	84	83.5	82	82.5	1.009	1.009	1.008	1.008	1.008	1.008	0.001
1:4 - EOSPRO standard - Delivery 1	20.0%	12.0%	0.993	0.993	0.992	0.993	0.993	83	83	83	83	83	0.996	0.996	0.995	0.996	0.996	0.996	0.0004
1:4 - EOSPRO standard - Delivery 2	20.0%	12.0%	0.997	0.997	0.998	0.997	0.997	48	48	48	48	48	0.996	0.996	0.997	0.996	0.996	0.996	0.0004
1:4 - EOSPRO standard - Delivery 3	20.0%	12.0%	0.996	0.996	0.996	0.996	0.996	58	58	58	58	58	0.996	0.996	0.996	0.996	0.996	0.996	0.0000
1:4 - EOSPRO standard - Delivery 4	20.0%	12.0%	0.994	0.994	0.995	0.995	0.994	66	66	66	66	66	0.995	0.995	0.996	0.996	0.995	0.995	0.001

Notes:
Dup - sample duplicate
NM - Not measured
SD - standard deviation
1. Injectate solution includes emulsified vegetable oil (EOS_{PRO}), phosphate solution (Aquapure 3601 NSF), glycerin, and sodium sulfite mixed into extracted groundwater. A 1:4 injectate stock solution standard was prepared for each mixture of deliveries of EOS_{PRO} used for batch mixing.

Table A.5
Specific Gravity Measurements
Injection Event 7 - February/March 2021
Seep Well Field Area Bioremediation Treatability Study
Nevada Environmental Response Trust

Batch	Date	Time	Batch Volume Remaining gallons	Average Hydrometer Readings (Calibrated for 60°F)	Avergae Sample Temperature (°F)	Average Corrected Specific Gravity	Calculated Percent Oil	Within Acceptable Range[1]	Comments
1A	2/24/2021	14:40	14570	0.991	77	0.993	15.6%	YES	Pre-injection.
1A	2/24/2021	16:37	10597	0.995	74	0.996	11.1%	YES	
1A	2/25/2021	7:46	6975	0.993	67	0.994	15.0%	YES	
1A	2/25/2021	8:59	4685	0.994	62	0.994	14.7%	YES	
2B	2/25/2021	9:00	14463	0.991	65	0.991	18.6%	YES	Pre-injection.
2B	2/25/2021	11:41	11115	0.993	69	0.994	15.0%	YES	
2B	2/25/2021	13:21	4146	0.993	71	0.994	14.7%	YES	
3A	2/25/2021	15:40	12671	0.994	74	0.995	12.6%	YES	Pre-injection.
3A	2/25/2021	16:28	9422	0.994	69	0.995	13.2%	YES	
3A	2/26/2021	9:10	7112	0.996	62	0.996	12.3%	YES	
3A	2/26/2021	10:42	3354	0.995	64	0.995	13.2%	YES	
4B	2/27/2021	10:37	13905	0.994	67	0.995	13.5%	YES	Pre-injection.
4B	2/27/2021	11:48	8708	0.992	70	0.993	15.6%	YES	
4B	2/27/2021	12:31	3461	0.993	70	0.994	14.7%	YES	
5A	2/27/2021	10:52	14551	0.996	67	0.997	10.2%	YES	Pre-injection.
5A	2/27/2021	12:38	14551	0.995	72	0.996	11.7%	YES	Pre-injection.
5A	2/27/2021	13:59	8502	0.996	73	0.997	10.8%	YES	
5A	2/27/2021	15:07	2962	0.996	74	0.997	10.8%	YES	
6B	2/28/2021	9:05	14619	0.995	63	0.995	13.2%	YES	Pre-injection.
6B	2/28/2021	10:27	11331	0.994	66	0.995	13.8%	YES	
6B	2/28/2021	12:30	5850	0.994	70	0.995	13.5%	YES	

1. The acceptable range of specific gravity measurements was determined to be 0.991 to 1.001 for EOS_{PRO} Deliveries 1 through 3, and 0.990 to 1.000 for batches mixed after EOS_{PRO} Delivery 4. This was determined by taking +/- 10% of the difference between the pure EOS_{PRO} with amendments solution and the pure extracted groundwater (equivalent to 0.005) and then adding and subtracting that value with the specific gravity of the 1:4 standard (shown in Table 5).

2. Tank level approximated based on sample collection time and average injection rates.

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW01A	11/3/2021	3:02 PM	4:30 PM	16	to	26	8	8	5.3	470.22	-	470	
	11/4/2021	2:02 PM	4:30 PM	16	to	26	8	8	5.2	776.22	-	776	
	11/5/2021	7:54 AM	4:04 PM	16	to	26	9	10	2.6	1268.08		1,268	
	11/8/2021	8:36 AM	8:52 AM	16	to	26	8	8	4.7	75.08		75	
	11/9/2021	7:01 AM	10:16 AM	16	to	26	10	10	14.6		2839.30	2,839	
	11/18/2021	10:25 AM	4:20 PM	16	to	26	11	13	7.2		2548.60	2,549	
	11/19/2021	6:56 AM	1:33 PM	16	to	26	11	14	7.2		2862.08	2,862	
	11/21/2021	3:16 PM	3:28 PM	16	to	26	14	18	14.7		176.30	176	
	11/22/2021	8:32 AM	8:36 AM	16	to	26	12	12	5.0		19.90	20	
									TOTALS	**2589.60**	**8446.18**	**11,036**	
SWFTS-IW01B	11/5/2021	4:05 PM	4:45 PM	27	to	37	12	13	13.0	519.57		520	
	11/6/2021	8:35 AM	11:50 AM	27	to	37	10	12	10.2	1995.20		1,995	
	11/8/2021	9:34 AM	9:50 AM	27	to	37	9	10	15.1	242.06		242	
	11/8/2021	10:21 AM	4:00 PM	27	to	37	7	10	7.4		2521.00	2,521	
	11/19/2021	1:36 PM	4:40 PM	27	to	37	12	13	6.1		1114.72	1,115	
	11/20/2021	6:58 AM	4:20 PM	27	to	37	18	21	6.7		3770.27	3,770	
	11/21/2021	6:52 AM	8:40 AM	27	to	37	17	21	7.8		844.02	844	
	11/21/2021	3:00 PM	3:14 PM	27	to	37	18	23	12.6		176.18	176	
									TOTALS	**2756.83**	**8426.19**	**11,183**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW02A	11/3/2021	3:02 PM	4:30 PM	17	to	27	13	12	5.3	463.69	-	464	
	11/4/2021	2:02 PM	4:30 PM	17	to	27	10	12	5.1	753.20	-	753	
	11/5/2021	7:54 AM	9:26 AM	17	to	27	14	14	8.6	795.02		795	
	11/8/2021	8:36 AM	8:54 AM	17	to	27	13	13	3.3	60.06		60	
	11/9/2021	7:01 AM	10:16 AM	17	to	27	16	18	15.1		2951.12	2,951	
	11/18/2021	10:25 AM	4:20 PM	17	to	27	14	16	7.1		2519.51	2,520	
	11/19/2021	6:56 AM	2:37 PM	17	to	27	17	19	7.1		3279.13	3,279	
	11/21/2021	3:16 PM	3:29 PM	17	to	27	17	20	13.6		176.24	176	
	11/22/2021	8:32 AM	8:36 AM	17	to	27	13	13	7.7		30.67	31	
									TOTALS	**2071.97**	**8956.67**	**11,029**	
SWFTS-IW02B	11/5/2021	3:40 PM	4:45 PM	26	to	36	11	11	17.9	1161.78		1,162	
	11/6/2021	8:35 AM	10:12 AM	26	to	36	5	5	8.8	850.08		850	
	11/8/2021	9:34 AM	9:44 AM	26	to	36	5	5	19.3	193.14		193	
	11/8/2021	10:21 AM	4:00 PM	26	to	36	12	14	7.3		2487.94	2,488	
	11/19/2021	2:41 PM	4:20 PM	26	to	36	16	16	7.6		749.34	749	
	11/20/2021	6:58 AM	4:20 PM	26	to	36	18	25	6.8		3812.01	3,812	
	11/21/2021	6:52 AM	11:26 AM	26	to	36	22	34	6.2		1701.17	1,701	
	11/21/2021	3:00 PM	3:15 PM	26	to	36	22	35	11.8		176.36	176	
									TOTALS	**2205.00**	**8926.82**	**11,132**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW03	11/3/2021	3:02 PM	4:30 PM	17	to	37	13	14	4.6	405.01		405	
	11/4/2021	2:02 PM	4:30 PM	17	to	37	13	15	5.3	782.14		782	
	11/5/2021	8:20 AM	4:45 PM	17	to	37	12	16	3.5	1782.05		1,782	
	11/6/2021	8:35 AM	10:34 AM	17	to	37	13	14	8.8	1053.10		1,053	
	11/8/2021	8:36 AM	9:24 AM	17	to	37	8	8	8.1	387.27		387	
	11/8/2021	10:21 AM	4:00 PM	17	to	37	6	11	7.5		2527.34	2,527	
	11/18/2021	10:25 AM	4:20 PM	17	to	37	12	15	7.4		2620.14	2,620	
	11/19/2021	6:56 AM	4:20 PM	17	to	37	13	19	7.1		4011.79	4,012	
	11/20/2021	6:58 AM	4:20 PM	17	to	37	16	19	6.5		3652.52	3,653	
	11/21/2021	6:52 AM	11:26 AM	17	to	37	18	22	17.1		4688.03	4,688	
	11/21/2021	3:00 PM	3:15 PM	17	to	37	20	25	23.4		351.20	351	
	11/22/2021	8:32 AM	8:36 AM	17	to	37	15	15	5.8		23.32	23	
									TOTALS	**4409.57**	**17874.34**	**22,284**	
SWFTS-IW04	11/3/2021	3:02 PM	4:30 PM	20	to	35	12	12	5.3	464.29		464	
	11/4/2021	2:02 PM	4:30 PM	20	to	35	11	13	5.6	824.08		824	
	11/5/2021	7:54 AM	4:38 PM	20	to	35	11	14	3.3	1743.49		1,743	
	11/8/2021	8:36 AM	8:54 AM	20	to	35	10	10	5.0	90.20		90	
	11/8/2021	10:21 AM	4:00 PM	20	to	35	10	12	7.5		2544.52	2,545	
	11/18/2021	9:22 AM	4:20 PM	20	to	35	11	19	7.4		3076.00	3,076	
	11/19/2021	6:56 AM	4:20 PM	20	to	35	16	21	7.1		4015.93	4,016	
	11/20/2021	6:58 AM	4:20 PM	20	to	35	20	23	6.2		3489.19	3,489	
	11/21/2021	3:00 PM	3:22 PM	20	to	35	20	**25**	12.0		263.38	263	
	11/22/2021	8:32 AM	8:36 AM	20	to	35	17	**17**	6.6		26.55	27	
									TOTALS	**3122.06**	**13415.57**	**16,538**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW05	11/3/2021	3:02 PM	4:30 PM	15	to	35	13	13	5.20	457.59		458	
	11/4/2021	2:02 PM	4:30 PM	15	to	35	11	13	5.23	773.61		774	
	11/5/2021	7:45 AM	9:46 AM	15	to	35	12	14	15.87	1920.30		1,920	
	11/6/2021	8:35 AM	10:53 AM	15	to	35	9	10	6.41	884.96		885	
	11/8/2021	8:36 AM	9:09 AM	15	to	35	10	10	11.8	387.97		388	
	11/8/2021	10:21 AM	4:00 PM	15	to	35	9	12	7.6		2572.66	2,573	
	11/18/2021	8:16 AM	4:20 PM	15	to	35	14	17	7.2		3507.25	3,507	
	11/19/2021	6:56 AM	4:20 PM	15	to	35	14	21	7.3		4089.15	4,089	
	11/20/2021	6:58 AM	4:20 PM	15	to	35	19	21	6.4		3606.11	3,606	
	11/21/2021	6:52 AM	12:47 PM	15	to	35	20	31	10.5		3725.09	3,725	
	11/21/2021	3:00 PM	3:30 PM	15	to	35	20	33	11.7		351.12	351	
	11/22/2021	8:32 AM	8:36 AM	15	to	35	21	21	6.7		26.97	27	
									TOTALS	**4424.43**	**17878.35**	**22,303**	
SWFTS-IW06A	11/3/2021	2:30 PM	4:30 PM	17	to	27	21	21	3.58	429.70		430	
	11/4/2021	10:53 AM	1:34 PM	17	to	27	18	26	9.83	1581.99		1,582	
	11/8/2021	8:25 AM	8:33 AM	17	to	27	18	18	7.50	59.98		60	
	11/9/2021	6:53 AM	10:16 AM	17	to	27	21	21	18.0		3656.12	3,656	
	11/18/2021	11:33 AM	4:20 PM	17	to	27	15	16	7.3		2085.76	2,086	
	11/19/2021	6:56 AM	1:55 PM	17	to	27	20	22	7.2		3009.12	3,009	
	11/21/2021	3:00 PM	3:16 PM	17	to	27	20	22	11.0		176.01	176	
	11/22/2021	8:22 AM	8:24 AM	17	to	27	13	13	2.3		4.64	5	
									TOTALS	**2071.67**	**8931.65**	**11,003**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW06B	11/4/2021	2:30 PM	4:30 PM	29	to	34	23	23	5.37	644.94	-	645	
	11/5/2021	7:50 AM	8:33 AM	29	to	34	30	30	8.40	361.00	-	361	
	11/8/2021	9:05 AM	9:12 AM	29	to	34	23	30	4.29	30.00	-	30	
	11/8/2021	10:21 AM	4:00 PM	29	to	34	15	22	6.6		2222.20	2,222	
	11/19/2021	1:16 PM	4:20 PM	29	to	34	26	29	5.4		994.28	994	
	11/20/2021	6:58 AM	9:43 AM	29	to	34	28	30	7.5		1242.96	1,243	
									TOTALS	**1035.94**	**4459.44**	**5,495**	
SWFTS-IW07	11/3/2021	2:30 PM	4:30 PM	17	to	37	18	18	5.1	611.65		612	
	11/4/2021	10:53 AM	4:30 PM	17	to	37	19	16	6.9	2334.34		2,334	
	11/5/2021	7:50 AM	4:11 PM	17	to	37	9	22	2.1	1077.08		1,077	
	11/8/2021	8:25 AM	8:47 AM	17	to	37	16	16	5.4	119.63		120	
	11/8/2021	10:21 AM	4:00 PM	17	to	37	12	15	6.8		2295.23	2,295	
	11/18/2021	9:56 AM	4:20 PM	17	to	37	17	19	3.2		1242.38	1,242	
	11/19/2021	6:56 AM	4:20 PM	17	to	37	19	23	7.3		4117.01	4,117	
	11/20/2021	6:58 AM	4:20 PM	17	to	37	16	26	9.6		5368.96	5,369	
	11/21/2021	6:52 AM	1:38 PM	17	to	37	19	30	11.0		4476.02	4,476	
	11/21/2021	3:00 PM	3:34 PM	17	to	37	20	32	9.8		334.77	335	
	11/22/2021	7:16 AM	7:33 AM	17	to	37	15	15	1.1		18.82	19	
									TOTALS	**4142.70**	**17853.19**	**21,996**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW08	11/3/2021	2:30 PM	4:30 PM	17	to	37	18	18	5.1	613.80		614	
	11/4/2021	1:28 PM	4:30 PM	17	to	37	20	18	13.5	2463.10		2,463	
	11/5/2021	7:50 AM	4:03 PM	17	to	37	5	24	1.9	946.28		946	
	11/8/2021	8:25 AM	8:48 AM	17	to	37	17	17	5.2	119.44		119	
	11/8/2021	10:21 AM	4:00 PM	17	to	37	14	18	6.9		2324.54	2,325	
	11/18/2021	7:46 AM	4:20 PM	17	to	37	17	25	7.2		3716.22	3,716	
	11/19/2021	6:56 AM	4:20 PM	17	to	37	20	28	7.1		4031.21	4,031	
	11/20/2021	6:58 AM	4:20 PM	17	to	37	16	26	7.4		4150.58	4,151	
	11/21/2021	6:52 AM	12:39 PM	17	to	37	20	31	9.4		3277.16	3,277	
	11/21/2021	3:00 PM	3:34 PM	17	to	37	20	32	9.4		319.46	319	
	11/22/2021	7:16 AM	7:33 AM	17	to	37	20	20	3.6		61.22	61	
									TOTALS	**4142.62**	**17880.39**	**22,023**	
SWFTS-IW09	11/3/2021	2:30 PM	4:30 PM	27	to	47	8	8	5.3	631.53		632	
	11/4/2021	1:28 PM	4:30 PM	27	to	47	15	20	10.8	1963.32		1,963	
	11/5/2021	7:50 AM	4:40 PM	27	to	47	15	26	2.7	1429.19		1,429.19	
	11/8/2021	8:25 AM	8:45 AM	27	to	47	13	15	6.0	119.00		119.00	
	11/8/2021	10:21 AM	4:00 PM	27	to	47	10	16	6.7		2261.66	2,261.66	
	11/17/2021	3:41 PM	4:20 PM	27	to	47	18	18	8.8		343.82	343.82	
	11/18/2021	7:46 AM	4:20 PM	27	to	47	18	25	7.2		3708.90	3,708.90	
	11/19/2021	6:56 AM	4:20 PM	27	to	47	20	28	7.1		4008.52	4,008.52	
	11/20/2021	6:58 AM	4:20 PM	27	to	47	25	35	7.6		4257.75	4,257.75	
	11/21/2021	6:58 AM	1:16 PM	27	to	47	25	35	7.7		2919.02	2,919.02	
	11/21/2021	3:00 PM	3:34 PM	27	to	47	27	35	6.8		230.50	230.50	
	11/22/2021	7:16 AM	7:59 AM	27	to	47	25	25	2.8		122.08	122.08	
									TOTALS	**4143.04**	**17852.25**	**21,995.29**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW11	11/6/2021	12:04 PM	2:19 PM	17	to	37	9	6	11.9	1605.09	-	1,605.09	
	11/7/2021	6:55 AM	11:27 AM	17	to	37	5	5	8.9	2418.02	-	2,418.02	
	11/7/2021	2:39 PM	3:36 PM	17	to	37	6	4	6.8	387.00	-	387.00	
	11/9/2021	10:18 AM	4:30 PM	17	to	37	5	5	8.8		3262.19	3,262.19	
	11/10/2021	6:47 AM	3:45 PM	17	to	37	3	5	6.8		3655.52	3,655.52	
	11/15/2021	7:12 AM	4:20 PM	17	to	37	7	12	7.7		4211.68	4,211.68	
	11/16/2021	11:55 AM	4:20 PM	17	to	37	4	11	5.2		1366.46	1,366.46	
	11/17/2021	7:18 AM	4:20 PM	17	to	37	10	21	7.6		4113.84	4,113.84	
	11/18/2021	7:46 AM	9:52 AM	17	to	37	14	**19**	7.1		890.22	890.22	
									TOTALS	**4410.11**	**17499.91**	**21,910.02**	
SWFTS-IW12	11/6/2021	12:17 PM	4:45 PM	14	to	39	13	13	5.8	1564.85	-	1,564.85	
	11/7/2021	6:55 AM	12:10 PM	14	to	39	11	11	11.4	3590.12	-	3,590.12	
	11/7/2021	2:39 PM	3:38 PM	14	to	39	10	10	8.4	496.10	-	496.10	
	11/9/2021	10:18 AM	4:30 PM	14	to	39	8	8	8.9		3316.79	3,316.79	
	11/10/2021	6:47 AM	3:45 PM	14	to	39	8	9	6.9		3708.55	3,708.55	
	11/15/2021	7:12 AM	4:20 PM	14	to	39	11	12	7.7		4228.78	4,228.78	
	11/16/2021	11:55 AM	4:20 PM	14	to	39	9	13	10.3		2719.39	2,719.39	
	11/17/2021	7:18 AM	4:20 PM	14	to	39	13	20	11.5		6227.58	6,227.58	
	11/18/2021	7:46 AM	9:47 AM	14	to	39	13	**17**	10.1		1224.69	1,224.69	
									TOTALS	**5651.07**	**21425.78**	**27,076.85**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW13A	11/6/2021	11:36 AM	2:19 PM	16	to	26	13	14	9.1	1480.06		1,480.06	
	11/7/2021	6:55 AM	7:47 AM	16	to	26	13	13	10.2	532.11		532.11	
	11/7/2021	3:47 PM	3:50 PM	16	to	26	13	13	23.6	70.94		70.94	
	11/8/2021	7:10 AM	7:30 AM	16	to	26	14	14	6.1	122.67		122.67	
	11/8/2021	8:36 AM	9:02 AM	16	to	26	11	11	4.7	122.66		122.66	
	11/9/2021	10:18 AM	4:30 PM	16	to	26	13	13	8.8		3260.60	3,260.60	
	11/16/2021	3:20 PM	4:20 PM	16	to	26	12	13	5.2		314.32	314.32	
	11/17/2021	7:18 AM	4:20 PM	16	to	26	14	**21**	7.7		4178.74	4,178.74	
	11/18/2021	7:46 AM	9:54 AM	16	to	26	15	**22**	7.8		996.15	996.15	
									TOTALS	**2328.44**	**8749.81**	**11,078.25**	
SWFTS-IW13B	11/7/2021	7:56 AM	11:37 AM	28	to	38	27	28	9.1	2012.24	-	2,012.24	
	11/7/2021	2:39 PM	3:47 PM	28	to	38	27	15	2.8	193.08		193.08	
	11/10/2021	6:47 AM	3:45 PM	16	to	26	20	20	6.9		3706.46	3,706.46	
	11/15/2021	7:12 AM	4:20 PM	28	to	38	17	**28**	7.4		4042.93	4,042.93	
	11/16/2021	11:55 AM	3:11 PM	28	to	38	22	**24**	5.1		1001.07	1,001.07	
									TOTALS	**2205.32**	**8750.46**	**10,955.78**	

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INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW14	11/6/2021	11:36 AM	4:45 PM	16	to	36	14	14	5.5	1700.66		1,700.66	
	11/7/2021	6:55 AM	11:30 AM	16	to	36	13	14	8.4	2322.30		2,322.30	
	11/7/2021	2:39 PM	3:44 PM	16	to	36	13	12	6.0	387.10		387.10	
	11/9/2021	10:18 AM	4:30 PM	16	to	36	14	13	8.7		3249.68	3,249.68	
	11/10/2021	6:47 AM	3:45 PM	16	to	36	12	15	6.9		3694.55	3,694.55	
	11/15/2021	7:12 AM	4:20 PM	16	to	36	15	22	7.7		4205.44	4,205.44	
	11/16/2021	11:55 AM	4:20 PM	16	to	36	12	15	5.1		1362.29	1,362.29	
	11/17/2021	7:18 AM	4:20 PM	16	to	36	16	**27**	7.7		4158.31	4,158.31	
	11/18/2021	7:46 AM	9:47 AM	16	to	36	17	**24**	7.4		889.68	889.68	
									TOTALS	**4410.06**	**17559.95**	**21,970.01**	
SWFTS-IW15	11/6/2021	1:00 PM	4:45 PM	16	to	36	15	13	5.1	1138.68	-	1,138.68	
	11/7/2021	6:55 AM	12:21 PM	16	to	36	12	14	11.9	3890.28	-	3,890.28	
	11/7/2021	2:39 PM	3:50 PM	16	to	36	11	11	6.8	484.30	-	484.30	
	11/9/2021	10:18 AM	4:30 PM	16	to	36	13	13	8.9		3312.04	3,312.04	
	11/10/2021	6:47 AM	3:45 PM	16	to	36	11	13	6.8		3641.91	3,641.91	
	11/15/2021	7:12 AM	4:20 PM	16	to	36	14	19	7.7		4215.36	4,215.36	
	11/16/2021	11:55 AM	4:20 PM	16	to	36	11	15	5.3		1394.46	1,394.46	
	11/17/2021	7:18 AM	3:51 PM	16	to	36	17	23	7.7		3937.08	3,937.08	
									TOTALS	**5513.26**	**16500.85**	**22,014.11**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW16A	11/5/2021	3:32 PM	4:45 PM	17	to	27	22	22	16.6	1208.96	-	1,208.96	
	11/6/2021	8:45 AM	9:55 AM	17	to	27	20	22	11.5	803.06	-	803.06	
	11/7/2021	3:11 PM	3:32 PM	17	to	27	16	16	9.2	192.99	-	192.99	
	11/9/2021	10:16 AM	4:00 PM	17	to	27	28	20	8.1		2786.69	2,786.69	
	11/16/2021	1:50 PM	4:20 PM	17	to	27	21	21	6.4		966.26	966.26	
	11/17/2021	7:18 AM	4:20 PM	17	to	27	20	35	5.1		2777.17	2,777.17	
	11/18/2021	7:46 AM	4:20 PM	17	to	27	26	**35**	3.1		1614.65	1,614.65	
	11/19/2021	6:56 AM	9:40 AM	17	to	27	25	**33**	3.7		606.02	606.02	
									TOTALS	**2205.01**	**8750.79**	**10,955.80**	
SWFTS-IW16B	11/6/2021	10:11 AM	4:45 PM	26	to	36	18	22	5.0	1985.22		1,985.22	
	11/7/2021	6:50 AM	6:56 AM	26	to	36	15	15	4.5	27.02		27.02	
	11/7/2021	2:37 PM	2:59 PM	26	to	36	15	15	8.8	193.80		193.80	
	11/10/2021	6:47 AM	#########	26	to	36	15	18	7.2		3894.75	3,894.75	
	11/15/2021	7:12 AM	4:20 PM	26	to	36	23	**28**	7.6		4160.54	4,160.54	
	11/16/2021	11:55 AM	1:47 PM	26	to	36	22	**23**	6.2		694.98	694.98	
									TOTALS	**2206.04**	**8750.27**	**10,956.31**	

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW17	11/6/2021	8:45 AM	4:45 PM	17	to	37	20	19	6.5	3102.84		3,102.84	
	11/7/2021	6:50 AM	8:33 AM	17	to	37	19	20	8.9	919.96		919.96	
	11/7/2021	2:37 PM	3:15 PM	17	to	37	16	16	10.2	387.06		387.06	
	11/9/2021	10:16 AM	4:00 PM	17	to	37	15	15	8.0		2763.26	2,763.26	
	11/10/2021	6:47 AM	3:45 PM	17	to	37	15	16	7.2		3879.71	3,879.71	
	11/15/2021	7:12 AM	4:20 PM	17	to	37	21	22	7.6		4164.56	4,164.56	
	11/16/2021	11:55 AM	4:20 PM	17	to	37	16	19	6.3		1682.56	1,682.56	
	11/17/2021	7:18 AM	4:20 PM	17	to	37	15	27	8.0		4336.07	4,336.07	
	11/18/2021	7:46 AM	9:21 AM	17	to	37	20	24	7.1		674.02	674.02	
									TOTALS	**4409.86**	**17500.18**	**21,910.04**	
SWFTS-IW18	11/6/2021	9:08 AM	4:45 PM	18	to	38	15	19	5.6	2540.06		2,540.06	
	11/7/2021	6:50 AM	11:12 AM	18	to	38	19	25	9.5	2489.70		2,489.70	
	11/7/2021	2:37 PM	3:30 PM	18	to	38	19	19	9.1	484.06		484.06	
	11/9/2021	10:16 AM	4:00 PM	18	to	38	15	15	8.1		2792.81	2,792.81	
	11/10/2021	6:47 AM	3:45 PM	18	to	38	13	18	7.2		3877.96	3,877.96	
	11/15/2021	7:12 AM	4:20 PM	18	to	38	22	24	7.5		4097.31	4,097.31	
	11/16/2021	11:55 AM	4:20 PM	18	to	38	16	19	6.4		1688.39	1,688.39	
	11/17/2021	7:18 AM	3:31 PM	18	to	38	19	30	8.2		4044.01	4,044.01	
									TOTALS	**5513.82**	**16500.48**	**22,014.30**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW19	11/6/2021	9:40 AM	4:45 PM	24	to	44	18	19	4.8	2025.16	-	2,025.16	
	11/7/2021	6:50 AM	11:47 AM	24	to	44	19	**20**	10.1	3004.12		3,004.12	
	11/7/2021	2:37 PM	3:50 PM	24	to	44	20	**20**	6.6	484.07		484.07	
	11/9/2021	10:16 AM	4:00 PM	24	to	44	13	**10**	8.5		2937.08	2,937.08	
	11/10/2021	6:47 AM	3:45 PM	24	to	44	13	**13**	7.3		3904.13	3,904.13	
	11/15/2021	7:12 AM	4:20 PM	24	to	44	16	**19**	7.6		4146.44	4,146.44	
	11/16/2021	11:55 AM	4:20 PM	24	to	44	13	**17**	6.3		1671.65	1,671.65	
	11/17/2021	7:18 AM	3:19 PM	24	to	44	22	**28**	8.0		3841.02	3,841.02	
									TOTALS	**5513.35**	**16500.32**	**22,013.67**	
SWFTS-IW20	11/6/2021	9:40 AM	4:45 PM	31	to	51	19	20	4.4	1881.50		1,881.50	
	11/7/2021	6:50 AM	11:21 AM	31	to	51	19	21	8.8	2394.08		2,394.08	
	11/7/2021	2:37 PM	3:20 PM	31	to	51	23	23	9.6	411.08		411.08	
	11/9/2021	10:16 AM	4:00 PM	31	to	51	22	15	8.5		2923.63	2,923.63	
	11/10/2021	6:47 AM	3:45 PM	31	to	51	16	18	7.0		3792.80	3,792.80	
	11/15/2021	7:12 AM	4:20 PM	31	to	51	23	28	7.5		4103.61	4,103.61	
	11/16/2021	11:55 AM	4:20 PM	31	to	51	15	19	6.3		1664.06	1,664.06	
	11/17/2021	7:18 AM	4:20 PM	31	to	51	22	27	7.8		4253	4,253.09	
	11/18/2021	7:46 AM	9:33 AM	31	to	51	22	28	7.1		763	763.01	
									TOTALS	**4686.66**	**17500**	**22,186.86**	

CASCADE

1. November 1, 2021 Pre-Injection Site Conditions

2. November 1, 2021 Pre-Injection Site Conditions

3. Extraction Well Stickup and Transfer Hose

4. Site Setup and Layout

5. Reagent Storage

6. Reagent Storage

7. Well Head Adapter complete with 60 PSI Pressure Gauge

8. 10-Point Stainless Steel Injection Manifold

Injection Event 8

Table A.6 – Batch Injection Quantities
Injection Event 8 – November 2021

Table A.7 – Summary of Injection Activities
Injection Event 8 – November 2021

Table A.8 – Summary of Groundwater Extraction Activities
Injection Event 8 – November 2021

Table A.9 – Specific Gravity Calibration Measurements
Injection Event 8 – November 2021

Table A.10 – Specific Gravity Measurements
Injection Event 8 – November 2021

Cascade Field Logs from Injection Event 8

Cascade Photo Log from Injection Event 8

Table A.6
Batch Injection Quantities
Injection Event 8 - November 2021
Seep Well Field Area Bioremediation Treatability Study

Components	Batch						
	1A	2B	3A	4B	5A	6B	7A
Emulsified Vegetable Oil (gallons)	2,701	2,858	2,770	2,486	2,799	2,800	763
Glycerin (gallons)	57	65	61	67	63	43	11
AquaPure (gallons)[(1)]	19	21	20	21	21	15	6
Sodium Sulfite (lbs)	47	53	50	50	50	40	10
Water (gallons)	10,538	11,458	11,080	11,325	11,491	11,295	3,139
Total Injectate Solution (gallons)	13,315	14,402	13,931	13,899	14,374	14,153	3,919

Notes:
lbs - pounds

Table A.7
Summary of Injection Activities
Injection Event 8 - November 2021
Seep Well Field Area Bioremediation Treatability Study

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[1]	Average Flow Rate	Sustained Pressure[2]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
11/3/2021	SWFTS-IW01A	3:02 PM	4:30 PM	88	5.3	8.5	470	0
	SWFTS-IW02A	3:02 PM	4:30 PM	88	5.3	12.5	464	0
	SWFTS-IW03	3:02 PM	3:18 PM	16	3.0	14	49	0
	SWFTS-IW03	3:21 PM	4:30 PM	69	5.2	14	356	0
	SWFTS-IW04	3:02 PM	4:30 PM	88	5.3	12	464	0
	SWFTS-IW05	3:02 PM	4:30 PM	88	5.2	14	458	0
	SWFTS-IW06A	2:30 PM	4:30 PM	120	3.6	21.5	430	0
	SWFTS-IW07	2:30 PM	4:30 PM	120	5.1	15	612	0
	SWFTS-IW08	2:30 PM	4:30 PM	120	5.1	18	614	0
	SWFTS-IW09	2:30 PM	4:30 PM	120	5.0	20	602	0
	SWFTS-IW10	2:30 PM	4:30 PM	120	5.3	6.5	632	0
					Daily Summary		**5,150**	**0**
11/4/2021	SWFTS-IW01A	2:03 PM	4:30 PM	147	5.3	8	776	0
	SWFTS-IW02A	2:03 PM	4:30 PM	147	5.1	13	753	0
	SWFTS-IW03	2:03 PM	4:30 PM	147	5.3	15	782	0
	SWFTS-IW04	2:03 PM	4:30 PM	147	5.6	13	824	0
	SWFTS-IW05	2:03 PM	4:30 PM	147	5.3	12.5	774	0
	SWFTS-IW06A	10:54 AM	1:34 PM	160	9.9	21	1,582	0
	SWFTS-IW06B	2:30 PM	4:30 PM	120	5.4	22	645	0
	SWFTS-IW07	10:54 AM	4:30 PM	263	8.9	17	2,334	0
	SWFTS-IW08	10:54 AM	4:30 PM	263	9.4	23	2,463	0
	SWFTS-IW09	10:54 AM	4:30 PM	263	8.1	23	2,133	0
	SWFTS-IW10	10:54 AM	4:30 PM	263	7.5	22	1,963	0
					Daily Summary		**15,030**	**0**
11/5/2021	SWFTS-IW01A	7:54 AM	4:04 PM	144	8.8	10.5	1,268	0
	SWFTS-IW01B	4:05 PM	4:45 PM	40	13.0	12.5	520	0
	SWFTS-IW02A	7:54 AM	9:26 AM	92	8.6	14	795	0
	SWFTS-IW02B	3:52 PM	4:45 PM	53	21.9	12.5	1,162	0
	SWFTS-IW03	8:20 AM	4:45 PM	159	11.2	16	1,782	0
	SWFTS-IW04	7:54 AM	4:38 PM	178	9.8	14	1,743	0
	SWFTS-IW05	7:54 AM	4:45 PM	185	10.4	13	1,920	0
	SWFTS-IW06B	7:50 AM	8:33 AM	43	8.4	27.5	361	0
	SWFTS-IW07	7:54 AM	4:11 PM	151	7.1	17	1,077	0
	SWFTS-IW08	7:54 AM	4:03 PM	143	6.6	23	946	0
	SWFTS-IW09	7:54 AM	4:40 PM	180	7.9	27.5	1,429	0
	SWFTS-IW10	7:54 AM	4:20 PM	160	8.7	27	1,391	0
	SWFTS-IW16A	3:52 PM	4:45 PM	53	22.8	23	1,209	0
					Daily Summary		**15,604**	**0**

Table A.7
Summary of Injection Activities
Injection Event 8 - November 2021
Seep Well Field Area Bioremediation Treatability Study

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[1]	Average Flow Rate	Sustained Pressure[2]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
11/6/2021	SWFTS-IW01B	9:00 AM	11:50 PM	890	2.2	12	1,995	0
	SWFTS-IW02B	8:35 AM	10:12 AM	97	8.8	9	850	0
	SWFTS-IW03	8:35 AM	10:34 AM	119	8.8	14	1,053	0
	SWFTS-IW05	8:35 AM	10:53 AM	138	6.4	10	885	0
	SWFTS-IW11	12:04 PM	4:45 PM	174	9.2	6	1,605	0
	SWFTS-IW12	12:17 PM	4:45 PM	161	9.7	13	1,565	0
	SWFTS-IW13A	11:36 AM	4:45 PM	202	7.3	14	1,480	0
	SWFTS-IW14	11:36 AM	4:45 PM	202	8.4	15	1,701	0
	SWFTS-IW15	1:00 PM	4:45 PM	118	9.6	15	1,139	0
	SWFTS-IW16A	8:45 AM	9:55 AM	70	11.5	20	803	0
	SWFTS-IW16B	10:11 AM	3:45 PM	227	8.7	20	1,985	0
	SWFTS-IW17	8:45 AM	4:45 PM	373	8.3	51	3,103	0
	SWFTS-IW18	9:08 AM	4:45 PM	350	7.3	20	2,540	0
	SWFTS-IW19	9:40 AM	4:45 PM	318	6.4	22	2,025	0
	SWFTS-IW20	9:28 AM	4:45 PM	330	5.7	22	1,882	0
					Daily Summary		**24,611**	**0**
11/7/2021	SWFTS-IW11	6:53 AM	11:27 AM	274	8.8	6	2,418	0
	SWFTS-IW12	6:53 AM	12:10 PM	317	11.3	11	3,590	0
	SWFTS-IW13A	6:53 AM	7:47 AM	54	9.9	13	532	0
	SWFTS-IW13B	7:57 AM	11:37 AM	220	9.1	29	2,012	0
	SWFTS-IW14	6:53 AM	11:30 AM	277	8.4	15	2,322	0
	SWFTS-IW15	6:53 AM	12:21 PM	328	11.9	17	3,890	0
	SWFTS-IW16B	6:50 AM	6:56 AM	6	4.5	---	27	0
	SWFTS-IW17	6:53 AM	8:33 AM	100	9.2	20	920	0
	SWFTS-IW18	6:50 AM	11:12 AM	262	9.5	21	2,490	0
	SWFTS-IW19	6:50 AM	11:47 AM	297	10.1	25	3,004	0
	SWFTS-IW20	6:50 AM	11:21 AM	271	8.8	27	2,394	0
					Daily Summary		**23,600**	**0**
11/7/2021	SWFTS-IW11	2:38 PM	3:36 PM	58	6.7	4	387	0
	SWFTS-IW12	2:38 PM	3:38 PM	60	8.3	10	496	0
	SWFTS-IW13A	3:47 PM	3:50 PM	3	23.6	12	71	0
	SWFTS-IW13B	2:38 PM	3:47 PM	69	2.8	20	193	0
	SWFTS-IW14	2:39 PM	3:44 PM	65	6.0	12	387	0
	SWFTS-IW15	2:38 PM	3:50 PM	72	6.7	13	484	0
	SWFTS-IW16A	3:10 PM	3:32 PM	22	8.8	16.5	193	0
	SWFTS-IW16B	2:37 PM	2:50 PM	13	14.9	20	194	0
	SWFTS-IW17	2:37 PM	3:15 PM	38	10.2	19	387	0
	SWFTS-IW18	2:37 PM	3:30 PM	53	9.1	17	484	0
	SWFTS-IW19	2:37 PM	3:28 PM	51	9.5	18	484	0
	SWFTS-IW20	2:37 PM	3:20 PM	43	9.6	21	411	0
					Daily Summary		**4,172**	**0**

Table A.7
Summary of Injection Activities
Injection Event 8 - November 2021
Seep Well Field Area Bioremediation Treatability Study

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[1]	Average Flow Rate	Sustained Pressure[2]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
11/8/2021	SWFTS-IW01A	8:36 AM	8:52 AM	16	4.7	8	75	0
	SWFTS-IW01B	9:23 AM	9:50 AM	27	9.0	10	242	0
	SWFTS-IW02A	8:36 AM	8:54 AM	18	3.3	11	60	0
	SWFTS-IW02B	9:23 AM	9:44 AM	21	9.2	13	193	0
	SWFTS-IW03	8:36 AM	9:24 AM	48	8.1	7	387	0
	SWFTS-IW04	8:36 AM	8:54 AM	18	5.0	10	90	0
	SWFTS-IW05	8:36 AM	9:09 AM	33	11.8	11	388	0
	SWFTS-IW06A	8:25 AM	8:33 AM	8	7.5	14	60	0
	SWFTS-IW06B	9:05 AM	9:12 AM	7	4.3	19	30	0
	SWFTS-IW07	8:25 AM	8:47 AM	22	5.4	13	120	0
	SWFTS-IW08	8:25 AM	8:48 AM	23	5.2	13	119	0
	SWFTS-IW09	8:25 AM	8:45 AM	20	5.9	12	119	0
	SWFTS-IW10	8:25 AM	8:46 AM	21	5.7	11	119	0
	SWFTS-IW13A	7:09 AM	9:02 AM	47	5.2	15	245	0
					Daily Summary		**2,248**	**0**
11/8/2021	SWFTS-IW01B	10:21 AM	4:00 PM	339	7.4	11	0	2,521
	SWFTS-IW02B	10:21 AM	4:13 PM	352	7.1	15	0	2,488
	SWFTS-IW03	10:21 AM	4:00 PM	339	7.5	10	0	2,527
	SWFTS-IW04	10:21 AM	4:00 PM	339	7.5	12	0	2,545
	SWFTS-IW05	10:21 AM	4:15 PM	354	7.3	12	0	2,573
	SWFTS-IW06B	10:21 AM	4:00 PM	339	6.6	23	0	2,222
	SWFTS-IW07	10:21 AM	4:00 PM	339	6.8	14	0	2,295
	SWFTS-IW08	10:21 AM	4:00 PM	339	6.9	17	0	2,325
	SWFTS-IW09	10:21 AM	4:00 PM	339	6.7	17	0	2,262
	SWFTS-IW10	10:21 AM	4:00 PM	339	6.7	19	0	2,288
					Daily Summary		**0**	**24,045**
11/9/2021	SWFTS-IW01A	7:00 AM	10:16 AM	196	14.5	13	0	2,839
	SWFTS-IW02A	7:00 AM	10:16 AM	196	15.1	18	0	2,951
	SWFTS-IW06A	6:53 AM	10:16 AM	203	18.0	21	0	3,656
	SWFTS-IW11	10:16 AM	4:00 PM	344	9.5	6	0	3,262
	SWFTS-IW12	10:16 AM	4:00 PM	344	9.6	9	0	3,317
	SWFTS-IW13A	10:16 AM	4:00 PM	344	9.5	16	0	3,261
	SWFTS-IW14	10:16 AM	4:00 PM	344	9.4	15	0	3,250
	SWFTS-IW15	10:16 AM	4:00 PM	344	9.6	14	0	3,312
	SWFTS-IW16A	10:16 AM	4:00 PM	344	8.1	27	0	2,787
	SWFTS-IW17	10:16 AM	4:00 PM	327	8.5	18	0	2,763
	SWFTS-IW18	10:16 AM	4:00 PM	344	8.1	17	0	2,793
	SWFTS-IW19	10:16 AM	4:00 PM	344	8.5	17	0	2,937
	SWFTS-IW20	10:16 AM	4:00 PM	344	8.5	22	0	2,924
					Daily Summary		**0**	**40,051**

Table A.7
Summary of Injection Activities
Injection Event 8 - November 2021
Seep Well Field Area Bioremediation Treatability Study

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[(1)]	Average Flow Rate	Sustained Pressure[(2)]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
11/10/2021	SWFTS-IW11	6:46 AM	3:45 PM	539	6.8	8	0	3,656
	SWFTS-IW12	6:46 AM	3:45 PM	539	6.9	14	0	3,709
	SWFTS-IW13B	6:46 AM	3:45 PM	539	6.9	24	0	3,706
	SWFTS-IW14	6:46 AM	3:45 PM	539	6.9	15	0	3,695
	SWFTS-IW15	6:46 AM	3:45 PM	539	6.8	15	0	3,642
	SWFTS-IW16B	7:19 AM	3:45 PM	506	7.7	24	0	3,895
	SWFTS-IW17	6:46 AM	3:45 PM	539	7.2	19	0	3,880
	SWFTS-IW18	6:46 AM	3:45 PM	539	7.2	20	0	3,878
	SWFTS-IW19	6:46 AM	3:45 PM	539	7.2	16	0	3,904
	SWFTS-IW20	6:46 AM	3:45 PM	539	7.0	24	0	3,793
					Daily Summary		**0**	**37,756**
11/15/2021	SWFTS-IW11	7:12 AM	4:20 PM	548	7.7	13	0	4,212
	SWFTS-IW12	7:12 AM	4:20 PM	548	7.7	13	0	4,229
	SWFTS-IW13B	7:12 AM	4:20 PM	548	7.4	30	0	4,043
	SWFTS-IW14	7:12 AM	4:20 PM	548	7.7	22	0	4,205
	SWFTS-IW15	7:12 AM	4:20 PM	548	7.7	20	0	4,215
	SWFTS-IW16B	7:12 AM	4:20 PM	548	7.6	35	0	4,161
	SWFTS-IW17	7:12 AM	4:20 PM	548	7.6	25	0	4,165
	SWFTS-IW18	7:12 AM	4:20 PM	548	7.5	29	0	4,097
	SWFTS-IW19	7:12 AM	4:20 PM	548	7.6	25	0	4,146
	SWFTS-IW20	7:12 AM	4:20 PM	548	7.5	29	0	4,104
					Daily Summary		**0**	**41,577**
11/16/2021	SWFTS-IW11	11:55 AM	4:20 PM	265	5.2	11	0	1,366
	SWFTS-IW12	11:55 AM	4:20 PM	265	10.3	13	0	2,719
	SWFTS-IW13A	3:20 PM	4:20 PM	60	5.2	14	0	314
	SWFTS-IW13B	11:55 AM	3:11 PM	196	5.1	24	0	1,002
	SWFTS-IW14	11:55 AM	4:20 PM	265	5.1	17	0	1,362
	SWFTS-IW15	11:55 AM	4:20 PM	265	5.3	16	0	1,394
	SWFTS-IW16A	1:50 PM	4:20 PM	150	6.4	22	0	966
	SWFTS-IW16B	11:55 AM	1:47 PM	112	6.2	22	0	695
	SWFTS-IW17	11:55 AM	4:20 PM	265	6.3	21	0	1,683
	SWFTS-IW18	11:55 AM	4:20 PM	265	6.4	22	0	1,688
	SWFTS-IW19	11:55 AM	4:20 PM	265	6.3	20	0	1,672
	SWFTS-IW20	11:55 AM	4:20 PM	265	6.3	23	0	1,664
					Daily Summary		**0**	**16,527**

Table A.7
Summary of Injection Activities
Injection Event 8 - November 2021
Seep Well Field Area Bioremediation Treatability Study

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[(1)]	Average Flow Rate	Sustained Pressure[(2)]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
11/17/2021	SWFTS-IW09	3:19 PM	4:20 PM	61	5.6	---	0	344
	SWFTS-IW11	7:17 AM	4:20 PM	543	7.6	21	0	4,114
	SWFTS-IW12	7:17 AM	4:20 PM	543	11.5	21	0	6,228
	SWFTS-IW13A	7:17 AM	4:20 PM	543	7.7	22	0	4,179
	SWFTS-IW14	7:17 AM	4:20 PM	543	7.7	26	0	4,158
	SWFTS-IW15	7:17 AM	3:51 PM	514	7.7	26	0	3,937
	SWFTS-IW16A	7:17 AM	4:20 PM	543	5.1	35	0	2,777
	SWFTS-IW17	7:17 AM	4:20 PM	543	8.0	31	0	4,336
	SWFTS-IW18	7:17 AM	3:51 PM	514	7.9	34	0	4,044
	SWFTS-IW19	7:17 AM	3:19 PM	482	8.0	32	0	3,841
	SWFTS-IW20	7:17 AM	4:20 PM	543	7.8	32	0	4,253
					Daily Summary		**0**	**42,211**
11/18/2021	SWFTS-IW01A	10:25 AM	4:20 PM	355	7.2	15	0	2,549
	SWFTS-IW02A	10:25 AM	4:20 PM	355	7.1	18	0	2,520
	SWFTS-IW03	10:25 AM	4:20 PM	355	7.4	20	0	2,620
	SWFTS-IW04	9:22 AM	4:20 PM	418	7.4	21	0	3,076
	SWFTS-IW05	9:16 AM	4:20 PM	424	8.3	20	0	3,507
	SWFTS-IW06A	11:33 AM	4:20 PM	287	7.3	19	0	2,086
	SWFTS-IW07	9:56 AM	4:20 PM	384	3.2	19	0	1,242
	SWFTS-IW08	7:46 AM	4:20 PM	514	7.2	23	0	3,716
	SWFTS-IW09	7:46 AM	4:20 PM	514	7.2	27	0	3,709
	SWFTS-IW10	9:56 AM	4:20 PM	384	6.9	26	0	2,664
	SWFTS-IW11	7:46 AM	9:52 AM	126	7.1	16	0	890
	SWFTS-IW12	7:46 AM	9:47 AM	121	10.1	16	0	1,225
	SWFTS-IW13A	7:46 AM	9:54 AM	128	7.8	19	0	996
	SWFTS-IW14	7:46 AM	9:47 AM	121	7.4	17	0	890
	SWFTS-IW16A	7:46 AM	4:20 PM	514	3.1	35	0	1,615
	SWFTS-IW17	7:46 AM	9:21 AM	95	7.1	21	0	674
	SWFTS-IW20	7:46 AM	9:33 AM	107	7.1	27	0	763
					Daily Summary		**0**	**34,741**

Table A.7
Summary of Injection Activities
Injection Event 8 - November 2021
Seep Well Field Area Bioremediation Treatability Study

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[(1)]	Average Flow Rate	Sustained Pressure[(2)]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
11/19/2021	SWFTS-IW01A	6:56 AM	1:33 PM	397	7.2	15	0	2,862
	SWFTS-IW01B	1:36 PM	4:20 PM	164	6.8	17	0	1,115
	SWFTS-IW02A	6:56 AM	2:37 PM	461	7.1	21	0	3,279
	SWFTS-IW02B	2:41 PM	4:20 PM	99	7.6	20	0	749
	SWFTS-IW03	6:56 AM	4:20 PM	564	7.1	20	0	4,012
	SWFTS-IW04	6:56 AM	4:20 PM	564	7.1	26	0	4,016
	SWFTS-IW05	6:56 AM	4:20 PM	564	7.3	23	0	4,089
	SWFTS-IW06A	6:56 AM	1:56 PM	420	7.2	29	0	3,009
	SWFTS-IW06B	1:56 PM	4:20 PM	144	6.9	30	0	994
	SWFTS-IW07	6:56 AM	4:20 PM	564	7.3	24	0	4,117
	SWFTS-IW08	6:56 AM	4:20 PM	564	7.1	28	0	4,031
	SWFTS-IW09	6:56 AM	4:20 PM	564	7.1	32	0	4,009
	SWFTS-IW10	6:56 AM	4:20 PM	564	7.0	35	0	3,928
	SWFTS-IW16A	6:56 AM	9:40 AM	164	3.7	33	0	606
					Daily Summary		**0**	**40,816**
11/20/2021	SWFTS-IW01B	6:58 AM	4:20 PM	562	6.7	26	0	3,770
	SWFTS-IW02B	6:58 AM	4:20 PM	562	6.8	26	0	3,812
	SWFTS-IW03	6:58 AM	4:20 PM	562	6.5	20	0	3,653
	SWFTS-IW04	6:58 AM	3:38 PM	520	6.7	28	0	3,489
	SWFTS-IW05	6:58 AM	4:20 PM	562	6.4	25	0	3,606
	SWFTS-IW06B	6:58 AM	9:43 AM	165	7.5	31	0	1,243
	SWFTS-IW07	6:58 AM	4:20 PM	562	9.6	29	0	5,369
	SWFTS-IW08	6:58 AM	4:20 PM	562	7.4	30	0	4,151
	SWFTS-IW09	6:58 AM	4:20 PM	562	7.6	35	0	4,258
	SWFTS-IW10	6:58 AM	4:20 PM	562	5.9	35	0	3,304
					Daily Summary		**0**	**36,654**

Table A.7
Summary of Injection Activities
Injection Event 8 - November 2021
Seep Well Field Area Bioremediation Treatability Study

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration[1]	Average Flow Rate	Sustained Pressure[2]	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
11/21/2021	SWFTS-IW01A	3:16 PM	3:28 PM	12	14.7	17	0	176
	SWFTS-IW01B	6:52 AM	3:14 PM	122	8.4	22	0	1,020
	SWFTS-IW02A	3:16 PM	3:29 PM	13	15.9	12	0	207
	SWFTS-IW02B	6:52 AM	3:15 PM	293	6.4	33	0	1,878
	SWFTS-IW03	6:52 AM	3:24 PM	437	11.5	26	0	5,039
	SWFTS-IW04	3:00 PM	3:27 PM	27	9.8	15	0	263
	SWFTS-IW05	6:52 AM	3:30 PM	385	10.6	31	0	4,076
	SWFTS-IW06A	3:00 PM	3:16 PM	16	11.0	19	0	176
	SWFTS-IW07	6:52 AM	3:34 PM	440	10.9	33	0	4,811
	SWFTS-IW08	6:52 AM	3:34 PM	381	9.4	35	0	3,597
	SWFTS-IW09	6:52 AM	3:34 PM	418	7.5	35	0	3,150
	SWFTS-IW10	6:52 AM	3:34 PM	522	4.1	35	0	2,158
					Daily Summary		**0**	**26,551**
					Injection Event Summary		**90,414**	**340,928**

Notes:

gal - gallons

gpm - gallons per minute

min - minutes

psi - pounds per square inch

--- - No pressure reading recorded due to short injection interval.

[1]Injection duration indicates the total minutes of active injection per day, accounting for any downtime in injections that may have occurred throughout the day. Therefore, injection duration may be less than the difference in daily injection start and stop times indicated.

[2]Sustained pressure reported represents the highest pressure recored during the injection interval indicated.

Table A.8
Summary of Groundwater Extraction Activities
Injection Event - November 2021
Seep Well Field Area Bioremediation Treatability Study

Date	Extraction Well	Start Time	Stop Time	Duration[1]	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				min	gpm	gal	gal
11/1/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	-	-	-	-	-	0.0
	SWFTS-MW11	-	-	-	-	-	0.0
	SWFTS-MW12	-	-	-	-	-	0.0
	SWFTS-MW13	15:18	17:17	119	15.5	1,840.3	1,840.3
	SWFTS-MW17	13:43	17:17	214	23.7	5,075.6	5,075.6
11/2/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	-	-	-	-	-	0.0
	SWFTS-MW11	10:26	12:45	139	7.7	1,065.2	1,065.2
	SWFTS-MW12	-	-	-	-	-	0.0
	SWFTS-MW13	8:01	15:30	334	15.0	5,023.6	6,863.9
	SWFTS-MW17	8:01	15:26	330	24.5	8,091.3	13,166.9
11/4/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	15:07	16:30	83	13.4[2]	1,114.7	1,114.7
	SWFTS-MW11	15:49	16:37	48	7.6	365.9	1,431.1
	SWFTS-MW12	15:07	16:30	83	14.7	1,221.6	1,221.6
	SWFTS-MW13	13:00	17:23	263	12.0	3,152.8	10,016.7
	SWFTS-MW17	13:00	16:37	217	23.4	5,069.1	18,236.0
11/5/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	10:07	13:27	134	21.7[2]	2,913.9	4,028.6
	SWFTS-MW11	10:09	13:27	133	7.0	929.7	2,360.8
	SWFTS-MW12	10:07	13:27	134	14.6	1,962.1	3,183.6
	SWFTS-MW13	10:04	13:27	161	20.4	3,285.2	13,301.9
	SWFTS-MW17	10:04	13:27	161	20.8	3,344.6	21,580.6
11/6/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	10:19	17:15	323	18.9[2]	6,116.8	10,145.4
	SWFTS-MW11	10:30	17:15	312	7.8	2,423.6	4,784.5
	SWFTS-MW12	10:19	17:15	323	14.6	4,724.2	7,907.8
	SWFTS-MW13	10:19	17:17	328	17.0	5,587.6	18,889.5
	SWFTS-MW17	10:19	17:15	326	22.5	7,349.1	28,929.7
11/7/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	10:06	16:15	101	20.3[2]	2052.5	12,197.9
	SWFTS-MW11	10:06	16:15	101	7.6	772.1	5,556.6
	SWFTS-MW12	15:31	16:15	44	14.0	616.1	8,524.0
	SWFTS-MW13	10:06	16:15	105	17.2	1811.1	20,700.6
	SWFTS-MW17	10:06	16:15	105	21.4	2243.5	31,173.2
11/8/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	6:27	8:03	96	19.7[2]	1,888.4	14,086.3
	SWFTS-MW11	6:17	16:05	491	7.5	3,684.0	9,240.6
	SWFTS-MW12	6:27	16:05	481	14.8	7,141.7	15,665.7
	SWFTS-MW13	6:17	16:05	491	14.0	6,886.3	27,586.9
	SWFTS-MW17	6:17	16:05	491	20.8	10,234.1	41,407.3

Table A.8
Summary of Groundwater Extraction Activities
Injection Event - November 2021
Seep Well Field Area Bioremediation Treatability Study

Date	Extraction Well	Start Time	Stop Time	Duration[(1)]	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				min	gpm	gal	gal
11/9/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	-	-	-	-	-	14,086.3
	SWFTS-MW11	7:05	16:06	541	7.5	4,069.1	13,309.7
	SWFTS-MW12	7:04	16:06	542	14.7	7,962.3	23,628.0
	SWFTS-MW13	7:04	16:06	542	17.4	9,421.7	37,008.6
	SWFTS-MW17	7:04	16:06	542	20.7	11,244.7	52,652.0
11/10/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	-	-	-	-	-	14,086.3
	SWFTS-MW11	6:33	15:53	560	7.6	4,235.1	17,544.8
	SWFTS-MW12	6:35	15:53	558	14.8	8,252.3	31,880.2
	SWFTS-MW13	6:37	15:53	556	18.4	10,210.5	47,219.1
	SWFTS-MW17	6:37	15:53	556	22.4	12,449.7	65,101.7
11/15/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	-	-	-	-	-	14,086.3
	SWFTS-MW11	6:51	16:36	585	7.4	4,339.6	21,884.3
	SWFTS-MW12	6:51	16:36	585	14.4	8,451.4	40,331.7
	SWFTS-MW13	6:49	16:36	587	19.0	11,139.1	58,358.2
	SWFTS-MW17	6:49	16:36	587	21.9	12,865.1	77,966.8
11/16/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	-	-	-	-	-	14,086.3
	SWFTS-MW11	11:50	16:30	280	7.5	2,109.9	23,994.2
	SWFTS-MW12	11:50	16:30	280	14.5	4,059.2	44,390.9
	SWFTS-MW13	11:50	16:30	280	17.8	4,975.5	63,333.7
	SWFTS-MW17	11:50	16:30	280	22.3	6,245.1	84,211.9
11/17/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	9:23	16:29	426	1.9	803.8	14,890.2
	SWFTS-MW11	6:57	16:29	572	7.6	4,329.3	28,323.5
	SWFTS-MW12	6:57	16:12	555	15.1	8,371.4	52,762.3
	SWFTS-MW13	6:57	16:29	572	18.5	10,566.2	73,899.9
	SWFTS-MW17	6:57	16:29	572	22.6	12,934.7	97,146.6
11/18/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	7:38	16:28	530	2.1	1,103	14,890.2
	SWFTS-MW11	7:38	16:28	530	7.6	4,046	32,369.8
	SWFTS-MW12	7:38	16:20	522	14.9	7,761	60,523.6
	SWFTS-MW13	7:38	16:20	522	17.9	9,340	83,240.1
	SWFTS-MW17	7:38	16:20	522	23.2	12,092	109,238.1
11/19/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	7:13	16:28	541	2.2	1,170.0	14,890.2
	SWFTS-MW11	6:44	16:28	570	7.6	4,347.2	36,717.0
	SWFTS-MW12	6:44	16:28	570	14.8	8,413.5	68,937.1
	SWFTS-MW13	6:44	16:28	570	18.4	10,500.6	93,740.7
	SWFTS-MW17	6:44	16:28	570	22.6	12,868.2	122,106.3

Table A.8
Summary of Groundwater Extraction Activities
Injection Event - November 2021
Seep Well Field Area Bioremediation Treatability Study

Date	Extraction Well	Start Time	Stop Time	Duration[(1)]	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				min	gpm	gal	gal
11/20/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	6:47	16:30	551	1.8	968.0	14,890.2
	SWFTS-MW11	6:47	16:30	551	7.5	4,119.8	40,836.8
	SWFTS-MW12	6:47	16:30	551	14.6	8,023.3	76,960.4
	SWFTS-MW13	7:23	16:30	515	19.5	10,021.6	103,762.3
	SWFTS-MW17	6:47	16:30	551	22.5	12,380.2	134,486.5
11/21/2021	SWFTS-MW07A	-	-	-	-	-	0.0
	SWFTS-MW08A	7:54	10:59	129	3.2	418.5	14,890.2
	SWFTS-MW11	7:21	10:59	162	7.7	1,240.8	42,077.6
	SWFTS-MW12	7:55	10:59	128	17.8	2,278.8	79,239.3
	SWFTS-MW13	7:21	10:59	162	14.9	2,412.9	106,175.2
	SWFTS-MW17	7:21	10:59	162	22.1	3,580.6	138,067.1
						EVENT TOTAL	**380,449.3**

Notes:

min - minutes

gpm - gallons per minute

gal - gallons

[1]Duration indicates the total minutes of active extraction per day, accounting for any downtime in pumping that may have occurred throughout the day. Therefore, duration may be less than the difference in daily extraction start and stop times indicated.

Table A.9
Specific Gravity Calibration Measurements
Injection Event 8 - November 2021
Seep Well Field Area Bioremediation Treatability Study

Standard Dilution	EOS_{PRO}	Emulsified Vegetable Oil Concentration	Hydrometer Readings (Calibrated for 60°F)					Sample Temperature (°F)					Temperature Corrected Specific Gravity						
Parts EOS_{PRO} and Amendments[1] to Parts Extracted Groundwater	% by weight	% by weight	Dup-1	Dup-2	Dup-3	Dup-4	Dup-5	Dup-1	Dup-2	Dup-3	Dup-4	Dup-5	Dup-1	Dup-2	Dup-3	Dup-4	Dup-5	Average	SD
1:0 - EOS_{PRO} Only - Delivery 1	100.0%	59.8%	0.970	0.972	0.968	NM	NM	85	85	48	NM	NM	0.973	0.975	0.967	NM	NM	0.972	0.004
1:2 - EOS_{PRO} standard - Delivery 1	33.3%	19.9%	0.991	0.991	0.991	0.992	0.991	68	68	68.5	70	70	0.992	0.992	0.992	0.993	0.992	0.992	0.001
1:4 - EOS_{PRO} standard - Delivery 1	20.0%	12.0%	0.997	0.997	0.996	0.996	0.997	68	68.5	68	69	69.5	0.998	0.998	0.997	0.997	0.998	0.997	0.001
1:6 - EOS_{PRO} standard - Delivery 1	14.3%	8.5%	0.999	0.999	0.999	1.000	1.000	68	68	68	67.5	68	1.000	1.000	1.000	1.001	1.001	1.000	0.001
0:1 - Extracted Groundwater Only	0.0%	0.0%	1.010	1.011	1.011	1.010	1.010	59	59	60	65	65	1.010	1.011	1.011	1.010	1.010	1.011	0.000
0:1 - Ammended Groundwater	0.0%	0.0%	1.000	1.002	1.001	1.000	1.002	83	83	83	83.5	83.5	1.003	1.005	1.004	1.003	1.005	1.004	0.001
1:4 - EOSPRO standard - Delivery 2	20.0%	12.0%	0.996	0.995	0.995	0.996	0.995	56	56	56	56	56	0.996	0.995	0.995	0.996	0.995	0.995	0.001
1:4 - EOSPRO standard - Delivery 3	20.0%	12.0%	0.997	0.997	0.997	0.997	0.997	58	58	58	58	58	0.997	0.997	0.997	0.997	0.997	0.997	0.000
1:4 - EOSPRO standard - Delivery 4	20.0%	12.0%	0.995	0.996	0.996	0.996	0.996	72	72	73	73	73	0.996	0.997	0.997	0.997	0.997	0.997	0.000

Notes:
Dup - sample duplicate
NM - not measured
SD - standard deviation
1. Injectate solution includes emulsified vegetable oil (EOS_{PRO}), phosphate solution (Aquapure 3601 NSF), glycerin, and sodium sulfite mixed into extracted groundwater. A 1:4 injectate stock solution standard was prepared for each mixture of deliveries of EOS_{PRO} used for batch mixing.

Table A.10
Specific Gravity Measurements
Injection Event 8 - November 2021
Seep Well Field Area Bioremediation Treatability Study

Batch	Date	Time	Batch Volume Remaining gallons	Hydrometer Reading (Calibrated for 60°F)	Sample Temperature (°F)	Corrected Specific Gravity	Calculated Percent Oil	Within Acceptable Range[1]	Comments
1A	11/3/2021	14:07	13278	0.995	73.5	0.996	14.6%	YES	Pre-Injection.
1A	11/3/2021	14:07	13278	0.994	73	0.995	16.5%	YES	Pre-Injection.
1A	11/3/2021	14:07	13278	0.994	73.5	0.995	16.5%	YES	Pre-Injection.
1A	11/3/2021	15:38	10518	0.995	77	0.997	12.8%	YES	
1A	11/3/2021	15:38	10518	0.994	77	0.996	14.6%	YES	
1A	11/4/2021	10:39	7053	0.993	69.5	0.994	18.3%	YES	
1A	11/4/2021	10:39	7053	0.993	69	0.994	18.3%	YES	
1A	11/4/2021	12:11	2375	0.993	74	0.994	18.3%	YES	
2B	11/4/2021	11:23	14375	0.994	73	0.995	16.5%	YES	Pre-Injection.
2B	11/4/2021	15:17	10244	0.993	80	0.995	16.5%	YES	
2B	11/5/2021	7:26	6681	0.995	66	0.996	14.6%	YES	
2B	11/5/2021	8:39	4430	0.992	66	0.993	20.1%	YES	
3A	11/5/2021	15:32	14257	0.994	77	0.996	14.6%	YES	Pre-Injection.
3A	11/5/2021	15:32	14257	0.995	77	0.997	12.8%	YES	Pre-Injection.
3A	11/5/2021	15:32	14257	0.995	76	0.997	12.8%	YES	Pre-Injection.
3A	11/5/2021	16:44	9675	0.994	76	0.996	14.6%	YES	
3A	11/6/2021	8:27	6075	0.996	67	0.997	12.8%	YES	
3A	11/6/2021	9:38	3099	0.995	69	0.996	14.6%	YES	
4B	11/6/2021	10:27	14140	0.994	70	0.995	16.5%	YES	Pre-Injection.
4B	11/6/2021	11:28	10694	0.993	70	0.994	18.3%	YES	
4B	11/6/2021	12:57	6584	0.993	78	0.995	16.5%	YES	
5A	11/6/2021	15:52	14839	0.992	80	0.994	18.3%	YES	Pre-Injection.
5A	11/7/2021	6:37	11242	0.992	70	0.993	20.1%	YES	
5A	11/7/2021	8:15	3706	0.993	74	0.994	18.3%	YES	
6B	11/7/2021	9:46	14825	0.991	75	0.993	20.1%	YES	Pre-Injection.
6B	11/7/2021	10:45	10597	0.995	78	0.997	12.8%	YES	
6B	11/7/2021	11:52	4465	0.991	80	0.993	20.1%	YES	
6B	11/7/2021	14:30	3412	0.992	78	0.994	18.3%	YES	
7A	11/7/2021	15:45	4097	0.991	80	0.993	20.1%	YES	Pre-Injection.
7A	11/8/2021	7:00	3295	0.994	70	0.995	16.5%	YES	

1. The acceptable range of specific gravity measurements was determined to be 0.993 to 1.001 for EOS_{PRO} Delivery 1, Delivery 3, and Delivery 4, and 0.991 to 0.999 for batches mixed with EOS_{PRO} Delivery 2. This was determined by taking +/- 10% of the difference between the pure EOS_{PRO} with amendments solution and the pure extracted groundwater (equivalent to 0.004) and then adding and subtracting that value with the specific gravity of the 1:4 standard (shown in Table 6).

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW01A	11/3/2021	3:02 PM	4:30 PM	16	to	26	8	8	5.3	470.22	-	470	
	11/4/2021	2:02 PM	4:30 PM	16	to	26	8	8	5.2	776.22	-	776	
	11/5/2021	7:54 AM	4:04 PM	16	to	26	9	10	2.6	1268.08		1,268	
	11/8/2021	8:36 AM	8:52 AM	16	to	26	8	8	4.7	75.08		75	
	11/9/2021	7:01 AM	10:16 AM	16	to	26	10	10	14.6		2839.30	2,839	
	11/18/2021	10:25 AM	4:20 PM	16	to	26	11	13	7.2		2548.60	2,549	
	11/19/2021	6:56 AM	1:33 PM	16	to	26	11	14	7.2		2862.08	2,862	
	11/21/2021	3:16 PM	3:28 PM	16	to	26	14	18	14.7		176.30	176	
	11/22/2021	8:32 AM	8:36 AM	16	to	26	12	12	5.0		19.90	20	
									TOTALS	**2589.60**	**8446.18**	**11,036**	
SWFTS-IW01B	11/5/2021	4:05 PM	4:45 PM	27	to	37	12	13	13.0	519.57		520	
	11/6/2021	8:35 AM	11:50 AM	27	to	37	10	12	10.2	1995.20		1,995	
	11/8/2021	9:34 AM	9:50 AM	27	to	37	9	10	15.1	242.06		242	
	11/8/2021	10:21 AM	4:00 PM	27	to	37	7	10	7.4		2521.00	2,521	
	11/19/2021	1:36 PM	4:40 PM	27	to	37	12	13	6.1		1114.72	1,115	
	11/20/2021	6:58 AM	4:20 PM	27	to	37	18	21	6.7		3770.27	3,770	
	11/21/2021	6:52 AM	8:40 AM	27	to	37	17	21	7.8		844.02	844	
	11/21/2021	3:00 PM	3:14 PM	27	to	37	18	23	12.6		176.18	176	
									TOTALS	**2756.83**	**8426.19**	**11,183**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW02A	11/3/2021	3:02 PM	4:30 PM	17	to	27	13	12	5.3	463.69	-	464	
	11/4/2021	2:02 PM	4:30 PM	17	to	27	10	12	5.1	753.20	-	753	
	11/5/2021	7:54 AM	9:26 AM	17	to	27	14	14	8.6	795.02		795	
	11/8/2021	8:36 AM	8:54 AM	17	to	27	13	13	3.3	60.06		60	
	11/9/2021	7:01 AM	10:16 AM	17	to	27	16	18	15.1		2951.12	2,951	
	11/18/2021	10:25 AM	4:20 PM	17	to	27	14	16	7.1		2519.51	2,520	
	11/19/2021	6:56 AM	2:37 PM	17	to	27	17	19	7.1		3279.13	3,279	
	11/21/2021	3:16 PM	3:29 PM	17	to	27	17	20	13.6		176.24	176	
	11/22/2021	8:32 AM	8:36 AM	17	to	27	13	13	7.7		30.67	31	
									TOTALS	**2071.97**	**8956.67**	**11,029**	
SWFTS-IW02B	11/5/2021	3:40 PM	4:45 PM	26	to	36	11	11	17.9	1161.78		1,162	
	11/6/2021	8:35 AM	10:12 AM	26	to	36	5	5	8.8	850.08		850	
	11/8/2021	9:34 AM	9:44 AM	26	to	36	5	5	19.3	193.14		193	
	11/8/2021	10:21 AM	4:00 PM	26	to	36	12	14	7.3		2487.94	2,488	
	11/19/2021	2:41 PM	4:20 PM	26	to	36	16	16	7.6		749.34	749	
	11/20/2021	6:58 AM	4:20 PM	26	to	36	18	25	6.8		3812.01	3,812	
	11/21/2021	6:52 AM	11:26 AM	26	to	36	22	34	6.2		1701.17	1,701	
	11/21/2021	3:00 PM	3:15 PM	26	to	36	22	35	11.8		176.36	176	
									TOTALS	**2205.00**	**8926.82**	**11,132**	

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW03	11/3/2021	3:02 PM	4:30 PM	17	to	37	13	14	4.6	405.01		405	
	11/4/2021	2:02 PM	4:30 PM	17	to	37	13	15	5.3	782.14		782	
	11/5/2021	8:20 AM	4:45 PM	17	to	37	12	16	3.5	1782.05		1,782	
	11/6/2021	8:35 AM	10:34 AM	17	to	37	13	14	8.8	1053.10		1,053	
	11/8/2021	8:36 AM	9:24 AM	17	to	37	8	8	8.1	387.27		387	
	11/8/2021	10:21 AM	4:00 PM	17	to	37	6	11	7.5		2527.34	2,527	
	11/18/2021	10:25 AM	4:20 PM	17	to	37	12	15	7.4		2620.14	2,620	
	11/19/2021	6:56 AM	4:20 PM	17	to	37	13	19	7.1		4011.79	4,012	
	11/20/2021	6:58 AM	4:20 PM	17	to	37	16	19	6.5		3652.52	3,653	
	11/21/2021	6:52 AM	11:26 AM	17	to	37	18	22	17.1		4688.03	4,688	
	11/21/2021	3:00 PM	3:15 PM	17	to	37	20	25	23.4		351.20	351	
	11/22/2021	8:32 AM	8:36 AM	17	to	37	15	15	5.8		23.32	23	
									TOTALS	**4409.57**	**17874.34**	**22,284**	
SWFTS-IW04	11/3/2021	3:02 PM	4:30 PM	20	to	35	12	12	5.3	464.29		464	
	11/4/2021	2:02 PM	4:30 PM	20	to	35	11	13	5.6	824.08		824	
	11/5/2021	7:54 AM	4:38 PM	20	to	35	11	14	3.3	1743.49		1,743	
	11/8/2021	8:36 AM	8:54 AM	20	to	35	10	10	5.0	90.20		90	
	11/8/2021	10:21 AM	4:00 PM	20	to	35	10	12	7.5		2544.52	2,545	
	11/18/2021	9:22 AM	4:20 PM	20	to	35	11	19	7.4		3076.00	3,076	
	11/19/2021	6:56 AM	4:20 PM	20	to	35	16	21	7.1		4015.93	4,016	
	11/20/2021	6:58 AM	4:20 PM	20	to	35	20	23	6.2		3489.19	3,489	
	11/21/2021	3:00 PM	3:22 PM	20	to	35	20	**25**	12.0		263.38	263	
	11/22/2021	8:32 AM	8:36 AM	20	to	35	17	**17**	6.6		26.55	27	
									TOTALS	**3122.06**	**13415.57**	**16,538**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW05	11/3/2021	3:02 PM	4:30 PM	15	to	35	13	13	5.20	457.59		458	
	11/4/2021	2:02 PM	4:30 PM	15	to	35	11	13	5.23	773.61		774	
	11/5/2021	7:45 AM	9:46 AM	15	to	35	12	14	15.87	1920.30		1,920	
	11/6/2021	8:35 AM	10:53 AM	15	to	35	9	10	6.41	884.96		885	
	11/8/2021	8:36 AM	9:09 AM	15	to	35	10	10	11.8	387.97		388	
	11/8/2021	10:21 AM	4:00 PM	15	to	35	9	12	7.6		2572.66	2,573	
	11/18/2021	8:16 AM	4:20 PM	15	to	35	14	17	7.2		3507.25	3,507	
	11/19/2021	6:56 AM	4:20 PM	15	to	35	14	21	7.3		4089.15	4,089	
	11/20/2021	6:58 AM	4:20 PM	15	to	35	19	21	6.4		3606.11	3,606	
	11/21/2021	6:52 AM	12:47 PM	15	to	35	20	31	10.5		3725.09	3,725	
	11/21/2021	3:00 PM	3:30 PM	15	to	35	20	33	11.7		351.12	351	
	11/22/2021	8:32 AM	8:36 AM	15	to	35	21	21	6.7		26.97	27	
									TOTALS	**4424.43**	**17878.35**	**22,303**	
SWFTS-IW06A	11/3/2021	2:30 PM	4:30 PM	17	to	27	21	21	3.58	429.70		430	
	11/4/2021	10:53 AM	1:34 PM	17	to	27	18	26	9.83	1581.99		1,582	
	11/8/2021	8:25 AM	8:33 AM	17	to	27	18	18	7.50	59.98		60	
	11/9/2021	6:53 AM	10:16 AM	17	to	27	21	21	18.0		3656.12	3,656	
	11/18/2021	11:33 AM	4:20 PM	17	to	27	15	16	7.3		2085.76	2,086	
	11/19/2021	6:56 AM	1:55 PM	17	to	27	20	22	7.2		3009.12	3,009	
	11/21/2021	3:00 PM	3:16 PM	17	to	27	20	22	11.0		176.01	176	
	11/22/2021	8:22 AM	8:24 AM	17	to	27	13	13	2.3		4.64	5	
									TOTALS	**2071.67**	**8931.65**	**11,003**	

CASCADE

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW06B	11/4/2021	2:30 PM	4:30 PM	29	to	34	23	23	5.37	644.94	-	645	
	11/5/2021	7:50 AM	8:33 AM	29	to	34	30	30	8.40	361.00	-	361	
	11/8/2021	9:05 AM	9:12 AM	29	to	34	23	30	4.29	30.00	-	30	
	11/8/2021	10:21 AM	4:00 PM	29	to	34	15	22	6.6		2222.20	2,222	
	11/19/2021	1:16 PM	4:20 PM	29	to	34	26	29	5.4		994.28	994	
	11/20/2021	6:58 AM	9:43 AM	29	to	34	28	30	7.5		1242.96	1,243	
									TOTALS	**1035.94**	**4459.44**	**5,495**	
SWFTS-IW07	11/3/2021	2:30 PM	4:30 PM	17	to	37	18	18	5.1	611.65		612	
	11/4/2021	10:53 AM	4:30 PM	17	to	37	19	16	6.9	2334.34		2,334	
	11/5/2021	7:50 AM	4:11 PM	17	to	37	9	22	2.1	1077.08		1,077	
	11/8/2021	8:25 AM	8:47 AM	17	to	37	16	16	5.4	119.63		120	
	11/8/2021	10:21 AM	4:00 PM	17	to	37	12	15	6.8		2295.23	2,295	
	11/18/2021	9:56 AM	4:20 PM	17	to	37	17	19	3.2		1242.38	1,242	
	11/19/2021	6:56 AM	4:20 PM	17	to	37	19	23	7.3		4117.01	4,117	
	11/20/2021	6:58 AM	4:20 PM	17	to	37	16	26	9.6		5368.96	5,369	
	11/21/2021	6:52 AM	1:38 PM	17	to	37	19	30	11.0		4476.02	4,476	
	11/21/2021	3:00 PM	3:34 PM	17	to	37	20	32	9.8		334.77	335	
	11/22/2021	7:16 AM	7:33 AM	17	to	37	15	15	1.1		18.82	19	
									TOTALS	**4142.70**	**17853.19**	**21,996**	

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INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW08	11/3/2021	2:30 PM	4:30 PM	17	to	37	18	18	5.1	613.80		614	
	11/4/2021	1:28 PM	4:30 PM	17	to	37	20	18	13.5	2463.10		2,463	
	11/5/2021	7:50 AM	4:03 PM	17	to	37	5	24	1.9	946.28		946	
	11/8/2021	8:25 AM	8:48 AM	17	to	37	17	17	5.2	119.44		119	
	11/8/2021	10:21 AM	4:00 PM	17	to	37	14	18	6.9		2324.54	2,325	
	11/18/2021	7:46 AM	4:20 PM	17	to	37	17	25	7.2		3716.22	3,716	
	11/19/2021	6:56 AM	4:20 PM	17	to	37	20	28	7.1		4031.21	4,031	
	11/20/2021	6:58 AM	4:20 PM	17	to	37	16	26	7.4		4150.58	4,151	
	11/21/2021	6:52 AM	12:39 PM	17	to	37	20	31	9.4		3277.16	3,277	
	11/21/2021	3:00 PM	3:34 PM	17	to	37	20	32	9.4		319.46	319	
	11/22/2021	7:16 AM	7:33 AM	17	to	37	20	20	3.6		61.22	61	
									TOTALS	**4142.62**	**17880.39**	**22,023**	
SWFTS-IW09	11/3/2021	2:30 PM	4:30 PM	27	to	47	8	8	5.3	631.53		632	
	11/4/2021	1:28 PM	4:30 PM	27	to	47	15	20	10.8	1963.32		1,963	
	11/5/2021	7:50 AM	4:40 PM	27	to	47	15	26	2.7	1429.19		1,429.19	
	11/8/2021	8:25 AM	8:45 AM	27	to	47	13	15	6.0	119.00		119.00	
	11/8/2021	10:21 AM	4:00 PM	27	to	47	10	16	6.7		2261.66	2,261.66	
	11/17/2021	3:41 PM	4:20 PM	27	to	47	18	18	8.8		343.82	343.82	
	11/18/2021	7:46 AM	4:20 PM	27	to	47	18	25	7.2		3708.90	3,708.90	
	11/19/2021	6:56 AM	4:20 PM	27	to	47	20	28	7.1		4008.52	4,008.52	
	11/20/2021	6:58 AM	4:20 PM	27	to	47	25	35	7.6		4257.75	4,257.75	
	11/21/2021	6:58 AM	1:16 PM	27	to	47	25	35	7.7		2919.02	2,919.02	
	11/21/2021	3:00 PM	3:34 PM	27	to	47	27	35	6.8		230.50	230.50	
	11/22/2021	7:16 AM	7:59 AM	27	to	47	25	25	2.8		122.08	122.08	
									TOTALS	**4143.04**	**17852.25**	**21,995.29**	

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INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW11	11/6/2021	12:04 PM	2:19 PM	17	to	37	9	6	11.9	1605.09	-	1,605.09	
	11/7/2021	6:55 AM	11:27 AM	17	to	37	5	5	8.9	2418.02	-	2,418.02	
	11/7/2021	2:39 PM	3:36 PM	17	to	37	6	4	6.8	387.00	-	387.00	
	11/9/2021	10:18 AM	4:30 PM	17	to	37	5	5	8.8		3262.19	3,262.19	
	11/10/2021	6:47 AM	3:45 PM	17	to	37	3	5	6.8		3655.52	3,655.52	
	11/15/2021	7:12 AM	4:20 PM	17	to	37	7	12	7.7		4211.68	4,211.68	
	11/16/2021	11:55 AM	4:20 PM	17	to	37	4	11	5.2		1366.46	1,366.46	
	11/17/2021	7:18 AM	4:20 PM	17	to	37	10	21	7.6		4113.84	4,113.84	
	11/18/2021	7:46 AM	9:52 AM	17	to	37	14	**19**	7.1		890.22	890.22	
									TOTALS	**4410.11**	**17499.91**	**21,910.02**	
SWFTS-IW12	11/6/2021	12:17 PM	4:45 PM	14	to	39	13	13	5.8	1564.85	-	1,564.85	
	11/7/2021	6:55 AM	12:10 PM	14	to	39	11	11	11.4	3590.12	-	3,590.12	
	11/7/2021	2:39 PM	3:38 PM	14	to	39	10	10	8.4	496.10	-	496.10	
	11/9/2021	10:18 AM	4:30 PM	14	to	39	8	8	8.9		3316.79	3,316.79	
	11/10/2021	6:47 AM	3:45 PM	14	to	39	8	9	6.9		3708.55	3,708.55	
	11/15/2021	7:12 AM	4:20 PM	14	to	39	11	12	7.7		4228.78	4,228.78	
	11/16/2021	11:55 AM	4:20 PM	14	to	39	9	13	10.3		2719.39	2,719.39	
	11/17/2021	7:18 AM	4:20 PM	14	to	39	13	20	11.5		6227.58	6,227.58	
	11/18/2021	7:46 AM	9:47 AM	14	to	39	13	**17**	10.1		1224.69	1,224.69	
									TOTALS	**5651.07**	**21425.78**	**27,076.85**	

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INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW13A	11/6/2021	11:36 AM	2:19 PM	16	to	26	13	14	9.1	1480.06		1,480.06	
	11/7/2021	6:55 AM	7:47 AM	16	to	26	13	13	10.2	532.11		532.11	
	11/7/2021	3:47 PM	3:50 PM	16	to	26	13	13	23.6	70.94		70.94	
	11/8/2021	7:10 AM	7:30 AM	16	to	26	14	14	6.1	122.67		122.67	
	11/8/2021	8:36 AM	9:02 AM	16	to	26	11	11	4.7	122.66		122.66	
	11/9/2021	10:18 AM	4:30 PM	16	to	26	13	13	8.8		3260.60	3,260.60	
	11/16/2021	3:20 PM	4:20 PM	16	to	26	12	13	5.2		314.32	314.32	
	11/17/2021	7:18 AM	4:20 PM	16	to	26	14	**21**	7.7		4178.74	4,178.74	
	11/18/2021	7:46 AM	9:54 AM	16	to	26	15	**22**	7.8		996.15	996.15	
									TOTALS	**2328.44**	**8749.81**	**11,078.25**	
SWFTS-IW13B	11/7/2021	7:56 AM	11:37 AM	28	to	38	27	28	9.1	2012.24	-	2,012.24	
	11/7/2021	2:39 PM	3:47 PM	28	to	38	27	15	2.8	193.08		193.08	
	11/10/2021	6:47 AM	3:45 PM	16	to	26	20	20	6.9		3706.46	3,706.46	
	11/15/2021	7:12 AM	4:20 PM	28	to	38	17	**28**	7.4		4042.93	4,042.93	
	11/16/2021	11:55 AM	3:11 PM	28	to	38	22	**24**	5.1		1001.07	1,001.07	
									TOTALS	**2205.32**	**8750.46**	**10,955.78**	

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INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW14	11/6/2021	11:36 AM	4:45 PM	16	to	36	14	14	5.5	1700.66		1,700.66	
	11/7/2021	6:55 AM	11:30 AM	16	to	36	13	14	8.4	2322.30		2,322.30	
	11/7/2021	2:39 PM	3:44 PM	16	to	36	13	12	6.0	387.10		387.10	
	11/9/2021	10:18 AM	4:30 PM	16	to	36	14	13	8.7		3249.68	3,249.68	
	11/10/2021	6:47 AM	3:45 PM	16	to	36	12	15	6.9		3694.55	3,694.55	
	11/15/2021	7:12 AM	4:20 PM	16	to	36	15	22	7.7		4205.44	4,205.44	
	11/16/2021	11:55 AM	4:20 PM	16	to	36	12	15	5.1		1362.29	1,362.29	
	11/17/2021	7:18 AM	4:20 PM	16	to	36	16	**27**	7.7		4158.31	4,158.31	
	11/18/2021	7:46 AM	9:47 AM	16	to	36	17	**24**	7.4		889.68	889.68	
									TOTALS	**4410.06**	**17559.95**	**21,970.01**	
SWFTS-IW15	11/6/2021	1:00 PM	4:45 PM	16	to	36	15	13	5.1	1138.68	-	1,138.68	
	11/7/2021	6:55 AM	12:21 PM	16	to	36	12	14	11.9	3890.28	-	3,890.28	
	11/7/2021	2:39 PM	3:50 PM	16	to	36	11	11	6.8	484.30	-	484.30	
	11/9/2021	10:18 AM	4:30 PM	16	to	36	13	13	8.9		3312.04	3,312.04	
	11/10/2021	6:47 AM	3:45 PM	16	to	36	11	13	6.8		3641.91	3,641.91	
	11/15/2021	7:12 AM	4:20 PM	16	to	36	14	19	7.7		4215.36	4,215.36	
	11/16/2021	11:55 AM	4:20 PM	16	to	36	11	15	5.3		1394.46	1,394.46	
	11/17/2021	7:18 AM	3:51 PM	16	to	36	17	23	7.7		3937.08	3,937.08	
									TOTALS	**5513.26**	**16500.85**	**22,014.11**	

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INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW16A	11/5/2021	3:32 PM	4:45 PM	17	to	27	22	22	16.6	1208.96	-	1,208.96	
	11/6/2021	8:45 AM	9:55 AM	17	to	27	20	22	11.5	803.06	-	803.06	
	11/7/2021	3:11 PM	3:32 PM	17	to	27	16	16	9.2	192.99	-	192.99	
	11/9/2021	10:16 AM	4:00 PM	17	to	27	28	20	8.1		2786.69	2,786.69	
	11/16/2021	1:50 PM	4:20 PM	17	to	27	21	21	6.4		966.26	966.26	
	11/17/2021	7:18 AM	4:20 PM	17	to	27	20	35	5.1		2777.17	2,777.17	
	11/18/2021	7:46 AM	4:20 PM	17	to	27	26	**35**	3.1		1614.65	1,614.65	
	11/19/2021	6:56 AM	9:40 AM	17	to	27	25	**33**	3.7		606.02	606.02	
									TOTALS	**2205.01**	**8750.79**	**10,955.80**	
SWFTS-IW16B	11/6/2021	10:11 AM	4:45 PM	26	to	36	18	22	5.0	1985.22		1,985.22	
	11/7/2021	6:50 AM	6:56 AM	26	to	36	15	15	4.5	27.02		27.02	
	11/7/2021	2:37 PM	2:59 PM	26	to	36	15	15	8.8	193.80		193.80	
	11/10/2021	6:47 AM	#########	26	to	36	15	18	7.2		3894.75	3,894.75	
	11/15/2021	7:12 AM	4:20 PM	26	to	36	23	**28**	7.6		4160.54	4,160.54	
	11/16/2021	11:55 AM	1:47 PM	26	to	36	22	**23**	6.2		694.98	694.98	
									TOTALS	**2206.04**	**8750.27**	**10,956.31**	

INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW17	11/6/2021	8:45 AM	4:45 PM	17	to	37	20	19	6.5	3102.84		3,102.84	
	11/7/2021	6:50 AM	8:33 AM	17	to	37	19	20	8.9	919.96		919.96	
	11/7/2021	2:37 PM	3:15 PM	17	to	37	16	16	10.2	387.06		387.06	
	11/9/2021	10:16 AM	4:00 PM	17	to	37	15	15	8.0		2763.26	2,763.26	
	11/10/2021	6:47 AM	3:45 PM	17	to	37	15	16	7.2		3879.71	3,879.71	
	11/15/2021	7:12 AM	4:20 PM	17	to	37	21	22	7.6		4164.56	4,164.56	
	11/16/2021	11:55 AM	4:20 PM	17	to	37	16	19	6.3		1682.56	1,682.56	
	11/17/2021	7:18 AM	4:20 PM	17	to	37	15	27	8.0		4336.07	4,336.07	
	11/18/2021	7:46 AM	9:21 AM	17	to	37	20	24	7.1		674.02	674.02	
									TOTALS	**4409.86**	**17500.18**	**21,910.04**	
SWFTS-IW18	11/6/2021	9:08 AM	4:45 PM	18	to	38	15	19	5.6	2540.06		2,540.06	
	11/7/2021	6:50 AM	11:12 AM	18	to	38	19	25	9.5	2489.70		2,489.70	
	11/7/2021	2:37 PM	3:30 PM	18	to	38	19	19	9.1	484.06		484.06	
	11/9/2021	10:16 AM	4:00 PM	18	to	38	15	15	8.1		2792.81	2,792.81	
	11/10/2021	6:47 AM	3:45 PM	18	to	38	13	18	7.2		3877.96	3,877.96	
	11/15/2021	7:12 AM	4:20 PM	18	to	38	22	24	7.5		4097.31	4,097.31	
	11/16/2021	11:55 AM	4:20 PM	18	to	38	16	19	6.4		1688.39	1,688.39	
	11/17/2021	7:18 AM	3:31 PM	18	to	38	19	30	8.2		4044.01	4,044.01	
									TOTALS	**5513.82**	**16500.48**	**22,014.30**	

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INJECTION FIELD LOG

PROJECT NUMBER/NAME: TETRA TECH SEEP WELL FIELD INJ EVENT 8/304-21-1101

Well ID	Start Date	Start Time	End Time	Injection Interval (Feet BGS)			Initial Pressure (PSI)	Sustained Pressure (PSI)	Average Flow Rate (GPM)	% Solution Injected (Gallons)	Flush Water Injected (Gallons)	Total Injected (Gallons)	Day Lighting (X)
SWFTS-IW19	11/6/2021	9:40 AM	4:45 PM	24	to	44	18	19	4.8	2025.16	-	2,025.16	
	11/7/2021	6:50 AM	11:47 AM	24	to	44	19	**20**	10.1	3004.12		3,004.12	
	11/7/2021	2:37 PM	3:50 PM	24	to	44	20	**20**	6.6	484.07		484.07	
	11/9/2021	10:16 AM	4:00 PM	24	to	44	13	**10**	8.5		2937.08	2,937.08	
	11/10/2021	6:47 AM	3:45 PM	24	to	44	13	**13**	7.3		3904.13	3,904.13	
	11/15/2021	7:12 AM	4:20 PM	24	to	44	16	**19**	7.6		4146.44	4,146.44	
	11/16/2021	11:55 AM	4:20 PM	24	to	44	13	**17**	6.3		1671.65	1,671.65	
	11/17/2021	7:18 AM	3:19 PM	24	to	44	22	**28**	8.0		3841.02	3,841.02	
									TOTALS	**5513.35**	**16500.32**	**22,013.67**	
SWFTS-IW20	11/6/2021	9:40 AM	4:45 PM	31	to	51	19	20	4.4	1881.50		1,881.50	
	11/7/2021	6:50 AM	11:21 AM	31	to	51	19	21	8.8	2394.08		2,394.08	
	11/7/2021	2:37 PM	3:20 PM	31	to	51	23	23	9.6	411.08		411.08	
	11/9/2021	10:16 AM	4:00 PM	31	to	51	22	15	8.5		2923.63	2,923.63	
	11/10/2021	6:47 AM	3:45 PM	31	to	51	16	18	7.0		3792.80	3,792.80	
	11/15/2021	7:12 AM	4:20 PM	31	to	51	23	28	7.5		4103.61	4,103.61	
	11/16/2021	11:55 AM	4:20 PM	31	to	51	15	19	6.3		1664.06	1,664.06	
	11/17/2021	7:18 AM	4:20 PM	31	to	51	22	27	7.8		4253	4,253.09	
	11/18/2021	7:46 AM	9:33 AM	31	to	51	22	28	7.1		763	763.01	
									TOTALS	**4686.66**	**17500**	**22,186.86**	

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APPENDIX B
Photographs

1. November 1, 2021 Pre-Injection Site Conditions

2. November 1, 2021 Pre-Injection Site Conditions

3. Extraction Well Stickup and Transfer Hose

4. Site Setup and Layout

5. Reagent Storage

6. Reagent Storage

7. Well Head Adapter complete with 60 PSI Pressure Gauge

8. 10-Point Stainless Steel Injection Manifold

Comparison of Injection Events

Table A.11 – Ratio of Average Sustained Pressure to Average Injection Rate

Table A.11
Ratio of Average Sustained Pressure to Average Injection Rate
Seep Well Field Area Bioremediation Treatability Study

Injection Well	Average Flow Rate (gpm)										Average Sustained Pressure (psi)										Ratio of Average Sustained Pressure to Average Flow Rate									
	Event 1	Event 2	Event 3	Event 4	Test 1[1]	Event 5	Test 2[2]	Event 6	Event 7	Event 8	Event 1	Event 2	Event 3	Event 4	Test 1[1]	Event 5	Test 2[2]	Event 6	Event 7	Event 8	Event 1	Event 2	Event 3	Event 4	Test 1[1]	Event 5	Test 2[2]	Event 6	Event 7	Event 8
SWFTS-IW01A	8.0	5.3	5.0	9.5	-	7.9	-	5.2	8.2	7.6	1.1	7.9	11.7	19.2	-	10.8	-	9.3	14.4	11.1	0.1	1.5	2.3	2.0	-	1.4	-	1.8	1.8	1.5
SWFTS-IW01B	7.4	5.3	4.3	7.9	-	2.8	20	7.1	7.4	7.5	0.0	4.0	11.7	19.0	-	21.8	16.0	15.7	16.6	14.6	0.0	0.7	2.7	2.4	-	7.8	0.8	2.2	2.2	1.9
SWFTS-IW02A	6.9	3.3	4.9	5.6	5.1	6.5	-	5.5	7.7	7.4	2.0	17.5	15.0	32.5	20.2	20.6	-	8.8	19.1	15.3	0.3	5.4	3.1	5.8	3.9	3.2	-	1.6	2.5	2.1
SWFTS-IW02B	6.2	4.2	4.2	3.3	-	7.6	-	5.9	7.3	10.2	0.0	16.0	7.5	14.3	-	15.3	-	14.3	18.3	15.8	0.0	3.8	1.8	4.3	-	2.0	-	2.4	2.5	1.5
SWFTS-IW03	7.1	5.2	4.6	8.0	-	7.0	-	6.2	8.3	7.0	3.0	6.5	10.5	17.5	-	19.9	-	10.0	16.8	14.8	0.4	1.3	2.3	2.2	-	2.8	-	1.6	2.0	2.1
SWFTS-IW04	5.8	--- (3)	5.4	5.1	-	7.8	-	5.8	9.2	6.8	3.6	--- (3)	11.4	13.9	-	14.1	-	10.8	15.0	16.9	0.6	-	2.1	2.7	-	1.8	-	1.9	1.6	2.5
SWFTS-IW05	7.3	6.0	7.1	17.8	-	6.4	-	6.3	8.7	7.7	3.7	8.6	10.0	10.8	-	20.8	-	10.8	19.3	14.4	0.5	1.4	1.4	0.6	-	3.2	-	1.7	2.2	1.9
SWFTS-IW06A	7.1	4.8	4.7	4.5	7.7	7.7	-	5.2	6.8	8.9	2.3	2.0	11.0	24.5	4.6	19.0	-	16.0	17.8	20.8	0.3	0.4	2.3	5.4	0.6	2.5	-	3.1	2.6	2.3
SWFTS-IW06B	5.8	4.4	5.3	2.9	3.0	4.5	-	2.7	4.7	6.3	4.3	10.0	12.5	30.6	22.1	22.7	-	26.6	20.4	24.3	0.7	2.3	2.3	10.7	7.4	5.0	-	9.8	4.3	3.9
SWFTS-IW07	6.4	4.7	4.9	9.6	-	6.9	-	9.2	10.4	6.3	10.3	9.4	13.5	13.9	-	23.6	-	12.3	16.1	17.0	1.6	2.0	2.8	1.5	-	3.4	-	1.3	1.5	2.7
SWFTS-IW08	6.3	--- (3)	6.5	8.5	-	11.8	-	9.1	8.9	6.8	8.0	--- (3)	18.1	17.0	-	23.6	-	17.9	19.5	20.7	1.3	-	2.8	2.0	-	2.0	-	2.0	2.2	3.0
SWFTS-IW09	6.5	5.8	3.9	3.7	5.3	7.4	-	7.2	9.1	6.7	2.3	6.0	26.5	27.5	12.0	28.5	-	22.9	23.8	22.6	0.4	1.0	6.9	7.4	2.3	3.8	-	3.2	2.6	3.4
SWFTS-IW10	6.3	5.5	5.0	3.3	4.5	8.6	-	7.3	8.2	6.8	2.1	6.4	20.6	25.8	20.2	24.0	-	17.6	24.0	20.9	0.3	1.1	4.2	7.8	4.5	2.8	-	2.4	2.9	3.1
SWFTS-IW11	6.3	4.3	4.4	5.6	8.4	10.9	-	7.6	9.7	7.6	1.6	12.3	11.4	31.1	8.0	13.6	-	14.6	15.9	10.1	0.3	2.9	2.6	5.6	1.0	1.2	-	1.9	1.6	1.3
SWFTS-IW12	7.6	6.0	6.0	11.1	-	14.8	-	7.9	10.0	9.5	3.9	5.0	21.4	23.9	-	17.7	-	21.1	13.7	13.1	0.5	0.8	3.6	2.2	-	1.2	-	2.7	1.4	1.4
SWFTS-IW13A	6.0	3.8	3.7	7.0	-	5.1	22.0	7.4	8.3	9.5	8.6	0.0	10.7	24.4	-	19.5	20.0	19.4	15.6	15.4	1.4	0.0	2.9	3.5	-	3.9	0.9	2.6	1.9	1.6
SWFTS-IW13B	4.4	2.9	2.3	--- (4)	1.0	--- (4)	9.0	3.8	7.2	6.3	13.9	21.3	30.6	--- (4)	34.0	--- (4)	35.0	32.2	23.1	25.2	3.2	7.3	13.1	--- (4)	34.0	--- (4)	3.9	8.4	3.2	4.0
SWFTS-IW14	7.3	4.5	4.3	12.5	-	8.9	-	6.7	10.0	7.4	9.1	9.4	15.9	18.1	-	21.6	-	19.8	16.5	16.9	1.2	2.1	3.7	1.5	-	2.4	-	2.9	1.7	2.3
SWFTS-IW15	5.9	4.7	5.8	8.3	-	7.9	-	6.9	11.0	8.2	12.7	15.4	16.3	29.4	-	25.9	-	20.0	17.5	16.8	2.1	3.2	2.8	3.6	-	3.3	-	2.9	1.6	2.0
SWFTS-IW16A	5.7	3.6	5.0	11.0	-	9.9	-	7.0	9.7	8.7	5.5	8.0	15.8	30.0	-	23.0	-	21.5	23.2	26.4	1.0	2.2	3.2	2.7	-	2.3	-	3.1	2.4	3.0
SWFTS-IW16B	5.6	4.3	4.9	5.9	-	10.2	-	7.8	9.3	8.3	2.2	8.8	10.0	17.0	-	25.5	-	24.2	23.7	24.1	0.4	2.0	2.1	2.9	-	2.5	-	3.1	2.5	2.9
SWFTS-IW17	7.0	5.7	5.5	6.9	-	15.8	-	7.6	8.7	8.0	9.3	15.5	21.1	26.8	-	22.3	-	24.8	20.7	24.8	1.3	2.7	3.9	3.9	-	1.4	-	3.3	2.4	3.1
SWFTS-IW18	5.7	5.3	5.3	3.9	8.2	9.6	-	7.1	9.9	7.9	1.5	12.8	11.1	29.4	15.6	20.1	-	21.4	24.1	22.5	0.3	2.4	2.1	7.5	1.9	2.1	-	3.0	2.4	2.8
SWFTS-IW19	6.4	--- (3)	5.8	--- (4)	5.5	8.5	-	5.3	10.0	7.9	6.3	--- (3)	10.0	--- (4)	24.3	25.7	-	30.1	22.5	21.8	1.0	-	1.7	--- (4)	4.4	3.0	-	5.7	2.3	2.8
SWFTS-IW20	6.3	6.0	4.8	7.3	-	5.6	17.5	8.6	10.4	7.6	4.7	21.7	25.0	25.5	-	28.7	35.0	23.5	21.9	25.2	0.7	3.6	5.2	3.5	-	5.1	2.0	2.7	2.1	3.3

Notes:

gpm - gallons per minute

psi - pounds per square inch

1. Injection Test 1 was conducted in October 2019 following the first well maintenance event.

2. Injection Test 2 was conducted in February 2020 following the second well maintenance event.. Due to the short time-frame and low volumes injected as part of the test, pressure and flow rate data shown are from the final measurements recorded during the test in order to most closely approximate pressure and flow rates during a full-scale injection event.

3. No injections were conducted at SWFTS-IW04, SWFTS-IW08, and SWFTS-IW19 during the second injection event.

4. Injections at wells SWFTS-IW13B and SWFTS-IW19 were not possible during injection event 4 due to high pressures observed immediately upon attempting to injection carbon substrate solution. Injections at wells SWFTS-IW13B were not possible during injection event 5 due to high pressures observed immediately upon attempting to injection carbon substrate solution.

Appendix B
Groundwater Sampling Field Logs

TETRA TECH

WELL WATER LEVEL MEASUREMENT LOG

Task Name: SWF Area Bioremediation Treatability Study	Task No: M11	Date: February 1, 2021
Task Manager: Dana Grady	Event: EM31	*Recorded by:* J. Bunkers G. Schuler
Equipment Model/Type: Solinst Water Level Meter	*Serial Number:*	

Time	Well ID	Measuring Point	Depth to Static Water Level (ft BMP)	Total Depth (ft BMP)	Condition of Well and Well Seal
09:11	PC-58	TOC	20.27	38.60	Good
09:21	PC-88	TOC	5.89	46.70	Good
08:54	PC-91	TOC	10.54	19.95	Good
08:57	PC-92	TOC	10.05	37.10	Good
09:04	PC-94	TOC	12.95	20.00	Good
09:27	SWFTS-MW01	TOC	14.28	38.30	Good
09:31	SWFTS-MW02	TOC	11.83	31.30	Good
09:34	SWFTS-MW03	TOC	13.41	41.50	Good
09:38	SWFTS-MW04	TOC	9.20	39.60	Good
09:42	SWFTS-MW05A	TOC	17.52	28.30	Good
09:45	SWFTS-MW05B	TOC	17.46	41.70	Good
09:48	SWFTS-MW06A	TOC	4.84	20.90	Good
09:50	SWFTS-MW06B	TOC	5.05	35.00	Good
09:53	SWFTS-MW07A	TOC	12.25	29.80	Good
09:57	SWFTS-MW07B	TOC	11.95	38.50	Good
10:02	SWFTS-MW08A	TOC	15.58	34.80	Good
10:05	SWFTS-MW08C	TOC	13.90	69.70	Good
10:14	SWFTS-MW09A	TOC	13.55	29.00	Good
08:44	SWFTS-MW09B	TOC	13.70	38.80	Good
08:53	SWFTS-MW10A	TOC	10.38	34.55	Good
10:11	SWFTS-MW10C	TOC	8.54	63.20	Good
09:09	SWFTS-MW11	TOC	16.37	39.00	Good
09:15	SWFTS-MW12	TOC	17.98	39.80	Good
09:22	SWFTS-MW13	TOC	23.21	47.25	Good
09:29	SWFTS-MW14	TOC	10.47	36.05	Good
09:37	SWFTS-MW15	TOC	13.51	33.70	Good
09:45	SWFTS-MW16	TOC	22.23	39.40	Good
09:52	SWFTS-MW17	TOC	26.23	51.20	Good
09:59	SWFTS-MW18	TOC	15.54	35.05	Good
10:05	SWFTS-MW19	TOC	9.99	30.05	Good
10:11	SWFTS-MW20	TOC	12.61	35.34	Good
10:16	SWFTS-MW21	TOC	15.73	37.65	Good
10:41	SWFTS-MW22	TOC	11.05	31.31	Good
10:24	SWFTS-MW23	TOC	12.43	35.74	Good
10:37	SWFTS-MW24	TOC	12.94	36.56	Good
10:28	SWFTS-MW25	TOC	10.43	42.80	Good

BMP = Below Measuring Point DP = Dedicated Pump OS = Offsite Storage TOC = Top of Casing (Well Riser)

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-01	**Well ID: PC-58**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 20.21	Screened Interval Top (ft): 7.8		Pump Intake Depth (ft): 22.60	
Well Depth (ft): 38.60	Screened/Open Interval Bottom (ft): 32.8		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:16				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:16	21.9		9.48		2.342		1.18		36.0		33.4		300	20.21		Clear/None
13:19	22.4		9.39		2.357		0.76		27.4		16.5		300	20.21	900	Clear/None
13:22	22.3		9.51		2.353		0.64		18.2		12.1		300	20.21	1800	Clear/None
13:25	22.4	0%	9.48	0.0	2.358	0%	0.58	6%	12.4	2.5	11.9	6%	300	20.21	2700	Clear/None
13:28	22.3	0%	9.48	0.0	2.354	0%	0.54	1%	10.2	0.3	13.0	2%	300	20.21	3600	Clear/None
13:31	22.3	0%	9.46	0.0	2.355	0%	0.52	4%	7.2	2.7	13.1	3%	300	20.21	4500	Clear/None

Stop Purge Time: 13:32	**Sample Time: 13:40**	**QA/QC Sample Time(s): n/a**
	Sample ID: PC-58-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: PC-88**
Field Samplers: J. Bunkers				
Transducer Removal Time: 07:09	Transducer Redeployment Time: 08:45		General Well Condition: Good	
Depth to Water (ft): 5.90	Screened Interval Top (ft): 40.0		Pump Intake Depth (ft): 44.90	
Well Depth (ft): 46.60	Screened/Open Interval Bottom (ft): 50.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:58				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:58	20.4		4.85		2.463		1.70		116.6		51.0		250	5.90		Clear/None
08:01	21.1		5.82		2.504		0.78		81.1		12.4		250	5.90	750	Clear/None
08:04	21.1		6.33		2.508		0.65		64.8		6.1		250	5.90	1500	Clear/None
08:07	21.2		6.41		2.516		0.59		54.0		4.7		250	5.90	2250	Clear/None
08:11	21.1		6.51		2.488		0.55		46.6		3.1		250	5.90	3250	Clear/None
08:14	21.1	0%	6.54	0.0	2.500	0%	0.52	4%	41.2	4.4	3.8	<10	250	5.90	4000	Clear/None
08:17	21.0	0%	6.49	0.0	2.503	0%	0.50	0%	36.4	0.4	1.2	<10	250	5.90	4750	Clear/None
08:20	21.0	0%	6.49	0.0	2.504	0%	0.48	<0.5	32.7	4.1	0.7	<10	250	5.90	5500	Clear/None

Stop Purge Time: 08:21	**Sample Time: 08:30**	**QA/QC Sample Time(s): 08:30**
	Sample ID: PC-88-EM31	**QA/QC Sample ID(s): PC-88-EM31-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-01	**Well ID: PC-91**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.52	Screened Interval Top (ft): 11.5		Pump Intake Depth (ft): 16.00	
Well Depth (ft): 19.90	Screened/Open Interval Bottom (ft): 21.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:36				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:36	24.1		6.84		3.640		0.90		-57.3		63.7		300	10.52		Clear/None
10:39	25.0		8.11		3.745		0.63		-92.0		52.7		300	10.52	900	Clear/None
10:42	25.1		8.62		3.777		0.56		-109.7		36.2		300	10.52	1800	Clear/None
10:45	25.1		8.63		3.798		0.54		-120.0		32.0		300	10.52	2700	Clear/None
10:48	25.2		8.62		3.806		0.52		-127.1		27.7		300	10.52	3600	Clear/None
10:51	25.3	0%	8.50	0.0	3.809	0%	0.49	<0.5	-132.5	4.2	26.8	9%	300	10.52	4500	Clear/None
10:54	25.2	0%	8.55	0.0	3.812	0%	0.47	<0.5	-137.4	0.7	23.8	2%	300	10.52	5400	Clear/None
10:57	25.2	0%	8.56	0.0	3.821	0%	0.46	<0.5	-140.2	3.5	22.6	7%	300	10.52	6300	Clear/None

Stop Purge Time: 10:58	**Sample Time: 11:00**	**QA/QC Sample Time(s): n/a**
	Sample ID: PC-91-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 1.5** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-01	**Well ID: PC-92**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.12	Screened Interval Top (ft): 26.5		Pump Intake Depth (ft): 31.20	
Well Depth (ft): 37.10	Screened/Open Interval Bottom (ft): 36.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:23				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:23	22.5		9.77		3.744		1.62		-2.0		262.5		250	10.12		Clear/None
11:26	22.5		9.59		3.773		0.81		0.8		178.2		250	10.12	750	Clear/None
11:29	22.4		9.58		3.786		0.68		1.4		157.9		250	10.12	1500	Clear/None
11:32	22.5	0%	9.58	0.0	3.798	0%	0.62	5%	1.2	0.4	125.0	12%	250	10.12	2250	Clear/None
11:36	22.5	0%	9.57	0.0	3.816	0%	0.59	0%	0.9	0.1	102.0	8%	250	10.12	3250	Clear/None
11:39	22.6	0%	9.52	0.0	3.861	0%	0.55	6%	0.3	0.5	105.8	4%	250	10.12	4000	Clear/None

Stop Purge Time: 11:40	**Sample Time: 11:45**	**QA/QC Sample Time(s): n/a**
	Sample ID: PC-92-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-01	**Well ID: PC-94**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.95	Screened Interval Top (ft): 9.5		Pump Intake Depth (ft): 16.30	
Well Depth (ft): 20.00	Screened/Open Interval Bottom (ft): 19.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:05				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:05	22.7		8.79		4.442		0.95		51.5		242.1		300	12.95		Clear/None
12:08	23.1		8.79		4.479		0.65		49.3		84.5		300	12.95	900	Clear/None
12:11	23.2		8.84		4.486		0.59		47.6		102.0		300	12.95	1800	Clear/None
12:15	23.3		8.91		4.493		0.54		46.0		58.5		300	12.95	3000	Clear/None
12:18	23.2		9.00		4.477		0.52		44.4		81.3		300	12.95	3900	Clear/None
12:21	23.3		9.11		4.487		0.50		43.1		56.6		300	12.95	4800	Clear/None
12:24	23.2	0%	9.37	0.0	4.473	0%	0.49	<0.5	41.7	1.0	49.4	28%	300	12.95	5700	Clear/None
12:27	23.2	0%	9.32	0.0	4.464	0%	0.48	<0.5	40.6	0.1	33.7	12%	300	12.95	6600	Clear/None
12:30	23.3	0%	9.28	0.0	4.464	0%	0.48	<0.5	39.7	1.0	32.4	15%	300	12.95	7500	Clear/None

Stop Purge Time: 12:31	**Sample Time: 12:35**	**QA/QC Sample Time(s): n/a**
	Sample ID: PC-94-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW01**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 14.28	Screened Interval Top (ft): 24.2		Pump Intake Depth (ft): 21.30	
Well Depth (ft): 38.40	Screened/Open Interval Bottom (ft): 38.9		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:01				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:01	22.3		5.27		4.475		1.01		106.2		2.9		300	14.28		Clear/None
09:04	23.1		5.34		4.578		0.65		92.8		1.2		300	14.28	900	Clear/None
09:30	22.9		5.56		4.552		0.73		110.8		-0.2		300	14.28	8700	Clear/None
09:33	23.4		6.27		4.607		0.55		95.5		-0.4		300	14.28	9600	Clear/None
09:37	23.4		6.51		4.605		0.51		89.1		-0.3		300	14.28	10800	Clear/None
09:40	23.4	0%	6.57	0.0	4.606	0%	0.48	<0.5	84.5	3.6	-0.1	<10	300	14.28	11700	Clear/None
09:43	23.4	0%	6.63	0.0	4.593	0%	0.47	<0.5	80.8	0.1	0.4	<10	300	14.28	12600	Clear/None
09:46	23.5	0%	6.58	0.0	4.610	0%	0.46	<0.5	77.5	3.4	1.1	<10	300	14.28	13500	Clear/None

Stop Purge Time: 09:47	**Sample Time: 09:50**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW01-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW02**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 11.82	Screened Interval Top (ft): 18.4		Pump Intake Depth (ft): 25.50	
Well Depth (ft): 31.20	Screened/Open Interval Bottom (ft): 33.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:17				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:17	24.7		6.53		5.988		1.09		69.4		243.9		300	11.82		Clear/None
10:20	25.0		6.51		6.027		0.72		67.9		194.2		300	11.82	900	Clear/None
10:23	25.0		6.56		6.018		0.63		67.2		154.4		300	11.82	1800	Clear/None
10:26	25.0	0%	6.56	0.0	6.012	0%	0.59	5%	66.2	0.6	124.5	7%	300	11.82	2700	Clear/None
10:30	25.2	0%	6.49	0.0	6.044	0%	0.56	0%	65.8	0.2	142.8	6%	300	11.82	3900	Clear/None
10:33	25.0	0%	6.54	0.0	6.025	0%	0.53	5%	64.7	0.9	135.8	1%	300	11.82	4800	Clear/None

Stop Purge Time: 10:34 | **Sample Time: 10:40** | **QA/QC Sample Time(s): n/a**

Sample ID: SWFTS-MW02-EM31 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW03**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.40	Screened Interval Top (ft): 27.2		Pump Intake Depth (ft): 34.00	
Well Depth (ft): 41.60	Screened/Open Interval Bottom (ft): 42.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:02				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:02	22.8		6.44		5.175		1.69		67.0		285.9		300	13.40		Clear/None
11:05	23.0		6.38		5.190		0.76		73.5		299.9		300	13.40	900	Clear/None
11:09	23.3		6.37		5.207		0.63		77.5		147.8		300	13.40	2100	Clear/None
11:12	23.0		6.42		5.176		0.57		80.0		86.9		300	13.40	3000	Clear/None
11:15	23.0	0%	6.38	0.0	5.174	0%	0.53	3%	80.0	0.1	108.5	59%	300	13.40	3900	Clear/None
11:18	23.4	1%	6.31	0.0	5.210	0%	0.52	1%	79.9	0.2	48.6	28%	300	13.40	4800	Clear/None
11:21	23.1	0%	6.38	0.0	5.177	0%	0.49	<0.5	80.3	0.2	47.5	30%	300	13.40	5700	Clear/None

Stop Purge Time: 11:22 | **Sample Time: 11:25** | **QA/QC Sample Time(s): n/a**

Sample ID: SWFTS-MW03-EM31 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW04**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.20	Screened Interval Top (ft): 25.8		Pump Intake Depth (ft): 32.80	
Well Depth (ft): 39.60	Screened/Open Interval Bottom (ft): 40.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:49				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:49	22.1		6.61		3.408		1.08		84.4		119.7		300	9.20		Clear/None
11:52	22.4		6.62		3.292		0.67		81.9		97.4		300	9.20	900	Clear/None
11:55	22.3	0%	6.62	0.0	3.245	0%	0.58	7%	80.1	1.2	89.2	22%	300	9.20	1800	Clear/None
11:58	22.4	0%	6.61	0.0	3.242	0%	0.53	1%	78.9	0.0	66.4	9%	300	9.20	2700	Clear/None
12:01	22.3	0%	6.62	0.0	3.251	0%	0.51	5%	77.7	1.2	63.7	12%	300	9.20	3600	Clear/None

Stop Purge Time: 12:02	**Sample Time: 12:05**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW04-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW05A**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.50	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.80	
Well Depth (ft): 28.20	Screened/Open Interval Bottom (ft): 29.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:29				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:29	24.7		6.32		6.866		0.97		101.4		9.8		300	17.50		Clear/None
12:32	24.9	0%	6.25	0.0	6.888	0%	0.70	6%	93.9	3.1	5.1	<10	300	17.50	900	Clear/None
12:36	25.0	0%	6.24	0.0	6.905	0%	0.65	1%	90.2	0.6	4.6	<10	300	17.50	2100	Clear/None
12:39	25.1	0%	6.24	0.0	6.918	0%	0.63	4%	88.3	2.5	3.7	<10	300	17.50	3000	Clear/None

Stop Purge Time: 12:40 | **Sample Time: 12:45** | **QA/QC Sample Time(s): 12:45**

Sample ID: SWFTS-MW05A-EM31 | **QA/QC Sample ID(s): SWFTS-MW05A-EM31-MS/MSD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW05B**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.45	Screened Interval Top (ft): 32.3		Pump Intake Depth (ft): 36.60	
Well Depth (ft): 41.70	Screened/Open Interval Bottom (ft): 42.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:15				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:15	24.9		9.35		5.599		1.15		58.2		67.6		300	17.45		Clear/None
13:18	24.6		7.96		5.515		0.57		64.7		51.2		300	17.45	900	Clear/None
13:21	24.4		7.69		5.467		0.50		65.6		69.8		300	17.45	1800	Clear/None
13:24	24.3	0%	7.60	0.0	5.456	0%	0.48	<0.5	65.7	0.3	84.0	35%	300	17.45	2700	Clear/None
13:28	24.3	0%	7.59	0.0	5.463	0%	0.45	<0.5	65.5	0.1	50.9	17%	300	17.45	3900	Clear/None
13:31	24.4	0%	7.58	0.0	5.470	0%	0.43	<0.5	65.1	0.3	50.9	17%	300	17.45	4800	Clear/None

Stop Purge Time: 13:32	**Sample Time: 13:40**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW05B-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW06A**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 4.80	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 16.20	
Well Depth (ft): 20.70	Screened/Open Interval Bottom (ft): 21.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:36				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:36	20.9		4.81		2.705		1.27		88.6		173.8		300	4.80		Clear/None
07:40	21.4		5.78		2.733		0.67		74.9		197.3		300	4.80	1200	Clear/None
07:43	21.5		6.11		2.732		0.58		68.9		211.8		300	4.80	2100	Clear/None
07:46	21.5		6.32		2.728		0.54		65.1		188.9		300	4.80	3000	Clear/None
07:49	21.6		6.44		2.731		0.51		62.5		249.3		300	4.80	3900	Clear/None
07:53	21.6		6.50		2.722		0.49		57.3		280.3		300	4.80	5100	Clear/None
07:56	21.5	0%	6.64	0.1	2.724	0%	0.47	<0.5	49.3	4.0	321.4	12%	300	4.80	6000	Clear/None
07:59	21.6	0%	6.72	0.0	2.727	0%	0.46	<0.5	44.5	0.8	261.1	8%	300	4.80	6900	Clear/None
08:03	21.6	0%	6.72	0.0	2.721	0%	0.45	<0.5	42.2	3.1	272.4	4%	300	4.80	8100	Clear/None

Stop Purge Time: 08:04	**Sample Time: 08:10**	**QA/QC Sample Time(s): 08:10**
	Sample ID: SWFTS-MW06A-EM31	**QA/QC Sample ID(s): SWFTS-MW06A-EM31-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW06B**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 5.04	Screened Interval Top (ft): 25.9		Pump Intake Depth (ft): 30.30	
Well Depth (ft): 35.10	Screened/Open Interval Bottom (ft): 35.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:36				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:36	21.1		6.27		2.734		1.21		95.1		163.5		300	5.04		Clear/None
08:39	21.3		6.53		2.749		0.68		88.3		190.2		300	5.04	900	Clear/None
08:43	21.4		6.57		2.748		0.57		85.1		128.6		300	5.04	2100	Clear/None
08:46	21.3		6.52		2.738		0.56		84.6		125.9		300	5.04	3000	Clear/None
08:49	21.3		6.46		2.736		0.53		84.0		125.8		300	5.04	3900	Clear/None
08:53	21.4		6.40		2.733		0.51		83.3		127.1		300	5.04	5100	Clear/None
08:56	21.4	0%	6.31	0.0	2.732	0%	0.49	<0.5	81.9	1.9	150.4	4%	300	5.04	6000	Clear/None
08:59	21.4	0%	6.25	0.0	2.729	0%	0.48	<0.5	79.9	0.1	157.7	0%	300	5.04	6900	Clear/None
09:03	21.4	0%	6.25	0.0	2.727	0%	0.47	<0.5	78.3	1.7	164.9	4%	300	5.04	8100	Clear/None

Stop Purge Time: 09:04	**Sample Time: 09:10**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW06B-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW07A**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.22	Screened Interval Top (ft): 15.0		Pump Intake Depth (ft): 22.00	
Well Depth (ft): 29.80	Screened/Open Interval Bottom (ft): 29.5		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:38				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:38	23.4		5.64		4.155		0.94		139.2		104.2		300	12.22		Clear/None
09:41	23.5		5.70		4.165		0.71		129.6		14.6		300	12.22	900	Clear/None
09:44	23.5		5.79		4.165		0.62		117.0		9.7		300	12.22	1800	Clear/None
09:48	23.5		5.77		4.164		0.57		107.5		9.5		300	12.22	3000	Clear/None
09:51	23.5		5.64		4.179		0.50		102.2		43.1		300	12.22	3900	Clear/None
09:54	23.5	0%	5.69	0.0	4.197	0%	0.46	<0.5	99.5	1.9	29.7	134%	300	12.22	4800	Clear/None
09:57	23.5	0%	5.66	0.0	4.212	0%	0.44	<0.5	97.3	0.3	5.1	<10	300	12.22	5700	Clear/None
10:00	23.5	0%	5.62	0.0	4.220	0%	0.43	<0.5	95.9	1.7	3.2	<10	300	12.22	6600	Clear/None

Stop Purge Time: 10:01	**Sample Time: 10:05**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW07A-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW07B**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 11.93	Screened Interval Top (ft): 33.8		Pump Intake Depth (ft): 35.70	
Well Depth (ft): 38.60	Screened/Open Interval Bottom (ft): 38.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:30				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:30	23.0		5.47		3.784		1.24		78.1		17.7		300	11.93		Clear/None
10:34	22.9		5.46		3.820		0.71		63.4		28.0		300	11.93	1200	Clear/None
10:37	22.9		5.44		3.826		0.72		60.3		29.9		300	11.93	2100	Clear/None
10:41	22.9	0%	5.40	0.0	3.845	0%	0.56	6%	58.5	1.6	30.4	25%	300	11.93	3300	Clear/None
10:44	23.0	0%	5.45	0.0	3.852	0%	0.52	1%	56.5	0.4	20.7	14%	300	11.93	4200	Clear/None
10:47	23.0	0%	5.38	0.0	3.855	0%	0.50	5%	55.7	1.2	21.3	11%	300	11.93	5100	Clear/None

Stop Purge Time: 10:48	**Sample Time: 10:55**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW07B-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW08A**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.64	Screened Interval Top (ft): 20.2		Pump Intake Depth (ft): 27.00	
Well Depth (ft): 34.80	Screened/Open Interval Bottom (ft): 34.8		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:27				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:27	23.1		5.29		4.368		0.97		93.5		8.8		300	15.64		Clear/None
11:31	23.2		5.18		4.371		0.72		93.9		6.9		300	15.64	1200	Clear/None
11:34	23.2		5.16		4.369		0.63		91.3		7.0		300	15.64	2100	Clear/None
11:37	23.2		5.15		4.359		0.60		88.7		9.1		300	15.64	3000	Clear/None
11:41	23.2		5.13		4.357		0.57		85.1		11.2		300	15.64	4200	Clear/None
11:44	23.2		5.12		4.353		0.55		82.0		14.8		300	15.64	5100	Clear/None
11:48	23.2		5.10		4.349		0.54		79.4		17.7		300	15.64	6300	Clear/None
11:51	23.2	0%	5.09	0.0	4.345	0%	0.53	2%	78.4	1.5	19.9	17%	300	15.64	7200	Clear/None
11:55	23.2	0%	5.07	0.0	4.344	0%	0.52	0%	76.6	0.3	24.8	3%	300	15.64	8400	Clear/None
11:58	23.2	0%	5.06	0.0	4.338	0%	0.50	3%	75.8	1.1	27.4	14%	300	15.64	9300	Clear/None

Stop Purge Time: 11:59 | **Sample Time: 12:05** | **QA/QC Sample Time(s): n/a**

Sample ID: SWFTS-MW08A-EM31 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW09A**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.54	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.70	
Well Depth (ft): 29.00	Screened/Open Interval Bottom (ft): 28.9		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:56				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:56	23.8		6.45		4.507		1.52		185.6		3.7		300	13.54		Clear/None
12:59	23.7		6.76		4.531		1.16		125.2		1.7		300	13.54	900	Clear/None
13:03	23.5		6.92		4.510		1.12		106.6		2.0		300	13.54	2100	Clear/None
13:06	23.6	0%	7.02	0.0	4.506	0%	0.99	6%	88.4	5.2	1.6	<10	300	13.54	3000	Clear/None
13:10	23.7	0%	7.05	0.0	4.508	0%	0.94	0%	80.3	2.9	1.8	<10	300	13.54	4200	Clear/None
13:13	23.8	0%	7.07	0.0	4.514	0%	0.87	6%	80.8	2.4	1.7	<10	300	13.54	5100	Clear/None

Stop Purge Time: 13:14	**Sample Time: 13:20**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW09A-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-01	**Well ID: SWFTS-MW09B**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.68	Screened Interval Top (ft): 34.4		Pump Intake Depth (ft): 36.20	
Well Depth (ft): 38.80	Screened/Open Interval Bottom (ft): 39.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:08				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:08	22.8		7.07		4.800		2.47		61.3		3.4		345	13.68		Clear/None
11:11	23.0		7.04		5.012		1.54		55.2		2.2		345	13.68	1035	Clear/None
11:14	23.1	0%	7.04	0.0	5.074	0%	1.25	9%	62.2	1.0	1.7	<10	345	13.68	2070	Clear/None
11:17	23.1	0%	7.04	0.0	5.091	0%	1.13	0%	61.2	0.0	1.3	<10	345	13.68	3105	Clear/None
11:20	23.1	0%	7.04	0.0	5.106	0%	1.03	9%	60.3	0.9	1.2	<10	345	13.68	4140	Clear/None

Stop Purge Time: 11:21	**Sample Time: 11:40**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW09B-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-01	**Well ID: SWFTS-MW10A**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.35	Screened Interval Top (ft): 20.4		Pump Intake Depth (ft): 27.40	
Well Depth (ft): 34.55	Screened/Open Interval Bottom (ft): 35.0		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:24				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:24	24.0		6.99		6.412		3.39		111.2		142.1		345	10.40		Clear/None
12:27	24.0		6.93		6.451		1.98		115.4		146.8		345	10.40	1035	Clear/None
12:30	24.1		6.92		6.458		1.50		117.4		145.6		345	10.40	2070	Clear/None
12:33	24.1		6.92		6.467		1.30		117.4		160.0		345	10.40	3105	Clear/None
12:36	24.0		6.91		6.444		1.12		109.4		151.3		345	10.40	4140	Clear/None
12:39	24.0	0%	6.91	0.0	6.445	0%	0.93	5%	106.8	6.2	1.1	<10	345	10.40	5175	Clear/None
12:42	24.0	0%	6.90	0.0	6.439	0%	0.87	1%	101.0	0.4	0.8	<10	345	10.40	6210	Clear/None
12:45	24.0	0%	6.90	0.0	6.446	0%	0.84	4%	94.0	6.6	1.1	<10	345	10.40	7245	Clear/None

Stop Purge Time: 12:46	**Sample Time: 12:55**	**QA/QC Sample Time(s): 12:55**
	Sample ID: SWFTS-MW10A-EM31	**QA/QC Sample ID(s): SWFTS-MW10A-EM31-MS/MSD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-01	**Well ID: SWFTS-MW11**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 16.36	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.60	
Well Depth (ft): 39.00	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:31				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:31	22.9		7.33		5.548		6.85		83.6		0.2		285	16.39		Clear/None
13:34	23.6	0%	7.28	0.0	5.627	0%	6.40	1%	85.7	7.5	0.1	<10	285	16.39	855	Clear/None
13:37	23.9	0%	7.27	0.0	5.652	0%	6.31	0%	96.9	3.7	0.2	<10	285	16.39	1710	Clear/None
13:41	24.0	0%	7.26	0.0	5.665	0%	6.27	0%	96.9	3.7	0.1	<10	285	16.39	2850	Clear/None

Stop Purge Time: 13:42 | **Sample Time: 13:55** | **QA/QC Sample Time(s): 13:55**

Sample ID: SWFTS-MW11-EM31 | **QA/QC Sample ID(s): SWFTS-MW11-EM31-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW12**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.98	Screened Interval Top (ft): 15.8		Pump Intake Depth (ft): 27.90	
Well Depth (ft): 39.80	Screened/Open Interval Bottom (ft): 40.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:40				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:40	20.7		6.52		5.173		1.52		-39.6		2.7		145	18.03		Clear/None
07:43	21.1		6.55		5.325		1.27		-50.3		2.9		145	18.03	435	Clear/None
07:46	21.1	1%	6.57	0.0	5.412	0%	1.14	1%	-55.8	2.9	2.9	<10	145	18.03	870	Clear/None
07:49	21.1	1%	6.58	0.0	5.428	0%	1.09	2%	-59.9	1.2	3.5	<10	145	18.03	1305	Clear/None
07:52	20.4	2%	6.58	0.0	5.374	0%	1.13	0%	-60.3	1.6	3.3	<10	145	18.03	1740	Clear/None

Stop Purge Time: 07:53 | **Sample Time: 08:20** | **QA/QC Sample Time(s): n/a**

Sample ID: SWFTS-MW12-EM31 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 1.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW13**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 23.21	Screened Interval Top (ft): 17.8		Pump Intake Depth (ft): 32.30	
Well Depth (ft): 47.25	Screened/Open Interval Bottom (ft): 47.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:06				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:06	21.3		7.30		6.110		6.61		92.6		1.3		330	23.21		Clear/None
09:09	22.8	0%	7.22	0.0	6.919	0%	6.08	0%	97.3	8.8	1.1	<10	330	23.21	990	Clear/None
09:12	22.9	0%	7.22	0.0	7.039	1%	5.99	0%	108.1	2.0	1.1	<10	330	23.21	1980	Clear/None
09:15	23.0	0%	7.24	0.0	6.938	0%	6.06	0%	112.9	6.8	1.0	<10	330	23.21	2970	Clear/None

Stop Purge Time: 09:16 | **Sample Time: 09:30** | **QA/QC Sample Time(s): n/a**

Sample ID: SWFTS-MW13-EM31 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW14**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.48	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.40	
Well Depth (ft): 36.05	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:36				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:36	23.5		6.89		5.423		1.74		-88.4		64.7		345	10.52		Clear/None
10:39	23.8		6.87		5.545		1.00		-118.4		122.7		345	10.52	1035	Clear/None
10:43	23.8		6.88		5.540		0.78		-126.1		162.6		345	10.52	2415	Clear/None
10:46	23.8		6.89		5.532		0.69		-127.9		266.8		345	10.52	3450	Clear/None
10:49	23.7		6.89		5.531		0.61		-129.3		21.2		345	10.52	4485	Clear/None
10:52	23.8	0%	6.90	0.0	5.538	0%	0.53	5%	-133.0	1.7	60.4	92%	345	10.52	5520	Clear/None
10:55	23.9	0%	6.91	0.0	5.531	0%	0.49	<0.5	-135.1	0.4	17.4	44%	345	10.52	6555	Clear/None
10:58	23.9	0%	6.89	0.0	5.545	0%	0.49	<0.5	-136.0	1.3	16.3	48%	345	10.52	7590	Clear/None

Stop Purge Time: 10:59	**Sample Time: 11:10**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW14-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW15**
Field Samplers: G. Schuler				
Transducer Removal Time: 11:31	Transducer Redeployment Time: 12:25		General Well Condition: Good	
Depth to Water (ft): 13.49	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 24.40	
Well Depth (ft): 33.70	Screened/Open Interval Bottom (ft): 34.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:45				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:45	22.8		7.00		4.939		1.49		-10.5		27.6		330	13.49		Clear/None
11:48	23.1		7.00		5.012		0.90		-36.1		18.6		330	13.49	990	Clear/None
11:51	23.1		7.00		5.011		0.93		-44.6		18.7		330	13.49	1980	Clear/None
11:54	23.1		7.00		5.003		0.91		-52.6		26.7		330	13.49	2970	Clear/None
11:57	23.2		6.99		5.002		1.01		-55.7		25.5		330	13.49	3960	Clear/None
12:00	23.3		6.99		5.001		1.27		-48.4		28.2		330	13.49	4950	Clear/None
12:05	23.2		6.99		5.004		1.54		-36.3		16.2		330	13.49	6600	Clear/None
12:08	23.2	0%	6.99	0.0	5.004	0%	1.83	0%	-26.0	6.6	17.6	5%	330	13.49	7590	Clear/None
12:11	23.3	0%	7.00	0.0	5.004	0%	1.81	1%	-18.9	0.5	16.3	2%	330	13.49	8580	Clear/None
12:14	23.2	0%	7.00	0.0	4.991	0%	1.87	1%	-13.3	6.1	16.1	3%	330	13.49	9570	Clear/None

Stop Purge Time: 12:15	**Sample Time: 12:25**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW15-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW16**
Field Samplers: G. Schuler				
Transducer Removal Time: 12:50	Transducer Redeployment Time: 13:30		General Well Condition: Good	
Depth to Water (ft): 23.20	Screened Interval Top (ft): 21.8		Pump Intake Depth (ft): 31.30	
Well Depth (ft): 39.40	Screened/Open Interval Bottom (ft): 41.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:58				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:58	23.4		6.84		4.627		1.42		-41.5		121.4		300	23.25		Clear/None
13:01	23.6		6.81		4.659		0.81		-56.9		81.9		300	23.25	900	Clear/None
13:04	23.6		6.80		4.665		0.78		-64.7		88.4		300	23.25	1800	Clear/None
13:07	23.6	0%	6.80	0.0	4.671	0%	0.64	9%	-70.8	4.6	72.3	5%	300	23.25	2700	Clear/None
13:10	23.6	0%	6.80	0.0	4.689	0%	0.58	0%	-75.9	0.5	77.1	0%	300	23.25	3600	Clear/None
13:13	23.6	0%	6.81	0.0	4.712	0%	0.53	9%	-79.4	4.0	80.7	5%	300	23.25	4500	Clear/None

Stop Purge Time: 13:14	**Sample Time: 13:30**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW16-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-02	**Well ID: SWFTS-MW17**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 26.22	Screened Interval Top (ft): 22.8		Pump Intake Depth (ft): 37.40	
Well Depth (ft): 51.20	Screened/Open Interval Bottom (ft): 52.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:59				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:59	23.9		7.25		4.914		6.12		83.5		16.9		100	26.22		Clear/None
14:02	24.3		7.21		4.984		5.77		89.3		10.8		100	26.22	300	Clear/None
14:05	24.4	0%	7.20	0.0	4.971	0%	5.59	0%	90.7	2.1	6.8	<10	100	26.22	600	Clear/None
14:08	24.4	0%	7.20	0.0	4.962	0%	5.57	0%	92.4	0.4	5.1	<10	100	26.22	900	Clear/None
14:11	24.6	0%	7.21	0.0	4.988	0%	5.63	0%	95.3	2.5	4.0	<10	100	26.22	1200	Clear/None

Stop Purge Time: 14:12 | **Sample Time: 14:20** | **QA/QC Sample Time(s): n/a**

Sample ID: SWFTS-MW17-EM31 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW18**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.54	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.10	
Well Depth (ft): 35.05	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:23				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:23	23.7		6.84		5.211		2.03		99.5		24.8		300	15.54		Clear/None
07:26	23.7		6.90		5.241		1.85		111.9		15.3		300	15.54	900	Clear/None
07:29	23.7		6.95		5.247		1.55		111.8		18.5		300	15.54	1800	Clear/None
07:32	23.5		6.99		5.233		1.68		111.6		8.2		300	15.54	2700	Clear/None
07:35	23.5	0%	7.01	0.0	5.240	0%	1.47	4%	111.1	0.4	5.7	<10	300	15.54	3600	Clear/None
07:38	23.6	0%	7.03	0.0	5.255	0%	1.37	2%	110.5	0.2	9.3	<10	300	15.54	4500	Clear/None
07:41	23.5	0%	7.04	0.0	5.246	0%	1.36	2%	110.6	0.1	8.5	<10	300	15.54	5400	Clear/None

Stop Purge Time: 07:42	**Sample Time: 07:55**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW18-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW19**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.96	Screened Interval Top (ft): 11.3		Pump Intake Depth (ft): 21.00	
Well Depth (ft): 30.05	Screened/Open Interval Bottom (ft): 31.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:29				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:29	22.3		7.18		3.553		1.90		81.4		95.4		315	10.00		Clear/None
08:32	22.4		7.17		3.615		1.65		77.6		54.0		315	10.00	945	Clear/None
08:35	22.5		7.18		3.628		1.84		74.6		38.6		315	10.00	1890	Clear/None
08:38	22.5		7.18		3.626		2.20		71.2		31.0		315	10.00	2835	Clear/None
08:41	22.6		7.19		3.622		2.14		74.9		13.7		315	10.00	3780	Clear/None
08:44	22.5		7.20		3.624		2.43		74.8		15.6		315	10.00	4725	Clear/None
08:47	22.6	0%	7.20	0.0	3.630	0%	2.41	1%	77.1	0.6	11.8	23%	315	10.00	5670	Clear/None
08:50	22.6	0%	7.20	0.0	3.632	0%	2.47	1%	75.1	1.4	17.7	14%	315	10.00	6615	Clear/None
08:53	22.6	0%	7.20	0.0	3.643	0%	2.43	0%	77.3	0.8	16.8	8%	315	10.00	7560	Clear/None

Stop Purge Time: 08:54 | **Sample Time: 09:10** | **QA/QC Sample Time(s): 09:10**

Sample ID: SWFTS-MW19-EM31 | **QA/QC Sample ID(s): SWFTS-MW19-EM31-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW20**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.59	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.80	
Well Depth (ft): 35.34	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:42				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:42	24.7		6.60		7.386		1.27		91.8		571.0		300	12.59		Clear/None
09:46	24.9		6.64		7.613		0.83		79.5		260.9		300	12.59	1200	Clear/None
09:49	24.9		6.66		7.644		0.73		72.0		150.5		300	12.59	2100	Clear/None
09:52	25.0	0%	6.67	0.0	7.602	1%	0.64	6%	66.8	8.7	150.0	34%	300	12.59	3000	Clear/None
09:55	24.9	0%	6.68	0.0	7.527	0%	0.60	0%	58.6	0.5	88.7	20%	300	12.59	3900	Clear/None
09:58	25.0	0%	6.69	0.0	7.429	1%	0.57	5%	49.0	9.1	96.7	13%	300	12.59	4800	Clear/None

Stop Purge Time: 09:59 | **Sample Time: 10:10** | **QA/QC Sample Time(s): n/a**

Sample ID: SWFTS-MW20-EM31 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW21**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.71	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.90	
Well Depth (ft): 37.65	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:39				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:39	24.1		7.21		6.654		1.73		68.6		111.0		100	15.71		Clear/None
10:42	24.2		7.19		6.631		1.01		52.9		66.7		100	15.71	300	Clear/None
10:45	24.2		7.18		6.621		0.91		47.9		52.3		100	15.71	600	Clear/None
10:48	24.3		7.18		6.622		0.86		47.8		36.0		100	15.71	900	Clear/None
10:51	24.3		7.17		6.637		0.78		50.9		27.3		100	15.71	1200	Clear/None
10:54	24.3		7.17		6.637		0.71		52.6		20.0		100	15.71	1500	Clear/None
10:58	24.3	0%	7.17	0.0	6.637	0%	0.72	5%	52.3	1.9	17.2	25%	100	15.71	1900	Clear/None
11:01	24.4	0%	7.17	0.0	6.640	0%	0.68	0%	50.1	0.3	12.5	8%	100	15.71	2200	Clear/None
11:04	24.4	0%	7.17	0.0	6.641	0%	0.65	4%	48.8	1.6	11.4	16%	100	15.71	2500	Clear/None

Stop Purge Time: 11:05 | **Sample Time: 11:15** | **QA/QC Sample Time(s): n/a**

Sample ID: SWFTS-MW21-EM31 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW22**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 11.02	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 21.30	
Well Depth (ft): 31.31	Screened/Open Interval Bottom (ft): 31.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:38				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:38	24.0		7.28		4.312		1.86		145.8		388.6		100	11.02	0	Clear/None
11:41	24.2		7.23		4.432		1.03		139.7		304.1		100	11.02	300	Clear/None
11:44	24.2		7.20		4.479		0.85		131.1		242.6		100	11.02	600	Clear/None
11:47	24.3		7.19		4.507		0.74		117.5		205.3		100	11.02	900	Clear/None
11:50	24.3		7.18		4.530		0.69		106.6		203.9		100	11.02	1200	Clear/None
11:54	24.3	0%	7.17	0.0	4.582	1%	0.62	5%	98.3	10.5	140.1	12%	100	11.02	1600	Clear/None
11:57	24.3	0%	7.15	0.0	4.631	0%	0.58	1%	87.6	0.2	118.2	5%	100	11.02	1900	Clear/None
12:00	24.3	0%	7.14	0.0	4.678	1%	0.56	4%	77.6	10.2	115.7	7%	100	11.02	2200	Clear/None

Stop Purge Time: 12:01	**Sample Time: 12:10**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW22-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW23**
Field Samplers: G. Schuler				
Transducer Removal Time: 12:32	Transducer Redeployment Time: 13:09		General Well Condition: Good	
Depth to Water (ft): 12.39	Screened Interval Top (ft): 13.8		Pump Intake Depth (ft): 26.30	
Well Depth (ft): 35.74	Screened/Open Interval Bottom (ft): 33.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:40				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:40	22.5		7.23		3.016		1.17		126.0		23.1		300	12.41		Clear/None
12:44	22.6		7.25		3.021		0.82		112.4		11.0		300	12.41	1200	Clear/None
12:47	22.5		7.26		3.022		0.69		101.4		7.3		300	12.41	2100	Clear/None
12:50	22.5	0%	7.27	0.0	3.023	0%	0.66	2%	93.0	4.8	5.7	<10	300	12.41	3000	Clear/None
12:53	22.5	0%	7.28	0.0	3.022	0%	0.61	5%	85.6	2.6	4.7	<10	300	12.41	3900	Clear/None
12:56	22.8	0%	7.28	0.0	3.046	0%	0.66	2%	86.1	2.1	3.8	<10	300	12.41	4800	Clear/None

Stop Purge Time: 12:57 | **Sample Time: 13:05** | **QA/QC Sample Time(s): n/a**

Sample ID: SWFTS-MW23-EM31 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-03	**Well ID: SWFTS-MW24**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.95	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.90	
Well Depth (ft): 36.56	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:31				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:31	24.1		7.11		5.282		2.25		131.6		281.4		100	12.98		Clear/None
13:35	24.2		7.09		5.343		1.67		132.0		181.0		100	12.98	400	Clear/None
13:38	24.3		7.08		5.362		1.43		115.8		67.1		100	12.98	700	Clear/None
13:41	24.3		7.09		5.369		1.35		100.3		27.0		100	12.98	1000	Clear/None
13:44	24.3		7.09		5.375		1.34		94.5		17.0		100	12.98	1300	Clear/None
13:47	24.4	0%	7.09	0.0	5.386	0%	1.28	1%	90.6	2.9	12.9	32%	100	12.98	1600	Clear/None
13:50	24.4	0%	7.09	0.0	5.395	0%	1.27	1%	88.4	0.7	9.3	<10	100	12.98	1900	Clear/None
13:53	24.4	0%	7.09	0.0	5.387	0%	1.22	2%	84.0	3.7	6.9	<10	100	12.98	2200	Clear/None

Stop Purge Time: 13:54	**Sample Time: 14:05**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW24-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-02-04	**Well ID: SWFTS-MW25**
Field Samplers: G. Schuler				
Transducer Removal Time: 10:20	Transducer Redeployment Time: 11:00		General Well Condition: Good	
Depth to Water (ft): 10.44	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 27.30	
Well Depth (ft): 42.80	Screened/Open Interval Bottom (ft): 42.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:28				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:28	22.7		6.80		4.878		2.06		226.7		1163.3		345	10.51		Clear/None
10:31	23.0		6.89		5.020		0.89		216.2		779.9		345	10.51	1035	Clear/None
10:34	23.2		6.93		5.063		0.74		210.0		597.2		345	10.51	2070	Clear/None
10:37	23.1		6.95		5.062		0.62		205.0		563.0		345	10.51	3105	Clear/None
10:40	23.1		6.97		5.070		0.58		202.0		569.5		345	10.51	4140	Clear/None
10:43	23.1		6.98		5.083		0.53		196.6		427.2		345	10.51	5175	Clear/None
10:47	23.1		6.99		5.089		0.49		193.1		376.8		345	10.51	6555	Clear/None
10:50	23.2		7.02		5.104		0.59		196.5		376.4		345	10.51	7590	Clear/None
10:54	23.2		7.01		5.106		0.49		192.1		328.8		345	10.51	8970	Clear/None
10:57	23.2		7.01		5.095		0.48		188.7		286.6		345	10.51	10005	Clear/None
11:00	23.1	0%	7.01	0.0	5.093	0%	0.45	<0.5	185.4	2.9	413.8	29%	345	10.51	11040	Clear/None
11:03	23.3	0%	7.01	0.0	5.110	0%	0.43	<0.5	182.4	0.1	282.1	12%	345	10.51	12075	Clear/None
11:06	23.3	0%	7.02	0.0	5.112	0%	0.42	<0.5	179.7	2.8	266.0	17%	345	10.51	13110	Clear/None

Stop Purge Time: 11:07	**Sample Time: 11:20**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW25-EM31	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

WELL WATER LEVEL MEASUREMENT LOG

Task Name: SWF Area Bioremediation Treatability Study	Task No: M11	Date: March 26, 2021
Task Manager: Dana Grady	Event: EM32	*Recorded by:* G. Schuler
Equipment Model/Type: Solinst Water Level Meter	*Serial Number: 337327*	

Time	Well ID	Measuring Point	Depth to Static Water Level (ft BMP)	Total Depth (ft BMP)	Condition of Well and Well Seal
16:00	PC-58	TOC	19.85	38.60	Good
15:12	PC-88	TOC	5.56	46.60	Good
14:56	PC-91	TOC	10.36	19.90	Good
14:49	PC-92	TOC	10.90	37.10	Good
14:19	PC-94	TOC	12.89	20.00	Good
14:26	SWFTS-MW01	TOC	14.22	38.40	Good
15:05	SWFTS-MW02	TOC	11.62	31.20	Good
14:16	SWFTS-MW03	TOC	13.37	41.60	Good
15:01	SWFTS-MW04	TOC	8.92	39.60	Good
12:52	SWFTS-MW05A	TOC	17.50	28.20	Good
12:49	SWFTS-MW05B	TOC	17.44	41.70	Good
13:51	SWFTS-MW06A	TOC	4.56	20.70	Good
14:02	SWFTS-MW06B	TOC	4.78	35.10	Good
15:22	SWFTS-MW07A	TOC	12.03	29.80	Good
15:20	SWFTS-MW07B	TOC	11.71	38.60	Good
12:33	SWFTS-MW08A	TOC	15.42	34.80	Good
12:37	SWFTS-MW08C	TOC	13.80	69.70	Good
14:21	SWFTS-MW09A	TOC	13.51	29.00	Good
14:23	SWFTS-MW09B	TOC	13.64	38.80	Good
13:39	SWFTS-MW10A	TOC	10.17	34.55	Good
13:42	SWFTS-MW10C	TOC	8.26	63.20	Good
15:17	SWFTS-MW11	TOC	16.19	39.00	Good
12:39	SWFTS-MW12	TOC	17.82	39.80	Good
12:43	SWFTS-MW13	TOC	23.09	47.25	Good
13:35	SWFTS-MW14	TOC	10.30	36.05	Good
12:24	SWFTS-MW15	TOC	13.42	33.70	Good
13:00	SWFTS-MW16	TOC	22.11	39.40	Good
12:45	SWFTS-MW17	TOC	26.15	51.20	Good
12:58	SWFTS-MW18	TOC	15.50	35.04	Good
13:46	SWFTS-MW19	TOC	9.81	30.05	Good
14:31	SWFTS-MW20	TOC	12.44	35.34	Good
12:55	SWFTS-MW21	TOC	15.73	37.65	Good
14:28	SWFTS-MW22	TOC	10.98	31.31	Good
14:04	SWFTS-MW23	TOC	12.37	35.74	Good
14:12	SWFTS-MW24	TOC	12.94	36.56	Good
14:07	SWFTS-MW25	TOC	10.35	42.80	Good

BMP = Below Measuring Point DP = Dedicated Pump OS = Offsite Storage TOC = Top of Casing (Well Riser)

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-04-01	**Well ID: PC-58**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 19.98	Screened Interval Top (ft): 7.8		Pump Intake Depth (ft): 22.60	
Well Depth (ft): 38.10	Screened/Open Interval Bottom (ft): 32.8		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:33				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:33	23.7		9.31		3.115		4.58		199.1		132.1		300	19.98		Clear/None
11:37	23.3		8.23		2.906		1.32		247.4		187.5		300	19.98	1200	Clear/None
11:40	23.1		8.02		2.889		0.92		267.0		105.6		300	19.98	2100	Clear/None
11:43	23.1		7.94		2.885		0.83		279.8		76.2		300	19.98	3000	Clear/None
11:46	23.2		7.90		2.886		0.76		289.3		56.2		300	19.98	3900	Clear/None
11:49	23.3		7.87		2.894		0.68		296.9		114.1		300	19.98	4800	Clear/None
12:30	23.1		7.84		2.878		0.92		347.8		74.5		300	19.98	17100	Clear/None
12:33	23.0	0%	7.81	0.0	2.869	0%	0.68	6%	348.8	0.9	71.1	3%	300	19.98	18000	Clear/None
12:36	23.0	0%	7.79	0.0	2.865	0%	0.64	0%	349.6	0.1	74.1	0%	300	19.98	18900	Clear/None
12:41	22.9	0%	7.79	0.0	2.864	0%	0.60	6%	350.7	1.0	75.2	2%	300	19.98	20400	Clear/None

Stop Purge Time: 12:42	**Sample Time: 12:50**	**QA/QC Sample Time(s): n/a**
	Sample ID: PC-58-EM32	**QA/QC Sample ID(s): n/a**

PC-58

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: PC-88**
Field Samplers: G. Schuler				
Transducer Removal Time: 07:23	Transducer Redeployment Time: 08:10		General Well Condition: Good	
Depth to Water (ft): 5.62	Screened Interval Top (ft): 40.0		Pump Intake Depth (ft): 44.90	
Well Depth (ft): 46.60	Screened/Open Interval Bottom (ft): 50.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:36				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:36	20.5		6.95		2.646		1.09		101.2		86.1		240	5.62		Clear/None
07:39	21.0		7.05		2.674		0.72		143.5		23.8		240	5.62	720	Clear/None
07:42	21.0		7.10		2.674		0.61		170.7		11.3		240	5.62	1440	Clear/None
07:45	21.1	0%	7.12	0.0	2.675	0%	0.57	6%	189.0	11.9	9.1	<10	240	5.62	2160	Clear/None
07:48	21.1	0%	7.13	0.0	2.676	0%	0.53	1%	202.7	1.8	6.5	<10	240	5.62	2880	Clear/None
07:51	21.1	0%	7.13	0.0	2.679	0%	0.51	4%	211.1	10.2	6.5	<10	240	5.62	3600	Clear/None

Stop Purge Time: 07:52	**Sample Time: 08:00**	**QA/QC Sample Time(s): 08:00**	*PC-88*
	Sample ID: PC-88-EM32	**QA/QC Sample ID(s): PC-88-EM32-FD**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-29	**Well ID: PC-91**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.34	Screened Interval Top (ft): 11.5		Pump Intake Depth (ft): 16.00	
Well Depth (ft): 19.90	Screened/Open Interval Bottom (ft): 21.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:46				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:46	20.5		6.19		4.230		0.92		-179.9		158.3		120	10.30		Clear/None
09:48	21.4		6.18		4.341		0.78		-182.0		154.4		120	10.30	0	Clear/None
09:51	21.3	1%	6.22	0.0	4.327	0%	0.75	3%	-185.4	0.2	147.4	5%	40	10.30	120	Clear/None
09:54	21.0	0%	6.24	0.0	4.311	0%	0.76	2%	-185.8	0.2	141.5	1%	40	10.30	160	Clear/None
09:57	20.4	2%	6.27	0.0	4.267	0%	0.83	6%	-185.5	0.1	128.3	7%	40	10.30	200	Clear/None

Stop Purge Time: 09:58 | **Sample Time: 10:15** | **QA/QC Sample Time(s): n/a** | *PC-91*

Sample ID: PC-91-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Could Not Stabilize

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-29	**Well ID: PC-92**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.86	Screened Interval Top (ft): 26.5		Pump Intake Depth (ft): 31.20	
Well Depth (ft): 37.10	Screened/Open Interval Bottom (ft): 36.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:54				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:54	25.1		8.08		4.097		2.37		92.3		14.9		90	9.89		Clear/None
12:57	24.9		7.69		4.110		1.39		101.0		15.9		90	9.89	270	Clear/None
13:00	24.7		7.60		4.094		1.08		106.2		18.6		90	9.89	540	Clear/None
13:03	25.0	0%	7.55	0.0	4.101	0%	0.96	2%	110.3	3.7	19.5	8%	90	9.89	810	Clear/None
13:06	25.3	0%	7.54	0.0	4.122	0%	0.94	0%	113.7	0.3	21.3	0%	90	9.89	1080	Clear/None
13:09	25.3	0%	7.56	0.0	4.125	0%	0.90	3%	118.0	4.0	23.3	9%	90	9.89	1350	Clear/None

Stop Purge Time: 13:10 | **Sample Time: 13:25** | **QA/QC Sample Time(s): n/a** | *PC-92*

Sample ID: PC-92-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-29	**Well ID: PC-94**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.75	Screened Interval Top (ft): 9.5		Pump Intake Depth (ft): 16.30	
Well Depth (ft): 20.00	Screened/Open Interval Bottom (ft): 19.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:50				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:50	24.6		8.72		4.703		2.41		134.6		164.6		300	12.92		Clear/None
13:53	24.2		7.58		4.647		0.95		153.3		137.5		300	12.92	900	Clear/None
13:56	24.0		7.39		4.622		0.77		159.9		107.0		300	12.92	1800	Clear/None
13:59	24.1		7.34		4.627		0.67		163.7		90.2		300	12.92	2700	Clear/None
14:02	24.0	0%	7.31	0.0	4.625	0%	0.59	5%	167.4	2.9	79.2	8%	300	12.92	3600	Clear/None
14:05	24.0	0%	7.30	0.0	4.615	0%	0.55	1%	170.9	0.6	71.0	2%	300	12.92	4500	Clear/None
14:08	23.9	0%	7.29	0.0	4.613	0%	0.53	4%	172.5	2.2	68.6	5%	300	12.92	5400	Clear/None

Stop Purge Time: 14:09 | **Sample Time: 14:15** | **QA/QC Sample Time(s): n/a** | *PC-94*

Sample ID: PC-94-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW01**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.21	Screened Interval Top (ft): 24.2		Pump Intake Depth (ft): 21.30	
Well Depth (ft): 38.40	Screened/Open Interval Bottom (ft): 38.9		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:45				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:45	21.2		6.70		5.037		1.92		236.9		3.1		315	15.21		Clear/None
08:48	22.3		6.57		5.176		0.89		259.3		2.6		315	15.21	945	Clear/None
08:51	22.5		6.58		5.207		0.74		272.7		3.5		315	15.21	1890	Clear/None
08:54	22.6	0%	6.58	0.0	5.219	0%	0.66	8%	281.7	6.5	4.3	<10	315	15.21	2835	Clear/None
08:57	22.6	0%	6.58	0.0	5.221	0%	0.60	1%	288.2	0.0	4.4	<10	315	15.21	3780	Clear/None
09:01	22.6	0%	6.57	0.0	5.226	0%	0.56	7%	294.6	6.4	5.5	<10	315	15.21	5040	Clear/None

Stop Purge Time: 09:02 | **Sample Time: 09:15** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW01*

Sample ID: SWFTS-MW01-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW02**
Field Samplers: G. Schuler				
Transducer Removal Time: 09:43	Transducer Redeployment Time: 10:25		General Well Condition: Good	
Depth to Water (ft): 11.62	Screened Interval Top (ft): 18.4		Pump Intake Depth (ft): 25.50	
Well Depth (ft): 31.20	Screened/Open Interval Bottom (ft): 33.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:50				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:50	23.6		6.63		6.657		2.27		251.4		254.7		300	11.62		Clear/None
09:53	24.1		6.54		6.757		1.11		283.4		146.3		300	11.62	900	Clear/None
09:56	24.1		6.56		6.766		0.88		299.9		86.6		300	11.62	1800	Clear/None
09:59	24.3		6.56		6.800		0.75		310.2		65.5		300	11.62	2700	Clear/None
10:03	24.3		6.56		6.826		0.67		317.3		55.2		300	11.62	3900	Clear/None
10:06	24.3	0%	6.56	0.0	6.833	0%	0.61	3%	323.0	3.9	51.5	3%	300	11.62	4800	Clear/None
10:09	24.2	0%	6.55	0.0	6.832	0%	0.58	1%	327.3	0.4	49.3	0%	300	11.62	5700	Clear/None
10:12	24.0	0%	6.55	0.0	6.807	0%	0.58	1%	330.3	3.4	48.3	2%	300	11.62	6600	Clear/None

Stop Purge Time: 10:13	**Sample Time: 10:20**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW02-EM32	**QA/QC Sample ID(s): n/a**

SWFTS-MW02

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW03**
Field Samplers: G. Schuler				
Transducer Removal Time: 10:54	Transducer Redeployment Time: 11:46		General Well Condition: Good	
Depth to Water (ft): 13.35	Screened Interval Top (ft): 27.2		Pump Intake Depth (ft): 34.00	
Well Depth (ft): 41.60	Screened/Open Interval Bottom (ft): 42.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:04				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:04	22.4		7.03		5.732		2.39		292.0		91.9		300	13.35		Clear/None
11:07	23.0		6.76		5.813		0.96		313.8		134.3		300	13.35	900	Clear/None
11:10	23.0		6.71		5.812		0.78		325.5		114.0		300	13.35	1800	Clear/None
11:13	23.1		6.67		5.822		0.71		332.8		71.2		300	13.35	2700	Clear/None
11:16	23.2		6.65		5.836		0.63		338.2		43.7		300	13.35	3600	Clear/None
11:19	23.1		6.64		5.825		0.59		342.7		53.4		300	13.35	4500	Clear/None
11:22	23.2		6.63		5.832		0.54		346.2		36.7		300	13.35	5400	Clear/None
11:25	23.3	0%	6.62	0.0	5.839	0%	0.52	1%	349.1	2.6	32.4	24%	300	13.35	6300	Clear/None
11:29	23.2	0%	6.62	0.0	5.832	0%	0.51	0%	351.8	0.1	22.8	12%	300	13.35	7500	Clear/None
11:32	23.2	0%	6.62	0.0	5.828	0%	0.51	0%	354.2	2.5	22.7	12%	300	13.35	8400	Clear/None

Stop Purge Time: 11:33	**Sample Time: 11:40**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW03-EM32	**QA/QC Sample ID(s): n/a**

SWFTS-MW03

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW04**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 8.96	Screened Interval Top (ft): 25.8		Pump Intake Depth (ft): 32.80	
Well Depth (ft): 39.60	Screened/Open Interval Bottom (ft): 40.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:16				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:16	22.4		7.75		3.889		2.76		323.7		77.2		100	8.96		Clear/None
12:19	22.5		7.21		3.959		0.88		337.5		77.1		100	8.96	300	Clear/None
12:22	22.6		7.09		3.958		0.76		344.3		93.4		100	8.96	600	Clear/None
12:25	22.6	0%	7.04	0.0	3.978	0%	0.70	5%	348.8	3.3	60.6	10%	100	8.96	900	Clear/None
12:28	22.7	0%	7.02	0.0	3.983	0%	0.65	2%	352.7	0.6	50.8	7%	100	8.96	1200	Clear/None
12:31	22.8	0%	7.02	0.0	4.005	0%	0.64	3%	354.9	2.8	53.3	2%	100	8.96	1500	Clear/None

Stop Purge Time: 12:32 | **Sample Time: 12:40** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW04*

Sample ID: SWFTS-MW04-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW05A**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.46	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.80	
Well Depth (ft): 28.20	Screened/Open Interval Bottom (ft): 29.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:54				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:54	24.5		7.46		7.726		1.36		191.3		8.1		240	17.55		Clear/None
13:57	24.7		6.91		7.752		0.75		199.8		6.3		240	17.55	720	Clear/None
14:00	24.7	0%	6.79	0.0	7.752	0%	0.68	7%	207.4	5.7	5.9	<10	240	17.55	1440	Clear/None
14:04	24.7	0%	6.75	0.0	7.757	0%	0.62	1%	213.4	0.3	6.6	<10	240	17.55	2400	Clear/None
14:07	24.7	0%	6.73	0.0	7.754	0%	0.59	6%	218.5	5.4	5.7	<10	240	17.55	3120	Clear/None

Stop Purge Time: 14:08	**Sample Time: 14:25**	**QA/QC Sample Time(s): 14:25** *SWFTS-MW05A*
	Sample ID: SWFTS-MW05A-EM32	**QA/QC Sample ID(s): SWFTS-MW05A-EM32-MS/MSD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW05B**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.42	Screened Interval Top (ft): 32.3		Pump Intake Depth (ft): 36.60	
Well Depth (ft): 41.70	Screened/Open Interval Bottom (ft): 42.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:16				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:16	24.4		7.24		6.355		1.74		113.3		17.3		285	17.42		Clear/None
13:19	24.1		6.62		6.321		0.72		1.6		38.4		285	17.42	855	Clear/None
13:22	24.0	0%	6.52	0.0	6.304	0%	0.55	9%	-25.4	8.8	36.3	8%	285	17.42	1710	Clear/None
13:25	24.1	0%	6.48	0.0	6.311	0%	0.50	0%	-35.8	1.6	41.8	5%	285	17.42	2565	Clear/None
13:29	24.1	0%	6.47	0.0	6.335	0%	0.46	<0.5	-41.5	7.3	41.3	3%	285	17.42	3705	Clear/None

Stop Purge Time: 13:30	**Sample Time: 13:40**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW05B-EM32	**QA/QC Sample ID(s): n/a**

SWFTS-MW05B

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-31	**Well ID: SWFTS-MW06A**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 4.63	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 16.20	
Well Depth (ft): 20.70	Screened/Open Interval Bottom (ft): 21.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:13				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:13	17.6		6.94		2.839		3.25		106.3		105.2		300	4.63		Clear/None
08:16	19.5		6.94		2.998		1.03		118.9		99.3		300	4.63	900	Clear/None
08:19	19.7		7.01		3.017		0.79		135.9		74.1		300	4.63	1800	Clear/None
08:22	19.9		7.03		3.026		0.69		152.0		51.2		300	4.63	2700	Clear/None
08:26	19.9		7.05		3.028		0.65		166.9		35.2		300	4.63	3900	Clear/None
08:29	19.9		7.05		3.024		0.60		180.6		30.9		300	4.63	4800	Clear/None
08:32	20.0	0%	7.05	0.0	3.029	0%	0.58	1%	192.4	9.8	22.2	10%	300	4.63	5700	Clear/None
08:35	19.9	0%	7.06	0.0	3.027	0%	0.58	1%	203.0	0.8	19.9	1%	300	4.63	6600	Clear/None
08:38	20.0	0%	7.06	0.0	3.029	0%	0.55	3%	211.3	9.1	18.4	8%	300	4.63	7500	Clear/None

Stop Purge Time: 08:39	**Sample Time: 08:55**	**QA/QC Sample Time(s): 08:55**	*SWFTS-MW06A*
	Sample ID: SWFTS-MW06A-EM32	**QA/QC Sample ID(s): SWFTS-MW06A-EM32-FD**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-31	**Well ID: SWFTS-MW06B**
Field Samplers: G. Schuler				
Transducer Removal Time: 09:43	Transducer Redeployment Time: 10:20		General Well Condition: Good	
Depth to Water (ft): 4.86	Screened Interval Top (ft): 25.9		Pump Intake Depth (ft): 30.30	
Well Depth (ft): 35.10	Screened/Open Interval Bottom (ft): 35.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:51				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:51	20.5		7.39		3.043		2.21		237.2		160.6		300	4.86		Clear/None
09:54	20.7		7.23		3.074		0.99		254.1		213.7		300	4.86	900	Clear/None
09:57	20.8	0%	7.18	0.0	3.078	0%	0.80	8%	265.7	8.2	167.0	35%	300	4.86	1800	Clear/None
10:00	20.8	0%	7.15	0.0	3.081	0%	0.74	0%	274.5	0.6	106.4	13%	300	4.86	2700	Clear/None
10:04	20.9	0%	7.13	0.0	3.083	0%	0.68	8%	281.6	7.7	97.0	21%	300	4.86	3900	Clear/None

Stop Purge Time: 10:05	**Sample Time: 10:15**	**QA/QC Sample Time(s): n/a** *SWFTS-MW06B*
	Sample ID: SWFTS-MW06B-EM32	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-31	**Well ID: SWFTS-MW07A**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.02	Screened Interval Top (ft): 15.0		Pump Intake Depth (ft): 22.00	
Well Depth (ft): 29.80	Screened/Open Interval Bottom (ft): 29.5		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:02				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:02	23.3		7.20		4.695		1.70		289.1		5.0		85	12.06		Clear/None
11:05	23.5		7.15		4.739		1.39		299.9		4.2		85	12.06	255	Clear/None
11:08	23.6		7.12		4.760		1.20		307.9		4.2		85	12.06	510	Clear/None
11:11	23.6		7.11		4.769		1.13		313.9		4.2		85	12.06	765	Clear/None
11:14	23.6		7.10		4.779		1.08		318.6		4.1		85	12.06	1020	Clear/None
11:17	23.6	1%	7.10	0.0	4.781	1%	1.04	2%	322.6	3.0	4.2	<10	85	12.06	1275	Clear/None
11:20	24.0	0%	7.09	0.0	4.823	0%	1.00	1%	325.7	0.1	4.1	<10	85	12.06	1530	Clear/None
11:23	24.6	2%	7.11	0.0	4.888	1%	1.00	1%	328.5	2.9	4.2	<10	85	12.06	1785	Clear/None

Stop Purge Time: 11:24 | **Sample Time: 11:40** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW07A*

Sample ID: SWFTS-MW07A-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-31	**Well ID: SWFTS-MW07B**
Field Samplers: J. Bunkers,G. Schuler				
Transducer Removal Time: 11:49	Transducer Redeployment Time: 12:44		General Well Condition: Good	
Depth to Water (ft): 11.73	Screened Interval Top (ft): 33.8		Pump Intake Depth (ft): 35.70	
Well Depth (ft): 38.60	Screened/Open Interval Bottom (ft): 38.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:03				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:03	24.9		8.93		4.639		2.75		205.3		88.3		150	11.73		Clear/None
12:06	24.7		7.63		4.708		1.55		238.0		52.5		150	11.73	450	Clear/None
12:09	24.8		7.40		4.725		1.28		251.4		36.9		150	11.73	900	Clear/None
12:12	24.7		7.33		4.731		1.07		262.4		28.0		150	11.73	1350	Clear/None
12:15	25.0		7.28		4.771		0.98		270.2		21.0		150	11.73	1800	Clear/None
12:18	25.1	0%	7.28	0.0	4.802	0%	0.97	5%	276.9	5.7	16.2	4%	150	11.73	2250	Clear/None
12:21	25.3	0%	7.26	0.0	4.821	0%	0.89	2%	282.8	0.2	15.6	0%	150	11.73	2700	Clear/None
12:24	25.3	0%	7.26	0.0	4.823	0%	0.89	2%	288.0	5.4	14.9	4%	150	11.73	3150	Clear/None

Stop Purge Time: 12:25	**Sample Time: 12:40**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW07B*
	Sample ID: SWFTS-MW07B-EM32	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-31	**Well ID: SWFTS-MW08A**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.38	Screened Interval Top (ft): 20.2		Pump Intake Depth (ft): 27.00	
Well Depth (ft): 34.80	Screened/Open Interval Bottom (ft): 34.8		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:28				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:28	23.4		7.99		5.286		1.79		211.5		6.3		200	15.45		Clear/None
13:31	23.3		7.41		5.272		1.26		231.4		5.9		200	15.45	600	Clear/None
13:35	23.3		7.26		5.264		1.13		245.0		5.8		200	15.45	1400	Clear/None
13:38	23.2	0%	7.20	0.0	5.259	0%	1.06	3%	255.4	8.2	5.8	<10	200	15.45	2000	Clear/None
13:41	23.2	0%	7.15	0.0	5.260	0%	1.00	1%	264.0	0.4	6.0	<10	200	15.45	2600	Clear/None
13:44	23.4	0%	7.13	0.0	5.277	0%	1.00	1%	271.5	7.9	5.7	<10	200	15.45	3200	Clear/None

Stop Purge Time: 13:45	**Sample Time: 14:00**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW08A-EM32	**QA/QC Sample ID(s): n/a**

SWFTS-MW08A

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-04-01	**Well ID: SWFTS-MW09A**
Field Samplers: G. Schuler				
Transducer Removal Time: 06:45	Transducer Redeployment Time: 07:45		General Well Condition: Good	
Depth to Water (ft): 13.48	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.70	
Well Depth (ft): 29.00	Screened/Open Interval Bottom (ft): 28.9		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 06:59				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
06:59	20.2		7.32		4.854		2.02		127.7		4.0		300	13.48		Clear/None
07:02	22.2		7.29		5.109		1.10		150.3		2.7		300	13.48	900	Clear/None
07:06	22.5		7.35		5.144		0.87		177.1		2.8		300	13.48	2100	Clear/None
07:09	22.5		7.37		5.149		0.76		200.3		3.8		300	13.48	3000	Clear/None
07:12	21.9		7.39		5.090		0.74		218.6		4.0		300	13.48	3900	Clear/None
07:15	21.3		7.36		5.003		0.78		231.2		4.6		300	13.48	4800	Clear/None
07:18	21.9	0%	7.34	0.0	5.067	0%	0.70	3%	240.0	8.6	5.7	<10	300	13.48	5700	Clear/None
07:21	21.8	0%	7.35	0.0	5.068	0%	0.68	0%	248.4	0.2	7.1	<10	300	13.48	6600	Clear/None
07:24	21.9	0%	7.36	0.0	5.072	0%	0.65	3%	257.3	8.7	7.2	<10	300	13.48	7500	Clear/None

Stop Purge Time: 07:25	**Sample Time: 07:35**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW09A*
	Sample ID: SWFTS-MW09A-EM32	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-04-01	**Well ID: SWFTS-MW09B**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.63	Screened Interval Top (ft): 34.4		Pump Intake Depth (ft): 36.20	
Well Depth (ft): 38.80	Screened/Open Interval Bottom (ft): 39.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:54				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:54	20.8		7.85		4.934		3.14		240.0		6.5		300	13.63		Clear/None
07:57	22.2		7.59		5.144		1.14		259.6		3.9		300	13.63	900	Clear/None
08:00	22.5		7.55		5.190		0.83		274.8		3.6		300	13.63	1800	Clear/None
08:03	22.6		7.52		5.206		0.72		286.5		3.2		300	13.63	2700	Clear/None
08:06	22.5		7.51		5.205		0.67		296.0		2.8		300	13.63	3600	Clear/None
08:09	22.6	0%	7.49	0.0	5.213	0%	0.60	4%	303.6	6.3	3.0	<10	300	13.63	4500	Clear/None
08:12	22.9	0%	7.48	0.0	5.237	0%	0.58	0%	310.1	0.2	3.0	<10	300	13.63	5400	Clear/None
08:15	22.8	0%	7.48	0.0	5.233	0%	0.55	4%	316.1	6.2	3.0	<10	300	13.63	6300	Clear/None

Stop Purge Time: 08:16	**Sample Time: 08:25**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW09B*
	Sample ID: SWFTS-MW09B-EM32	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-04-01	**Well ID: SWFTS-MW10A**
Field Samplers: G. Schuler				
Transducer Removal Time: 08:54	Transducer Redeployment Time: 09:45		General Well Condition: Good	
Depth to Water (ft): 10.18	Screened Interval Top (ft): 20.4		Pump Intake Depth (ft): 27.40	
Well Depth (ft): 34.55	Screened/Open Interval Bottom (ft): 35.0		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:04				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:04	23.4		7.59		6.453		1.12		274.9		3.2		300	10.22		Clear/None
09:08	23.8		7.48		6.533		0.80		296.3		4.1		300	10.22	1200	Clear/None
09:11	23.8	0%	7.44	0.0	6.536	0%	0.68	9%	311.3	10.6	4.5	<10	300	10.22	2100	Clear/None
09:14	23.8	0%	7.42	0.0	6.536	0%	0.62	0%	322.4	0.5	5.4	<10	300	10.22	3000	Clear/None
09:17	23.8	0%	7.40	0.0	6.521	0%	0.57	8%	332.1	10.2	6.0	<10	300	10.22	3900	Clear/None

Stop Purge Time: 09:18	**Sample Time: 09:30**	**QA/QC Sample Time(s): 09:30**	*SWFTS-MW10A*
	Sample ID: SWFTS-MW10A-EM32	**QA/QC Sample ID(s): SWFTS-MW10A-EM32-MS/MSD**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-04-01	**Well ID: SWFTS-MW11**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 16.16	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.60	
Well Depth (ft): 39.00	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:09				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:09	24.1		7.88		5.650		6.06		289.2		2.3		300	16.16		Clear/None
10:12	24.3		7.81		5.706		5.90		309.7		2.2		300	16.16	900	Clear/None
10:15	24.4	0%	7.79	0.0	5.723	0%	5.88	0%	323.0	8.4	2.3	<10	300	16.16	1800	Clear/None
10:18	24.5	0%	7.78	0.0	5.736	0%	5.87	0%	332.3	0.9	2.3	<10	300	16.16	2700	Clear/None
10:21	24.8	0%	7.77	0.0	5.780	0%	5.84	0%	339.0	7.6	2.2	<10	300	16.16	3600	Clear/None

Stop Purge Time: 10:22 | **Sample Time: 10:20** | **QA/QC Sample Time(s): 10:20** | *SWFTS-MW11*

Sample ID: SWFTS-MW11-EM32 | **QA/QC Sample ID(s): SWFTS-MW11-EM32-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-04-01	**Well ID: SWFTS-MW12**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.78	Screened Interval Top (ft): 15.8		Pump Intake Depth (ft): 27.90	
Well Depth (ft): 39.80	Screened/Open Interval Bottom (ft): 40.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:10				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:10	24.5		7.30		5.966		1.34		-62.2		20.8		180	17.91		Clear/None
13:13	24.6		7.21		6.007		0.85		-73.8		23.0		180	17.91	540	Clear/None
13:16	24.6		7.20		5.999		0.68		-77.2		26.0		180	17.91	1080	Clear/None
13:19	24.4	0%	7.19	0.0	5.970	0%	0.59	7%	-78.5	0.3	30.0	2%	180	17.91	1620	Clear/None
13:22	24.3	0%	7.18	0.0	5.958	0%	0.55	0%	-78.9	0.1	32.0	3%	180	17.91	2160	Clear/None
13:25	24.2	0%	7.16	0.0	5.943	0%	0.51	7%	-79.1	0.3	30.6	0%	180	17.91	2700	Clear/None

Stop Purge Time: 13:26 | **Sample Time: 13:30** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW12*

Sample ID: SWFTS-MW12-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-31	**Well ID: SWFTS-MW13**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 23.10	Screened Interval Top (ft): 17.8		Pump Intake Depth (ft): 32.30	
Well Depth (ft): 47.30	Screened/Open Interval Bottom (ft): 47.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:35				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:35	23.2	0%	7.27	0.0	6.127	1%	5.76	2%	30.3	11.6	2.7	<10	200	23.10		Clear/None
11:38	23.5	0%	7.20	0.0	6.215	0%	5.60	0%	44.2	2.3	1.8	<10	200	23.10	600	Clear/None
11:42	23.6	0%	7.20	0.0	6.226	0%	5.53	1%	51.3	9.4	1.6	<10	200	23.10	1400	Clear/None

Stop Purge Time: 11:43 | **Sample Time: 11:50** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW13*

Sample ID: SWFTS-MW13-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-31	**Well ID: SWFTS-MW14**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.35	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.40	
Well Depth (ft): 36.00	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:49				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:49	23.8		6.85		4.700		1.26		-97.5		7.3		200	10.35		Clear/None
10:52	24.1		6.84		4.725		0.81		-107.9		5.3		200	10.35	600	Clear/None
10:55	24.2	0%	6.85	0.0	4.727	0%	0.70	6%	-106.4	2.4	5.5	<10	200	10.35	1200	Clear/None
10:58	24.1	0%	6.85	0.0	4.720	0%	0.66	0%	-103.1	0.9	4.0	<10	200	10.35	1800	Clear/None
11:01	24.2	0%	6.86	0.0	4.725	0%	0.62	6%	-102.5	1.5	4.6	<10	200	10.35	2400	Clear/None

Stop Purge Time: 11:02 | **Sample Time: 11:05** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW14*

Sample ID: SWFTS-MW14-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-31	**Well ID: SWFTS-MW15**
Field Samplers: J. Bunkers				
Transducer Removal Time: 09:40	Transducer Redeployment Time: 10:40		General Well Condition: Good	
Depth to Water (ft): 13.42	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 24.40	
Well Depth (ft): 33.70	Screened/Open Interval Bottom (ft): 34.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:46				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:46	22.7		7.14		4.317		1.41		-58.7		24.1		200	13.42		Clear/None
09:49	22.9		7.04		4.338		0.89		-62.3		23.7		200	13.42	600	Clear/None
09:52	23.1		7.02		4.345		0.75		-71.0		20.4		200	13.42	1200	Clear/None
09:55	23.1		7.02		4.340		0.68		-80.9		20.9		200	13.42	1800	Clear/None
09:58	23.1		7.01		4.343		0.63		-90.5		18.3		200	13.42	2400	Clear/None
10:01	23.1		7.01		4.339		0.60		-106.6		18.9		200	13.42	3000	Clear/None
10:04	23.2		7.02		4.342		0.59		-119.6		18.0		200	13.42	3600	Clear/None
10:07	23.2		7.01		4.340		0.57		-138.4		18.7		200	13.42	4200	Clear/None
10:10	23.2	0%	7.02	0.0	4.341	0%	0.56	1%	-148.5	11.3	19.1	24%	200	13.42	4800	Clear/None
10:13	23.2	0%	7.01	0.0	4.345	0%	0.55	0%	-161.2	1.4	28.0	10%	200	13.42	5400	Clear/None
10:16	23.2	0%	7.01	0.0	4.343	0%	0.54	1%	-169.7	9.9	29.0	14%	200	13.42	6000	Clear/None

Stop Purge Time: 10:17 | **Sample Time: 10:20** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW15*

Sample ID: SWFTS-MW15-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-31	**Well ID: SWFTS-MW16**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 22.12	Screened Interval Top (ft): 21.8		Pump Intake Depth (ft): 31.30	
Well Depth (ft): 39.40	Screened/Open Interval Bottom (ft): 41.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:00				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:00	23.6		6.81		3.965		1.40		-20.4		72.2		200	22.12		Clear/None
09:03	24.0		6.78		4.009		0.87		-34.7		68.1		200	22.12	600	Clear/None
09:06	24.0		6.78		4.015		0.75		-41.9		63.7		200	22.12	1200	Clear/None
09:09	23.9	0%	6.79	0.0	4.018	0%	0.70	4%	-46.5	3.4	50.0	8%	200	22.12	1800	Clear/None
09:12	23.9	0%	6.79	0.0	4.031	0%	0.68	1%	-50.1	0.2	43.9	4%	200	22.12	2400	Clear/None
09:15	24.0	0%	6.79	0.0	4.048	0%	0.63	5%	-53.0	3.1	44.0	4%	200	22.12	3000	Clear/None

Stop Purge Time: 09:16 | **Sample Time: 09:20** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW16*

Sample ID: SWFTS-MW16-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-31	**Well ID: SWFTS-MW17**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 26.18	Screened Interval Top (ft): 22.8		Pump Intake Depth (ft): 37.40	
Well Depth (ft): 51.20	Screened/Open Interval Bottom (ft): 52.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:19				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:19	23.2		7.44		4.127		5.64		111.6		17.3		200	26.18		Clear/None
08:22	23.7	0%	7.26	0.0	4.197	0%	4.96	1%	113.8	5.0	13.3	63%	200	26.18	600	Clear/None
08:25	23.8	0%	7.25	0.0	4.210	0%	4.87	0%	118.4	0.4	7.1	<10	200	26.18	1200	Clear/None
08:28	23.9	0%	7.25	0.0	4.213	0%	4.84	1%	124.2	5.4	4.0	<10	200	26.18	1800	Clear/None

Stop Purge Time: 08:29 | **Sample Time: 08:30** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW17*

Sample ID: SWFTS-MW17-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW18**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.50	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.10	
Well Depth (ft): 35.00	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:33				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:33	24.2		6.68		5.210		1.40		119.4		258.3		200	15.50		Clear/None
13:36	24.6		6.68		5.214		0.88		89.1		45.3		200	15.50	600	Clear/None
13:39	24.5		6.70		5.170		0.79		77.8		44.4		200	15.50	1200	Clear/None
13:42	24.6	0%	6.71	0.0	5.142	0%	0.72	5%	71.2	4.1	35.9	18%	200	15.50	1800	Clear/None
13:45	24.6	0%	6.71	0.0	5.124	0%	0.67	1%	67.0	0.1	26.7	11%	200	15.50	2400	Clear/None
13:48	24.6	0%	6.72	0.0	5.097	0%	0.65	4%	63.1	4.0	28.0	7%	200	15.50	3000	Clear/None

Stop Purge Time: 13:49 | **Sample Time: 13:55** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW18*

Sample ID: SWFTS-MW18-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW19**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.85	Screened Interval Top (ft): 11.3		Pump Intake Depth (ft): 21.00	
Well Depth (ft): 30.00	Screened/Open Interval Bottom (ft): 31.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:42				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:42	21.5		7.29		3.481		2.05		158.1		99.7		200	9.85		Clear/None
12:45	21.5		7.12		3.500		1.47		157.7		72.6		200	9.85	600	Clear/None
12:48	21.6		7.09		3.503		1.37		157.7		44.0		200	9.85	1200	Clear/None
12:51	21.6		7.08		3.503		1.31		158.1		22.2		200	9.85	1800	Clear/None
12:54	21.6	0%	7.07	0.0	3.506	0%	1.27	1%	158.6	0.4	13.7	59%	200	9.85	2400	Clear/None
12:57	21.7	0%	7.06	0.0	3.510	0%	1.25	0%	159.0	0.0	7.6	<10	200	9.85	3000	Clear/None
13:00	21.7	0%	7.06	0.0	3.510	0%	1.23	1%	159.4	0.4	4.5	<10	200	9.85	3600	Clear/None

Stop Purge Time: 13:01 | **Sample Time: 13:05** | **QA/QC Sample Time(s): 13:05** | *SWFTS-MW19*

Sample ID: SWFTS-MW19-EM32 | **QA/QC Sample ID(s): SWFTS-MW19-EM32-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW20**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.55	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.80	
Well Depth (ft): 35.40	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:43				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:43	23.4		6.60		7.009		1.89		173.8		306.0		200	12.55		Clear/None
11:46	24.0		6.54		7.112		1.02		159.5		234.9		200	12.55	600	Clear/None
11:49	24.0		6.53		7.113		0.90		149.1		154.2		200	12.55	1200	Clear/None
11:52	24.0		6.53		7.094		0.84		141.7		108.0		200	12.55	1800	Clear/None
11:55	24.1		6.53		7.086		0.81		135.8		89.9		200	12.55	2400	Clear/None
11:58	24.1	0%	6.53	0.0	7.030	0%	0.77	1%	131.6	3.9	63.0	31%	200	12.55	3000	Clear/None
12:01	24.1	0%	6.54	0.0	6.970	0%	0.76	0%	127.7	0.0	41.7	12%	200	12.55	3600	Clear/None
12:04	24.0	0%	6.54	0.0	6.894	1%	0.74	2%	123.8	3.9	39.0	18%	200	12.55	4200	Clear/None

Stop Purge Time: 12:05 | **Sample Time: 12:10** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW20*

Sample ID: SWFTS-MW20-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW21**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.70	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.90	
Well Depth (ft): 37.60	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:00				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:00	23.0		7.03		5.839		1.78		189.5		193.9		200	15.70		Clear/None
11:03	23.5		6.98		5.945		1.05		186.3		84.2		200	15.70	600	Clear/None
11:06	23.7		6.98		5.976		0.92		184.5		55.1		200	15.70	1200	Clear/None
11:09	23.7	0%	6.99	0.0	5.976	0%	0.86	5%	183.2	1.3	47.1	74%	200	15.70	1800	Clear/None
11:12	23.7	0%	6.99	0.0	5.980	0%	0.82	0%	182.0	0.1	17.5	35%	200	15.70	2400	Clear/None
11:15	23.8	0%	6.99	0.0	6.000	0%	0.77	5%	180.6	1.3	16.6	38%	200	15.70	3000	Clear/None

Stop Purge Time: 11:16 | **Sample Time: 11:20** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW21*

Sample ID: SWFTS-MW21-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW22**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 11.00	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 21.30	
Well Depth (ft): 31.30	Screened/Open Interval Bottom (ft): 31.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:14				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:14	21.9		7.21		3.723		1.78		176.1		336.4		200	11.00		Clear/None
10:17	22.7		7.12		3.833		1.10		172.1		248.8		200	11.00	600	Clear/None
10:21	22.8		7.10		3.868		0.98		170.1		206.7		200	11.00	1400	Clear/None
10:24	23.0		7.09		3.913		0.91		169.3		189.0		200	11.00	2000	Clear/None
10:27	23.2	0%	7.07	0.0	3.983	0%	0.86	6%	169.4	0.2	168.8	16%	200	11.00	2600	Clear/None
10:30	23.0	0%	7.06	0.0	4.000	0%	0.79	2%	169.6	0.0	138.3	4%	200	11.00	3200	Clear/None
10:33	23.1	0%	7.05	0.0	4.031	0%	0.77	4%	169.7	0.1	128.4	11%	200	11.00	3800	Clear/None

Stop Purge Time: 10:34 | **Sample Time: 10:35** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW22*

Sample ID: SWFTS-MW22-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW23**
Field Samplers: J. Bunkers				
Transducer Removal Time: 09:09	Transducer Redeployment Time: 10:09		General Well Condition: Good	
Depth to Water (ft): 12.35	Screened Interval Top (ft): 13.8		Pump Intake Depth (ft): 26.30	
Well Depth (ft): 35.70	Screened/Open Interval Bottom (ft): 33.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:18				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:18	19.8		7.75		2.684		3.96		169.9		376.0		200	12.35		Clear/None
09:21	20.6		7.25		2.688		1.22		166.8		59.2		200	12.35	600	Clear/None
09:24	20.6		7.21		2.686		1.03		164.6		21.7		200	12.35	1200	Clear/None
09:27	20.6	0%	7.20	0.0	2.683	0%	0.93	6%	163.4	0.4	13.2	61%	200	12.35	1800	Clear/None
09:30	20.5	0%	7.19	0.0	2.680	0%	0.87	0%	162.9	0.1	7.4	<10	200	12.35	2400	Clear/None
09:33	20.6	0%	7.19	0.0	2.679	0%	0.83	5%	162.6	0.4	3.9	<10	200	12.35	3000	Clear/None

Stop Purge Time: 09:34 | **Sample Time: 09:35** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW23*

Sample ID: SWFTS-MW23-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW24**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.92	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.90	
Well Depth (ft): 36.60	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:11				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:11	15.0		6.92		0.003		9.53		179.0		28.5		200	12.92		Clear/None
07:12	18.4		8.09		0.004		7.23		145.1		71.6		200	12.92	200	Clear/None
07:13	20.1		7.26		4.510		4.54		149.3		206.1		200	12.92	200	Clear/None
07:17	21.3		7.03		4.632		2.70		151.2		106.7		200	12.92	1000	Clear/None
07:20	21.3		7.04		4.595		2.85		153.7		77.4		200	12.92	1600	Clear/None
07:23	21.6		7.06		4.597		3.34		156.8		58.1		200	12.92	2200	Clear/None
07:26	21.8		7.12		4.666		5.06		160.0		69.6		200	12.92	2800	Clear/None
07:29	21.6		7.12		4.658		5.23		163.9		50.6		200	12.92	3400	Clear/None
07:32	21.7		7.10		4.693		5.05		167.3		39.1		200	12.92	4000	Clear/None
07:35	21.7	0%	7.08	0.0	4.703	0%	4.65	7%	170.4	2.5	25.9	19%	200	12.92	4600	Clear/None
07:38	21.8	0%	7.07	0.0	4.700	0%	4.28	1%	173.0	0.1	19.8	8%	200	12.92	5200	Clear/None
07:41	21.8	0%	7.06	0.0	4.677	0%	4.05	6%	175.4	2.5	19.2	11%	200	12.92	5800	Clear/None

Stop Purge Time: 07:42 | **Sample Time: 07:45** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW24*

Sample ID: SWFTS-MW24-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-03-30	**Well ID: SWFTS-MW25**
Field Samplers: J. Bunkers				
Transducer Removal Time: 08:10	Transducer Redeployment Time: 09:14		General Well Condition: Good	
Depth to Water (ft): 10.36	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 27.30	
Well Depth (ft): 42.80	Screened/Open Interval Bottom (ft): 42.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:24				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:24	21.6		7.08		4.515		2.66		175.2		1105.1		200	10.36		Clear/None
08:27	22.3		7.00		4.579		1.24		172.4		916.4		200	10.36	600	Clear/None
08:30	22.5		7.00		4.595		1.02		171.2		831.1		200	10.36	1200	Clear/None
08:33	22.5		7.00		4.589		0.90		171.0		841.3		200	10.36	1800	Clear/None
08:36	22.4	0%	6.99	0.0	4.577	0%	0.84	4%	171.2	0.2	844.8	6%	200	10.36	2400	Clear/None
08:40	22.5	0%	6.99	0.0	4.579	0%	0.80	0%	171.5	0.1	749.6	5%	200	10.36	3200	Clear/None
08:43	22.3	0%	6.99	0.0	4.552	0%	0.77	4%	171.6	0.2	796.0	0%	200	10.36	3800	Clear/None

Stop Purge Time: 08:44 | **Sample Time: 08:45** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW25*

Sample ID: SWFTS-MW25-EM32 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: n/a mg/L **Hach Kit Ferrous Iron: n/a** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

WELL WATER LEVEL MEASUREMENT LOG

Task Name: SWF Area Bioremediation Treatability Study	Task No: M11	Date: June 1, 2021
Task Manager: Dana Grady	Event: EM33	*Recorded by:* *G. Schuler* *T. Slazas*
Equipment Model/Type: Solinst Water Level Meter	*Serial Number: 321507* *361758*	

Time	Well ID	Measuring Point	Depth to Static Water Level (ft BMP)	Total Depth (ft BMP)	Condition of Well and Well Seal
09:23	PC-58	TOC	20.87	38.55	Good
09:40	PC-88	TOC	6.36	46.60	Good
08:38	PC-91	TOC	10.83	19.85	Good
08:53	PC-92	TOC	10.41	37.10	Good
09:08	PC-94	TOC	13.15	20.05	Good
10:03	SWFTS-MW01	TOC	14.49	38.35	Good
10:19	SWFTS-MW02	TOC	12.11	31.10	Good
10:34	SWFTS-MW03	TOC	13.58	41.50	Good
10:48	SWFTS-MW04	TOC	9.53	39.60	Good
10:59	SWFTS-MW05A	TOC	17.72	28.20	Good
11:09	SWFTS-MW05B	TOC	17.67	41.70	Good
11:21	SWFTS-MW06A	TOC	5.23	20.90	Good
11:29	SWFTS-MW06B	TOC	5.46	35.00	Good
11:49	SWFTS-MW07A	TOC	12.60	29.85	Good
11:58	SWFTS-MW07B	TOC	12.27	38.50	Good
12:15	SWFTS-MW08A	TOC	15.76	34.80	Good
12:38	SWFTS-MW08C	TOC	14.11	69.80	Good
12:22	SWFTS-MW09A	TOC	13.76	28.98	Good
12:24	SWFTS-MW09B	TOC	13.91	39.92	Good
12:11	SWFTS-MW10A	TOC	10.62	34.90	Good
12:16	SWFTS-MW10C	TOC	8.75	63.29	Good
12:04	SWFTS-MW11	TOC	16.66	39.23	Good
11:55	SWFTS-MW12	TOC	18.17	40.10	Good
11:46	SWFTS-MW13	TOC	23.36	47.50	Good
11:38	SWFTS-MW14	TOC	10.77	36.21	Good
11:26	SWFTS-MW15	TOC	13.77	33.64	Good
11:17	SWFTS-MW16	TOC	22.41	39.50	Good
11:07	SWFTS-MW17	TOC	26.40	51.50	Good
11:01	SWFTS-MW18	TOC	15.79	35.25	Good
10:54	SWFTS-MW19	TOC	10.27	30.20	Good
10:47	SWFTS-MW20	TOC	12.86	35.20	Good
10:35	SWFTS-MW21	TOC	15.94	38.02	Good
10:26	SWFTS-MW22	TOC	11.30	31.73	Good
10:09	SWFTS-MW23	TOC	12.68	36.00	Good
10:19	SWFTS-MW24	TOC	13.12	36.73	Good
09:58	SWFTS-MW25	TOC	10.61	43.05	Good

BMP = Below Measuring Point DP = Dedicated Pump OS = Offsite Storage TOC = Top of Casing (Well Riser)

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-02	**Well ID: PC-58**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 20.84	Screened Interval Top (ft): 7.8		Pump Intake Depth (ft): 27.80	
Well Depth (ft): 38.27	Screened/Open Interval Bottom (ft): 32.8		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:05				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:05	26.6		7.38		2.323		0.86		40.5		40.4		200	20.84		Clear/None
13:08	25.9		7.35		2.283		0.52		45.1		36.6		200	20.84	600	Clear/None
13:11	25.2	1%	7.34	0.0	2.238	0%	0.40	<0.5	46.8	0.3	43.5	8%	200	20.84	1200	Clear/None
13:15	25.7	0%	7.34	0.0	2.260	0%	0.26	<0.5	46.7	0.2	50.4	5%	200	20.84	2000	Clear/None
13:18	26.1	1%	7.33	0.0	2.274	0%	0.20	<0.5	46.0	0.5	49.3	3%	200	20.84	2600	Clear/None

Stop Purge Time: 13:19 | **Sample Time: 13:25** | **QA/QC Sample Time(s): n/a** | *PC-58*

Sample ID: PC-58-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: PC-88**
Field Samplers: T. Slazas				
Transducer Removal Time: 13:35	Transducer Redeployment Time: 15:10		General Well Condition: Good	
Depth to Water (ft): 6.38	Screened Interval Top (ft): 40.0		Pump Intake Depth (ft): 44.90	
Well Depth (ft): 46.58	Screened/Open Interval Bottom (ft): 50.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:54				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:54	27.6		7.48		1.965		1.08		23.3		59.1		200	6.39		Clear/None
13:57	27.5		7.46		1.959		0.58		30.7		33.9		200	6.39	600	Clear/None
14:00	27.3		7.45		1.949		0.42		35.4		25.2		200	6.39	1200	Clear/None
14:03	26.7		7.45		1.924		0.32		39.1		23.1		200	6.39	1800	Clear/None
14:06	26.1		7.45		1.896		0.24		43.3		27.8		200	6.39	2400	Clear/None
14:09	26.2		7.44		1.898		0.20		47.1		32.0		200	6.39	3000	Clear/None
14:12	26.0		7.44		1.891		0.15		49.7		36.5		200	6.39	3600	Clear/None
14:15	26.2		7.44		1.899		0.14		51.2		40.3		200	6.39	4200	Clear/None
14:18	25.8	0%	7.44	0.0	1.885	0%	0.10	<0.5	53.5	1.1	10.3	27%	200	6.39	4800	Clear/None
14:21	25.8	0%	7.44	0.0	1.884	0%	0.09	<0.5	54.7	0.1	16.1	13%	200	6.39	5400	Clear/None
14:24	26.2	1%	7.44	0.0	1.898	0%	0.07	<0.5	55.6	1.0	16.0	13%	200	6.39	6000	Clear/None

Stop Purge Time: 14:25 | **Sample Time: 14:30** | **QA/QC Sample Time(s): 14:30** | *PC-88*

Sample ID: PC-88-EM33 | **QA/QC Sample ID(s): PC-88-EM33-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-02	**Well ID: PC-91**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.81	Screened Interval Top (ft): 11.5		Pump Intake Depth (ft): 15.60	
Well Depth (ft): 19.90	Screened/Open Interval Bottom (ft): 21.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:50				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
6/1 13:50	32.0		6.54		4.482		0.79		-116.2		311.9		200	10.79		Clear/None
13:56	32.2		6.51		4.401		0.28		-132.3		422.3		150	11.35	900	Clear/None
13:59	32.2		6.50		4.401		0.15		-139.6		377.0		150	11.35	1350	Clear/None
14:02	31.7		6.49		4.382		0.09		-145.1		222.5		150	11.35	1800	Clear/None
14:05	31.3		6.49		4.382		0.05		-149.9		295.1		150	11.35	2250	Clear/None
14:08	31.1		6.48		4.404		0.03		-155.5		364.8		150	11.35	2700	Clear/None
14:11	31.6		6.48		4.457		0.01		-166.0		214.2		150	11.35	3150	Clear/None
14:15	31.9		6.48		4.495		0.00		-189.1		225.6		150	11.35	3750	Clear/None
14:18	31.6		6.47		4.452		-0.01		-206.3		225.3		150	11.35	4200	Clear/None
14:21	31.8		6.47		4.446		-0.02		-220.7		246.6		150	11.35	4650	Clear/None
14:24	32.0		6.47		4.472		-0.02		-232.8		103.5		150	11.35	5100	Clear/None
14:27	31.7		6.47		4.543		-0.03		-246.3		178.6		150	11.35	5550	Clear/None
14:31	31.9		6.46		4.539		-0.03		-266.0		151.3		150	11.35	6150	Clear/None
14:34	31.8		6.46		4.516		-0.03		-294.3		126.9		150	11.35	6600	Clear/None
6/2 08:13	26.9		6.56		3.243		0.56		-153.1		38.8		150	10.80	12450	Clear/None
08:16	26.9		6.56		3.246		0.36		-161.5		43.7		150	10.80	12900	Clear/None
08:19	26.9		6.56		3.257		0.28		-165.8		56.6		150	10.80	13350	Clear/None
08:23	27.0		6.56		3.293		0.19		-171.2		69.8		150	10.80	13950	Clear/None
08:27	27.0		6.56		3.311		0.15		-175.0		77.3		150	10.80	14550	Clear/None
08:30	27.0		6.56		3.338		0.12		-179.1		88.0		150	10.80	15000	Clear/None
08:33	26.9	0%	6.56	0.0	3.346	0%	0.08	<0.5	-182.6	6.3	103.4	11%	150	10.80	15450	Clear/None
08:36	27.1	0%	6.56	0.0	3.366	0%	0.05	<0.5	-189.9	1.0	121.6	4%	150	10.80	15900	Clear/None
08:39	27.1	0%	6.56	0.0	3.394	0%	0.04	<0.5	-194.2	5.3	124.9	7%	150	10.80	16350	Clear/None

Stop Purge Time: 08:40 | **Sample Time: 08:45** | **QA/QC Sample Time(s): n/a** | *PC-91*

Sample ID: PC-91-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 2.0 mg/L **Hach Kit Ferrous Iron: 4.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-02	**Well ID: PC-92**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.40	Screened Interval Top (ft): 26.5		Pump Intake Depth (ft): 31.20	
Well Depth (ft): 37.10	Screened/Open Interval Bottom (ft): 36.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:10				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:10	25.2		7.22		3.270		0.64		-3.9		33.6		200	10.39		Clear/None
10:13	24.9	0%	7.20	0.0	3.242	0%	0.35	<0.5	-0.4	0.7	31.7	4%	200	10.39	600	Clear/None
10:16	24.8	0%	7.19	0.0	3.230	0%	0.23	<0.5	0.5	0.2	28.7	5%	200	10.39	1200	Clear/None
10:19	24.7	0%	7.19	0.0	3.221	0%	0.18	<0.5	0.9	0.6	30.3	0%	200	10.39	1800	Clear/None

Stop Purge Time: 10:20	**Sample Time: 10:25**	**QA/QC Sample Time(s): n/a**	*PC-92*
	Sample ID: PC-92-EM33	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-02	**Well ID: PC-94**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.15	Screened Interval Top (ft): 9.5		Pump Intake Depth (ft): 16.20	
Well Depth (ft): 20.00	Screened/Open Interval Bottom (ft): 19.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:27				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:27	28.1		6.97		3.989		1.95		54.8		36.6		200	13.15		Clear/None
11:30	27.2		6.97		3.957		1.68		57.1		36.5		200	13.15	600	Clear/None
11:33	26.9		6.97		3.931		1.30		58.2		38.9		200	13.15	1200	Clear/None
11:37	27.5		6.96		3.944		1.06		58.3		41.1		200	13.15	2000	Clear/None
11:40	27.4		6.96		3.941		0.90		57.8		47.8		200	13.15	2600	Clear/None
11:43	26.8		6.96		3.923		0.52		58.1		55.1		200	13.15	3200	Clear/None
11:46	26.8	0%	6.96	0.0	3.922	0%	0.37	<0.5	58.3	0.1	69.8	5%	200	13.15	3800	Clear/None
11:49	26.9	0%	6.96	0.0	3.919	0%	0.29	<0.5	58.4	0.2	73.6	0%	200	13.15	4400	Clear/None
11:52	26.9	0%	6.96	0.0	3.922	0%	0.23	<0.5	57.9	0.3	78.6	6%	200	13.15	5000	Clear/None

Stop Purge Time: 11:53 | **Sample Time: 12:00** | **QA/QC Sample Time(s): n/a** | *PC-94*

Sample ID: PC-94-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW01**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 14.51	Screened Interval Top (ft): 24.2		Pump Intake Depth (ft): 21.30	
Well Depth (ft): 38.40	Screened/Open Interval Bottom (ft): 38.9		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 06:44				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
06:44	25.2		6.82		3.821		1.20		54.5		26.9		300	14.52		Clear/None
06:47	25.2		6.81		3.830		0.80		61.9		63.6		300	14.52	900	Clear/None
06:50	25.3		6.81		3.846		0.73		66.6		109.8		300	14.52	1800	Clear/None
06:53	25.2		6.81		3.842		0.67		69.9		57.1		300	14.52	2700	Clear/None
06:56	25.1		6.82		3.829		0.56		72.7		78.2		300	14.52	3600	Clear/None
06:59	25.1		6.81		3.855		0.44		75.3		54.9		300	14.52	4500	Clear/None
07:02	25.0	0%	6.81	0.0	3.848	0%	0.36	<0.5	78.0	1.8	59.7	1%	300	14.52	5400	Clear/None
07:05	25.2	0%	6.81	0.0	3.877	0%	0.29	<0.5	79.8	0.0	62.5	2%	300	14.52	6300	Clear/None
07:08	25.1	0%	6.82	0.0	3.867	0%	0.17	<0.5	81.5	1.7	59.9	1%	300	14.52	7200	Clear/None

Stop Purge Time: 07:09 | **Sample Time: 07:15** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW01*

Sample ID: SWFTS-MW01-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW02**
Field Samplers: T. Slazas				
Transducer Removal Time: 10:58	Transducer Redeployment Time: 12:00		General Well Condition: Good	
Depth to Water (ft): 12.13	Screened Interval Top (ft): 18.4		Pump Intake Depth (ft): 25.50	
Well Depth (ft): 31.20	Screened/Open Interval Bottom (ft): 33.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:14				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:14	28.2		6.85		4.804		0.66		88.5		153.3		200	12.16		Clear/None
11:17	28.2	0%	6.84	0.0	4.786	0%	0.37	<0.5	89.0	0.0	153.7	2%	200	12.16	600	Clear/None
11:20	28.3	0%	6.82	0.0	4.811	0%	0.25	<0.5	89.0	0.0	157.0	0%	200	12.16	1200	Clear/None
11:23	28.4	0%	6.81	0.0	4.824	0%	0.20	<0.5	89.1	0.1	160.5	2%	200	12.16	1800	Clear/None

Stop Purge Time: 11:24	**Sample Time: 11:30**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW02*
	Sample ID: SWFTS-MW02-EM33	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW03**
Field Samplers: T. Slazas				
Transducer Removal Time: 06:18	Transducer Redeployment Time: 07:24		General Well Condition: Good	
Depth to Water (ft): 13.59	Screened Interval Top (ft): 27.2		Pump Intake Depth (ft): 34.00	
Well Depth (ft): 41.60	Screened/Open Interval Bottom (ft): 42.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 06:37				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
06:37	24.9		6.85		3.944		1.48		42.1		86.4		200	13.59		Clear/None
06:41	24.7		6.84		3.943		0.66		56.9		100.3		200	13.59	800	Clear/None
06:44	24.6		6.84		3.948		0.43		64.5		121.6		200	13.59	1400	Clear/None
06:47	24.6	0%	6.84	0.0	3.953	0%	0.32	<0.5	69.4	3.6	92.9	15%	200	13.59	2000	Clear/None
06:50	24.6	0%	6.84	0.0	3.957	0%	0.27	<0.5	73.3	0.3	116.6	6%	200	13.59	2600	Clear/None
06:53	24.7	0%	6.84	0.0	3.967	0%	0.16	<0.5	76.3	3.3	119.5	8%	200	13.59	3200	Clear/None

Stop Purge Time: 06:54	**Sample Time: 07:00**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW03*
	Sample ID: SWFTS-MW03-EM33	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW04**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.56	Screened Interval Top (ft): 25.8		Pump Intake Depth (ft): 32.80	
Well Depth (ft): 39.60	Screened/Open Interval Bottom (ft): 40.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:27				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:27	27.4		7.23		2.814		1.93		74.4		51.6		200	9.56		Clear/None
12:30	26.9		7.20		2.830		1.37		76.4		81.8		200	9.56	600	Clear/None
12:33	26.3	0%	7.20	0.0	2.803	0%	1.23	4%	76.8	0.1	86.9	8%	200	9.56	1200	Clear/None
12:36	26.3	0%	7.20	0.0	2.802	0%	1.19	0%	76.8	0.1	95.0	0%	200	9.56	1800	Clear/None
12:39	26.5	0%	7.20	0.0	2.810	0%	1.12	5%	76.6	0.1	104.1	9%	200	9.56	2400	Clear/None

Stop Purge Time: 12:40	**Sample Time: 12:45**	**QA/QC Sample Time(s): n/a**		*SWFTS-MW04*
	Sample ID: SWFTS-MW04-EM33	**QA/QC Sample ID(s): n/a**		

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW05A**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.72	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.80	
Well Depth (ft): 28.20	Screened/Open Interval Bottom (ft): 29.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:19				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:19	25.5		6.79		5.207		1.07		100.3		41.5		200	17.72		Clear/None
08:22	25.3		6.76		5.172		0.59		102.7		28.3		200	17.72	600	Clear/None
08:25	25.2	0%	6.75	0.0	5.162	0%	0.43	<0.5	103.9	0.3	26.8	1%	200	17.72	1200	Clear/None
08:29	25.2	0%	6.74	0.0	5.158	0%	0.36	<0.5	104.3	0.1	27.2	0%	200	17.72	2000	Clear/None
08:32	25.2	0%	6.75	0.0	5.155	0%	0.33	<0.5	104.3	0.1	27.4	0%	200	17.72	2600	Clear/None

Stop Purge Time: 08:33	**Sample Time: 08:38**	**QA/QC Sample Time(s): 08:38**	*SWFTS-MW05A*
	Sample ID: SWFTS-MW05A-EM33	**QA/QC Sample ID(s): SWFTS-MW05A-EM33-MS/MSD**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW05B**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.66	Screened Interval Top (ft): 32.3		Pump Intake Depth (ft): 36.60	
Well Depth (ft): 41.70	Screened/Open Interval Bottom (ft): 42.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:41				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:41	25.7		6.62		4.311		0.84		-15.5		267.7		200	17.67		Clear/None
09:44	25.5		6.59		4.279		0.42		-28.2		109.8		200	17.67	600	Clear/None
09:47	25.5		6.58		4.264		0.27		-34.1		176.0		200	17.67	1200	Clear/None
09:50	25.6		6.58		4.272		0.16		-36.7		288.6		200	17.67	1800	Clear/None
09:53	25.5		6.58		4.273		0.11		-40.8		171.5		200	17.67	2400	Clear/None
09:56	25.4		6.58		4.259		0.09		-43.5		309.7		200	17.67	3000	Clear/None
10:00	25.4		6.57		4.298		0.04		-45.0		141.3		200	17.67	3800	Clear/None
10:03	25.4	0%	6.57	0.0	4.288	0%	0.03	<0.5	-45.0	0.5	236.6	22%	200	17.67	4400	Clear/None
10:06	25.5	0%	6.57	0.0	4.292	0%	0.03	<0.5	-45.7	0.2	356.8	16%	200	17.67	5000	Clear/None
10:09	25.4	0%	6.57	0.0	4.283	0%	0.02	<0.5	-45.7	0.2	326.1	6%	200	17.67	5600	Clear/None

Stop Purge Time: 10:10 | **Sample Time: 10:20** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW05B*

Sample ID: SWFTS-MW05B-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 1.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW06A**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 5.25	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 16.20	
Well Depth (ft): 20.70	Screened/Open Interval Bottom (ft): 21.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:15				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:15	24.0		7.23		2.281		0.53		93.4		65.7		300	5.25		Clear/None
08:18	23.5		7.22		2.254		0.26		94.0		38.0		300	5.25	900	Clear/None
08:21	23.5		7.21		2.252		0.20		94.3		31.3		300	5.25	1800	Clear/None
08:24	23.2		7.21		2.243		1.26		94.7		24.6		300	5.25	2700	Clear/None
08:27	23.0		7.21		2.229		0.75		94.7		18.5		300	5.25	3600	Clear/None
08:30	23.0	0%	7.21	0.0	2.227	0%	0.27	<0.5	94.7	0.1	18.7	8%	300	5.25	4500	Clear/None
08:33	23.0	0%	7.21	0.0	2.228	0%	0.05	<0.5	94.8	0.0	16.7	2%	300	5.25	5400	Clear/None
08:36	23.1	0%	7.21	0.0	2.229	0%	0.03	<0.5	94.9	0.1	16.1	6%	300	5.25	6300	Clear/None

Stop Purge Time: 08:37 | **Sample Time: 08:42** | **QA/QC Sample Time(s): 08:42** | *SWFTS-MW06A*

Sample ID: SWFTS-MW06A-EM33 | **QA/QC Sample ID(s): SWFTS-MW06A-EM33-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW06B**
Field Samplers: G. Schuler				
Transducer Removal Time: 09:15	Transducer Redeployment Time: 10:04		General Well Condition: Good	
Depth to Water (ft): 5.49	Screened Interval Top (ft): 25.9		Pump Intake Depth (ft): 30.30	
Well Depth (ft): 35.10	Screened/Open Interval Bottom (ft): 35.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:26				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:26	23.6		7.24		2.244		1.09		107.7		97.3		300	5.51		Clear/None
09:29	23.6		7.22		2.241		0.44		106.9		103.1		300	5.51	900	Clear/None
09:32	23.5	0%	7.21	0.0	2.235	0%	0.26	<0.5	105.4	1.3	91.3	10%	300	5.51	1800	Clear/None
09:35	23.6	0%	7.21	0.0	2.238	0%	0.18	<0.5	104.0	0.1	79.5	4%	300	5.51	2700	Clear/None
09:38	23.5	0%	7.21	0.0	2.236	0%	0.20	<0.5	102.9	1.2	77.8	6%	300	5.51	3600	Clear/None

Stop Purge Time: 09:39	**Sample Time: 09:45**	**QA/QC Sample Time(s): n/a**		*SWFTS-MW06B*
	Sample ID: SWFTS-MW06B-EM33	**QA/QC Sample ID(s): n/a**		

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW07A**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.61	Screened Interval Top (ft): 15.0		Pump Intake Depth (ft): 22.40	
Well Depth (ft): 29.85	Screened/Open Interval Bottom (ft): 29.5		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:50				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:50	24.8		7.10		3.374		2.67		102.8		15.1		300	12.60		Clear/None
10:53	24.6		7.09		3.382		2.25		101.8		14.6		300	12.60	900	Clear/None
10:56	24.5	0%	7.08	0.0	3.382	0%	0.99	0%	101.1	0.5	6.6	<10	300	12.60	1800	Clear/None
10:59	24.5	0%	7.08	0.0	3.397	0%	0.98	1%	100.6	0.0	6.5	<10	300	12.60	2700	Clear/None
11:02	24.5	0%	7.08	0.0	3.399	0%	1.00	1%	100.2	0.4	4.4	<10	300	12.60	3600	Clear/None

Stop Purge Time: 11:03	**Sample Time: 11:10**	**QA/QC Sample Time(s): n/a**		*SWFTS-MW07A*
	Sample ID: SWFTS-MW07A-EM33	**QA/QC Sample ID(s): n/a**		

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW07B**
Field Samplers: G. Schuler				
Transducer Removal Time: 11:30	Transducer Redeployment Time: 12:31		General Well Condition: Good	
Depth to Water (ft): 12.31	Screened Interval Top (ft): 33.8		Pump Intake Depth (ft): 35.70	
Well Depth (ft): 38.60	Screened/Open Interval Bottom (ft): 38.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:46				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:46	27.6		7.06		3.815		0.90		84.6		13.6		300	12.31		Clear/None
11:49	27.5		7.03		3.854		0.42		93.8		9.2		300	12.31	900	Clear/None
11:53	27.9	1%	7.02	0.0	3.896	0%	0.25	<0.5	98.3	1.8	8.1	<10	300	12.31	2100	Clear/None
11:56	27.4	0%	7.01	0.0	3.867	0%	0.25	<0.5	99.5	0.6	7.7	<10	300	12.31	3000	Clear/None
11:59	27.4	0%	7.02	0.0	3.869	0%	0.12	<0.5	102.6	2.5	6.6	<10	300	12.31	3900	Clear/None

Stop Purge Time: 12:00 | **Sample Time: 12:10** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW07B*

Sample ID: SWFTS-MW07B-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW08A**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.77	Screened Interval Top (ft): 20.2		Pump Intake Depth (ft): 27.40	
Well Depth (ft): 34.80	Screened/Open Interval Bottom (ft): 34.8		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:38				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:38	25.0		7.65		4.172		1.15		248.7		3.3		300	15.78		Clear/None
13:41	24.8		7.31		4.162		0.86		293.8		3.4		300	15.78	900	Clear/None
13:44	24.7		7.25		4.157		0.75		334.4		2.7		300	15.78	1800	Clear/None
13:47	24.7		7.23		4.159		0.69		364.0		1.8		300	15.78	2700	Clear/None
13:50	24.6		7.22		4.150		0.64		383.8		1.8		300	15.78	3600	Clear/None
13:53	24.6		7.21		4.156		0.63		398.5		1.8		300	15.78	4500	Clear/None
13:56	24.7		7.21		4.160		0.61		411.0		1.8		300	15.78	5400	Clear/None
14:00	24.6		7.21		4.151		0.59		427.6		1.8		300	15.78	6600	Clear/None
14:03	24.5	0%	7.21	0.0	4.142	0%	0.58	1%	439.3	8.2	1.7	<10	300	15.78	7500	Clear/None
14:06	24.5	0%	7.21	0.0	4.142	0%	0.57	0%	448.1	0.6	1.7	<10	300	15.78	8400	Clear/None
14:09	24.5	0%	7.20	0.0	4.142	0%	0.56	1%	455.1	7.6	1.8	<10	300	15.78	9300	Clear/None

Stop Purge Time: 14:10 | **Sample Time: 14:20** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW08A*

Sample ID: SWFTS-MW08A-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-01	**Well ID: SWFTS-MW09A**
Field Samplers: G. Schuler				
Transducer Removal Time: 12:55	Transducer Redeployment Time: 13:06		General Well Condition: Good	
Depth to Water (ft): 13.76	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.70	
Well Depth (ft): 28.98	Screened/Open Interval Bottom (ft): 28.9		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:13				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:13	28.3		7.22		4.993		3.37		114.8		3.4		300	13.79		Clear/None
13:16	26.8		6.92		4.811		1.33		111.3		3.6		300	13.79	900	Clear/None
13:19	27.0	0%	6.89	0.0	4.819	0%	1.15	5%	108.2	2.3	3.0	<10	300	13.79	1800	Clear/None
13:22	26.7	0%	6.90	0.0	4.810	0%	1.06	2%	105.6	0.3	3.7	<10	300	13.79	2700	Clear/None
13:26	26.7	0%	6.91	0.0	4.804	0%	1.05	3%	103.8	2.1	5.1	<10	300	13.79	3900	Clear/None

Stop Purge Time: 13:27	**Sample Time: 13:45**	**QA/QC Sample Time(s): n/a**		*SWFTS-MW09A*
	Sample ID: SWFTS-MW09A-EM33	**QA/QC Sample ID(s): n/a**		

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-02	**Well ID: SWFTS-MW09B**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.91	Screened Interval Top (ft): 34.4		Pump Intake Depth (ft): 36.20	
Well Depth (ft): 39.04	Screened/Open Interval Bottom (ft): 39.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:58				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:58	24.5		7.27		3.823		4.39		133.3		11.3		300	13.91		Clear/None
08:01	24.3		7.13		3.904		1.48		120.2		12.1		300	13.91	900	Clear/None
08:04	24.3		7.13		3.915		1.04		116.7		8.7		300	13.91	1800	Clear/None
08:07	24.3	0%	7.14	0.0	3.916	0%	0.91	8%	114.8	1.2	6.5	<10	300	13.91	2700	Clear/None
08:10	24.2	0%	7.15	0.0	3.912	0%	0.83	0%	113.5	0.1	5.4	<10	300	13.91	3600	Clear/None
08:14	24.3	0%	7.15	0.0	3.913	0%	0.77	7%	112.4	1.2	4.9	<10	300	13.91	4800	Clear/None

Stop Purge Time: 08:15	**Sample Time: 08:30**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW09B*
	Sample ID: SWFTS-MW09B-EM33	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW10A**
Field Samplers: G. Schuler				
Transducer Removal Time: 11:49	Transducer Redeployment Time: 11:57		General Well Condition: Good	
Depth to Water (ft): 10.65	Screened Interval Top (ft): 20.4		Pump Intake Depth (ft): 27.40	
Well Depth (ft): 36.00	Screened/Open Interval Bottom (ft): 35.0		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:39				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:39	27.9		7.09		4.721		1.99		109.2		14.7		300	10.65		Clear/None
12:43	26.9		7.11		4.596		3.79		115.3		29.3		300	10.65	1200	Clear/None
12:46	26.7		7.16		4.578		5.38		119.3		55.5		300	10.65	2100	Clear/None
12:49	26.6		7.22		4.571		5.89		121.5		71.1		300	10.65	3000	Clear/None
12:52	26.5		7.27		4.572		7.00		123.2		6.2		300	10.65	3900	Clear/None
12:55	26.5		7.27		4.574		6.59		124.3		6.7		300	10.65	4800	Clear/None
13:09	28.2		5.32		0.015		7.30		-256.5		71.2		300	10.65	9000	Clear/None
13:12	26.7		7.18		4.575		5.40		140.1		15.2		300	10.65	9900	Clear/None
13:15	26.5		7.24		4.556		6.14		138.0		28.6		300	10.65	10800	Clear/None
13:24	28.2		7.15		4.763		4.80		135.7		31.6		300	10.65	13500	Clear/None
13:27	26.7		6.97		4.596		1.80		137.5		38.7		300	10.65	14400	Clear/None
13:30	26.7		6.94		4.595		0.90		133.9		44.6		300	10.65	15300	Clear/None
13:37	26.7	0%	6.94	0.0	4.594	0%	0.81	5%	132.0	6.2	46.7	122%	300	10.65	17400	Clear/None
13:40	26.7	0%	6.94	0.0	4.583	0%	0.76	0%	123.9	1.9	6.7	<10	300	10.65	19500	Clear/None
13:44	26.7	0%	6.94	0.0	4.587	0%	0.73	4%	121.4	4.4	9.5	<10	300	10.65	20700	Clear/None
13:37	26.7	0%	6.94	0.0	4.594	0%	0.81	5%	132.0	6.2	46.7	122%	300	10.65	17400	Clear/None
13:40	26.7	0%	6.94	0.0	4.583	0%	0.76	0%	123.9	1.9	6.7	<10	300	10.65	19500	Clear/None
13:44	26.7	0%	6.94	0.0	4.587	0%	0.73	4%	121.4	4.4	9.5	<10	300	10.65	20700	Clear/None

Stop Purge Time: 13:45 | **Sample Time: 14:05** | **QA/QC Sample Time(s): 14:05** | *SWFTS-MW10A*

Sample ID: SWFTS-MW10A-EM33 | **QA/QC Sample ID(s): SWFTS-MW10A-EM33-MS/MSD**

Observations/Comments: Well Condition: Good General Comments: Other

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW11**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 16.70	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.60	
Well Depth (ft): 39.28	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:32				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:32	27.8		12.56		4.122		5.78		84.4		2.7		270	16.70		Clear/None
10:35	27.2		9.17		4.050		5.38		84.2		2.7		270	16.70	810	Clear/None
10:38	27.1		8.65		4.043		5.35		84.4		2.6		270	16.70	1620	Clear/None
10:41	27.2		8.43		4.053		5.31		84.2		2.6		270	16.70	2430	Clear/None
10:44	27.0		8.33		4.040		5.30		83.8		2.6		270	16.70	3240	Clear/None
10:47	26.9		8.21		4.031		5.29		83.7		2.7		270	16.70	4050	Clear/None
10:50	27.0	0%	8.10	0.0	4.041	0%	5.28	0%	83.8	0.1	2.6	<10	270	16.70	4860	Clear/None
10:53	26.9	0%	8.09	0.0	4.030	0%	5.28	0%	83.6	0.1	2.7	<10	270	16.70	5670	Clear/None
10:56	26.9	0%	8.09	0.0	4.026	0%	5.26	0%	83.8	0.1	2.8	<10	270	16.70	6480	Clear/None

Stop Purge Time: 10:57 | **Sample Time: 11:20** | **QA/QC Sample Time(s): 11:20** | *SWFTS-MW11*

Sample ID: SWFTS-MW11-EM33 | **QA/QC Sample ID(s): SWFTS-MW11-EM33-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW12**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 18.16	Screened Interval Top (ft): 15.8		Pump Intake Depth (ft): 27.90	
Well Depth (ft): 40.10	Screened/Open Interval Bottom (ft): 40.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:25				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:25	26.4		7.22		4.464		1.01		65.1		22.8		185	18.31		Clear/None
09:28	26.3		7.05		4.452		0.85		65.6		30.5		185	18.31	555	Clear/None
09:31	26.4		6.93		4.460		0.77		65.5		38.6		185	18.31	1110	Clear/None
09:34	26.5	0%	6.88	0.0	4.492	0%	0.74	5%	64.5	1.2	45.0	9%	185	18.31	1665	Clear/None
09:37	26.4	0%	6.87	0.0	4.480	0%	0.70	0%	63.8	0.5	50.3	1%	185	18.31	2220	Clear/None
09:40	26.2	0%	6.86	0.0	4.468	0%	0.67	4%	61.7	1.6	54.1	8%	185	18.31	2775	Clear/None

Stop Purge Time: 09:41 | **Sample Time: 10:00** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW12*

Sample ID: SWFTS-MW12-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW13**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 23.37	Screened Interval Top (ft): 17.8		Pump Intake Depth (ft): 32.30	
Well Depth (ft): 47.50	Screened/Open Interval Bottom (ft): 47.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:16				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:16	26.6		8.35		5.601		6.04		86.2		3.5		300	23.37		Clear/None
08:19	25.7		7.72		5.502		5.64		88.6		3.6		300	23.37	900	Clear/None
08:22	25.7		7.51		5.511		5.51		89.7		4.1		300	23.37	1800	Clear/None
08:25	25.5		7.45		5.512		5.42		90.8		4.5		300	23.37	2700	Clear/None
08:28	25.4	0%	7.39	0.0	5.521	0%	5.33	2%	91.7	0.6	4.7	<10	300	23.37	3600	Clear/None
08:31	25.3	0%	7.35	0.0	5.544	0%	5.22	0%	92.4	0.1	5.7	<10	300	23.37	4500	Clear/None
08:34	25.4	0%	7.30	0.0	5.595	0%	5.04	3%	92.8	0.5	6.0	<10	300	23.37	5400	Clear/None

Stop Purge Time: 08:35 | **Sample Time: 08:50** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW13*

Sample ID: SWFTS-MW13-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-04	**Well ID: SWFTS-MW14**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.79	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.40	
Well Depth (ft): 36.15	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:04				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:04	25.5		7.30		3.983		2.18		33.6		57.5		300	10.79		Clear/None
07:07	25.2		7.18		3.965		0.99		5.3		36.4		300	10.79	900	Clear/None
07:10	25.1		7.14		3.961		0.81		12.0		65.4		300	10.79	1800	Clear/None
07:13	25.1	0%	7.13	0.0	3.962	0%	0.71	4%	17.9	0.4	98.3	58%	300	10.79	2700	Clear/None
07:16	25.2	0%	7.13	0.0	3.984	0%	0.68	0%	18.6	1.1	45.5	26%	300	10.79	3600	Clear/None
07:19	25.1	0%	7.11	0.0	3.984	0%	0.65	4%	16.0	1.5	42.2	31%	300	10.79	4500	Clear/None

Stop Purge Time: 07:20 | **Sample Time: 07:40** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW14*

Sample ID: SWFTS-MW14-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW15**
Field Samplers: G. Schuler				
Transducer Removal Time: 13:26	Transducer Redeployment Time: 14:15		General Well Condition: Good	
Depth to Water (ft): 13.75	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 24.40	
Well Depth (ft): 33.80	Screened/Open Interval Bottom (ft): 34.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:43				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:43	31.1		7.52		4.408		0.96		-36.5		23.9		300	13.75		Clear/None
13:46	27.4		8.43		4.075		0.73		-36.2		36.2		300	13.75	900	Clear/None
13:49	26.7		8.18		4.015		0.67		-33.9		39.2		300	13.75	1800	Clear/None
13:52	27.1		7.92		4.044		0.64		-32.3		35.9		300	13.75	2700	Clear/None
13:55	27.6		7.74		4.074		0.66		-31.1		39.9		300	13.75	3600	Clear/None
13:58	27.3		7.91		4.041		0.68		-30.1		42.9		300	13.75	4500	Clear/None
14:01	27.1		7.81		4.030		0.67		-30.2		37.4		300	13.75	5400	Clear/None
14:04	26.6	0%	7.78	0.0	3.992	0%	0.70	2%	-31.1	0.1	16.1	1%	300	13.75	6300	Clear/None
14:07	26.6	0%	7.74	0.0	3.976	0%	0.74	2%	-30.9	0.1	16.7	2%	300	13.75	7200	Clear/None
14:10	26.5	0%	7.72	0.0	3.972	0%	0.72	0%	-31.1	0.1	16.1	1%	300	13.75	8100	Clear/None

Stop Purge Time: 14:11 | **Sample Time: 14:30** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW15*

Sample ID: SWFTS-MW15-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW16**
Field Samplers: G. Schuler				
Transducer Removal Time: 11:25	Transducer Redeployment Time: 12:10		General Well Condition: Good	
Depth to Water (ft): 22.40	Screened Interval Top (ft): 21.8		Pump Intake Depth (ft): 31.30	
Well Depth (ft): 39.48	Screened/Open Interval Bottom (ft): 41.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:37				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:37	29.2		12.72		3.741		1.37		-37.5		191.5		225	22.43		Clear/None
11:40	27.9		10.36		3.658		0.91		-41.8		193.3		225	22.43	675	Clear/None
11:43	27.5		9.82		3.618		0.78		-43.3		169.5		225	22.43	1350	Clear/None
11:46	27.9	0%	9.54	0.0	3.671	0%	0.73	6%	-46.5	1.9	146.2	11%	225	22.43	2025	Clear/None
11:49	27.8	0%	9.60	0.0	3.646	0%	0.68	0%	-48.5	0.1	120.6	8%	225	22.43	2700	Clear/None
11:52	28.0	0%	9.55	0.0	3.667	0%	0.65	5%	-50.3	1.9	128.0	2%	225	22.43	3375	Clear/None

Stop Purge Time: 11:53 | **Sample Time: 12:15** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW16*

Sample ID: SWFTS-MW16-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 1.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW17**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 26.36	Screened Interval Top (ft): 22.8		Pump Intake Depth (ft): 37.40	
Well Depth (ft): 51.42	Screened/Open Interval Bottom (ft): 52.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:25				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:25	28.9		9.68		3.806		5.37		77.5		14.3		300	26.36		Clear/None
10:28	27.8		8.63		3.744		4.61		83.6		11.2		300	26.36	900	Clear/None
10:31	28.0	1%	8.37	0.0	3.758	0%	4.56	0%	84.3	0.2	7.4	<10	300	26.36	1800	Clear/None
10:34	27.7	0%	8.33	0.0	3.727	0%	4.55	0%	84.3	0.2	5.7	<10	300	26.36	2700	Clear/None
10:37	27.4	1%	8.32	0.0	3.705	0%	4.56	0%	83.8	0.3	4.3	<10	300	26.36	3600	Clear/None

Stop Purge Time: 10:38	**Sample Time: 10:55**	**QA/QC Sample Time(s): n/a**		*SWFTS-MW17*
	Sample ID: SWFTS-MW17-EM33	**QA/QC Sample ID(s): n/a**		

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW18**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.79	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.10	
Well Depth (ft): 35.27	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:15				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:15	26.1		8.26		4.006		2.25		82.8		141.2		300	15.79		Clear/None
09:18	25.7		7.75		3.942		1.04		79.3		80.8		300	15.79	900	Clear/None
09:21	25.7		7.64		3.926		0.86		77.6		55.2		300	15.79	1800	Clear/None
09:24	25.5		7.61		3.904		0.77		76.4		104.2		300	15.79	2700	Clear/None
09:27	25.4	0%	7.61	0.0	3.889	0%	0.73	3%	75.3	0.9	93.5	32%	300	15.79	3600	Clear/None
09:30	25.4	0%	7.60	0.0	3.895	0%	0.70	0%	74.3	0.1	61.3	13%	300	15.79	4500	Clear/None
09:33	25.6	0%	7.59	0.0	3.902	0%	0.68	3%	73.5	0.9	56.7	19%	300	15.79	5400	Clear/None

Stop Purge Time: 09:34 | **Sample Time: 09:55** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW18*

Sample ID: SWFTS-MW18-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW19**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.27	Screened Interval Top (ft): 11.3		Pump Intake Depth (ft): 21.00	
Well Depth (ft): 30.20	Screened/Open Interval Bottom (ft): 31.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:51				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:51	23.2		8.39		2.694		2.78		44.6		107.4		300	10.27		Clear/None
07:54	22.8		7.94		2.647		1.34		50.4		82.6		300	10.27	900	Clear/None
07:57	22.8		7.81		2.648		1.15		52.0		68.2		300	10.27	1800	Clear/None
08:00	22.7		7.76		2.647		1.04		52.0		32.4		300	10.27	2700	Clear/None
08:03	22.7		7.74		2.647		0.97		51.5		18.8		300	10.27	3600	Clear/None
08:07	22.7		7.73		2.640		1.15		51.2		15.0		300	10.27	4800	Clear/None
08:10	22.7	0%	7.73	0.0	2.632	0%	1.34	6%	51.3	0.1	11.3	17%	300	10.27	5700	Clear/None
08:13	22.7	0%	7.72	0.0	2.632	0%	1.48	3%	51.2	0.0	8.7	<10	300	10.27	6600	Clear/None
08:16	22.7	0%	7.72	0.0	2.632	0%	1.47	2%	51.1	0.1	8.9	<10	300	10.27	7500	Clear/None

Stop Purge Time: 08:17 | **Sample Time: 08:30** | **QA/QC Sample Time(s): 08:30** | *SWFTS-MW19*

Sample ID: SWFTS-MW19-EM33 | **QA/QC Sample ID(s): SWFTS-MW19-EM33-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-03	**Well ID: SWFTS-MW20**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.87	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.80	
Well Depth (ft): 35.35	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 06:38				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
06:38	25.6		7.49		5.449		2.35		96.3		391.6		300	12.87		Clear/None
06:41	25.3		7.27		5.422		1.12		75.5		227.3		300	12.87	900	Clear/None
06:44	25.3		7.25		5.384		0.92		67.3		188.3		300	12.87	1800	Clear/None
06:47	25.4		7.25		5.324		0.82		61.0		140.1		300	12.87	2700	Clear/None
06:50	25.4		7.26		5.251		0.74		55.4		98.9		300	12.87	3600	Clear/None
06:53	25.4		7.26		5.171		0.71		50.6		82.6		300	12.87	4500	Clear/None
06:56	25.4		7.27		5.087		0.68		45.9		67.4		300	12.87	5400	Clear/None
07:00	25.4		7.29		4.979		0.65		41.0		56.4		300	12.87	6600	Clear/None
07:03	25.4		7.29		4.933		0.64		36.5		46.8		300	12.87	7500	Clear/None
07:06	25.4	0%	7.30	0.0	4.854	0%	0.64	2%	32.3	3.7	40.7	14%	300	12.87	8400	Clear/None
07:09	25.4	0%	7.30	0.0	4.844	0%	0.62	0%	27.9	0.7	34.3	3%	300	12.87	9300	Clear/None
07:12	25.4	0%	7.31	0.0	4.776	1%	0.61	2%	25.6	3.0	31.9	10%	300	12.87	10200	Clear/None

Stop Purge Time: 07:13 | **Sample Time: 07:15** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW20*

Sample ID: SWFTS-MW20-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-02	**Well ID: SWFTS-MW21**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.92	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.90	
Well Depth (ft): 38.12	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 14:00				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
14:00	27.0		8.74		5.186		2.61		113.0		151.0		300	15.92		Clear/None
14:03	25.6		7.45		4.976		1.04		116.6		211.0		300	15.92	900	Clear/None
14:06	25.4		7.29		4.953		0.81		115.1		152.5		300	15.92	1800	Clear/None
14:09	25.3		7.26		4.942		0.73		113.0		120.6		300	15.92	2700	Clear/None
14:12	25.1		7.24		4.936		0.69		111.2		67.7		300	15.92	3600	Clear/None
14:15	25.2	0%	7.24	0.0	4.940	0%	0.65	2%	109.6	1.7	60.9	13%	300	15.92	4500	Clear/None
14:18	25.1	0%	7.25	0.0	4.933	0%	0.63	1%	107.9	0.0	50.2	6%	300	15.92	5400	Clear/None
14:22	25.1	0%	7.24	0.0	4.928	0%	0.63	1%	106.1	1.8	50.0	6%	300	15.92	6600	Clear/None

Stop Purge Time: 14:23 | **Sample Time: 14:35** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW21*

Sample ID: SWFTS-MW21-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-02	**Well ID: SWFTS-MW22**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 11.28	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 21.30	
Well Depth (ft): 31.75	Screened/Open Interval Bottom (ft): 31.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:48				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:48	28.3		9.01		3.496		3.29		113.2		441.0		300	11.28		Clear/None
12:54	29.3		7.48		3.545		1.16		107.9		290.0		300	11.28	1800	Clear/None
12:57	25.8		7.50		3.362		0.86		108.6		275.6		300	11.28	2700	Clear/None
13:01	25.9		7.45		3.392		0.77		107.6		244.8		300	11.28	3900	Clear/None
13:04	25.6		7.45		3.399		0.68		105.5		215.0		300	11.28	4800	Clear/None
13:07	25.9		7.44		3.416		0.78		103.2		200.8		300	11.28	5700	Clear/None
13:10	25.8	0%	7.41	0.0	3.463	0%	1.00	7%	101.8	1.9	140.2	16%	300	11.28	6600	Clear/None
13:13	25.8	0%	7.41	0.0	3.494	0%	1.07	0%	99.9	0.0	115.4	4%	300	11.28	7500	Clear/None
13:16	25.8	0%	7.41	0.0	3.508	0%	1.16	7%	98.0	1.9	105.8	12%	300	11.28	8400	Clear/None

Stop Purge Time: 13:17 | **Sample Time: 13:35** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW22*

Sample ID: SWFTS-MW22-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-02	**Well ID: SWFTS-MW23**
Field Samplers: G. Schuler				
Transducer Removal Time: 08:52	Transducer Redeployment Time: 09:30		General Well Condition: Good	
Depth to Water (ft): 12.66	Screened Interval Top (ft): 13.8		Pump Intake Depth (ft): 26.30	
Well Depth (ft): 36.05	Screened/Open Interval Bottom (ft): 33.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:01				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:01	23.7		7.69		2.360		4.23		91.0		51.8		300	12.66		Clear/None
09:04	22.9		7.51		2.275		1.32		89.7		8.5		300	12.66	900	Clear/None
09:07	22.9		7.46		2.270		1.00		88.8		5.2		300	12.66	1800	Clear/None
09:10	22.9	0%	7.44	0.0	2.279	0%	0.87	8%	87.7	1.4	4.4	<10	300	12.66	2700	Clear/None
09:13	23.1	0%	7.43	0.0	2.283	0%	0.79	1%	86.4	0.1	4.1	<10	300	12.66	3600	Clear/None
09:16	23.1	0%	7.42	0.0	2.283	0%	0.74	7%	84.9	1.4	3.8	<10	300	12.66	4500	Clear/None

Stop Purge Time: 09:17 | **Sample Time: 09:30** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW23*

Sample ID: SWFTS-MW23-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-02	**Well ID: SWFTS-MW24**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.10	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.90	
Well Depth (ft): 36.70	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:21				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:21	26.1		7.81		4.134		2.39		131.6		409.9		300	13.15		Clear/None
11:24	25.5		7.36		4.053		1.61		135.5		284.5		300	13.15	900	Clear/None
11:27	25.3		7.29		4.043		1.36		136.7		143.9		300	13.15	1800	Clear/None
11:30	25.2		7.27		4.035		1.34		137.1		68.3		300	13.15	2700	Clear/None
11:33	25.1		7.26		4.022		1.28		137.1		37.7		300	13.15	3600	Clear/None
11:36	25.3		7.25		4.035		1.22		136.8		27.2		300	13.15	4500	Clear/None
11:40	25.3	0%	7.24	0.0	4.032	0%	1.22	2%	135.2	2.7	31.1	36%	300	13.15	5700	Clear/None
11:43	25.2	0%	7.24	0.0	4.032	0%	1.20	0%	132.7	0.2	19.0	16%	300	13.15	6600	Clear/None
11:46	25.6	0%	7.23	0.0	4.061	0%	1.16	2%	129.7	2.8	18.1	20%	300	13.15	7500	Clear/None

Stop Purge Time: 11:47 | **Sample Time: 12:00** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW24*

Sample ID: SWFTS-MW24-EM33 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-06-02	**Well ID: SWFTS-MW25**
Field Samplers: G. Schuler				
Transducer Removal Time: 09:56	Transducer Redeployment Time: 10:40		General Well Condition: Good	
Depth to Water (ft): 10.50	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 27.30	
Well Depth (ft): 43.00	Screened/Open Interval Bottom (ft): 42.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:05				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:05	26.0		7.49		4.008		2.17		92.9		881.3		270	10.50		Clear/None
10:08	25.6		7.24		3.953		1.10		95.6		649.1		270	10.50	810	Clear/None
10:12	25.5		7.20		3.959		0.92		96.5		464.8		270	10.50	1890	Clear/None
10:15	25.5		7.19		3.952		0.83		96.9		318.6		270	10.50	2700	Clear/None
10:18	25.5		7.17		3.957		0.77		97.0		222.8		270	10.50	3510	Clear/None
10:21	25.5		7.17		3.955		0.73		96.5		185.5		270	10.50	4320	Clear/None
10:24	25.6	0%	7.16	0.0	3.966	0%	0.70	3%	96.2	0.7	160.6	5%	270	10.50	5130	Clear/None
10:27	25.4	0%	7.16	0.0	3.951	0%	0.68	0%	95.5	0.0	144.7	4%	270	10.50	5940	Clear/None
10:30	25.5	0%	7.16	0.0	3.961	0%	0.65	3%	94.9	0.6	149.3	1%	270	10.50	6750	Clear/None

Stop Purge Time: 10:31	**Sample Time: 10:50**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW25*
	Sample ID: SWFTS-MW25-EM33	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

WELL WATER LEVEL MEASUREMENT LOG

Task Name: SWF Area Bioremediation Treatability Study	Task No: M11	Date: July 19, 2021
Task Manager: Dana Grady	Event: EM34	*Recorded by:* *J. Roman* *S. Henning*
Equipment Model/Type: Solinst Water Level Meter	*Serial Number: 101 335861 336331*	

Time	Well ID	Measuring Point	Depth to Static Water Level (ft BMP)	Total Depth (ft BMP)	Condition of Well and Well Seal
18:29	PC-58	TOC	18.97	38.60	Good
16:39	PC-88	TOC	2.34	46.70	Good
16:14	PC-91	TOC	10.30	20.10	Good
16:11	PC-92	TOC	9.67	37.30	Good
11:47	PC-94	TOC	13.10	20.00	Good
14:27	SWFTS-MW01	TOC	14.39	38.40	Good
17:42	SWFTS-MW02	TOC	11.47	31.20	Good
11:42	SWFTS-MW03	TOC	13.57	41.60	Good
16:21	SWFTS-MW04	TOC	8.10	39.70	Good
18:19	SWFTS-MW05A	TOC	17.87	28.80	Good
18:19	SWFTS-MW05B	TOC	17.81	41.90	Good
11:58	SWFTS-MW06A	TOC	2.83	21.10	Good
12:02	SWFTS-MW06B	TOC	4.03	35.20	Good
17:29	SWFTS-MW07A	TOC	11.96	29.90	Good
17:33	SWFTS-MW07B	TOC	11.58	38.60	Good
17:46	SWFTS-MW08A	TOC	15.67	34.90	Good
17:50	SWFTS-MW08C	TOC	13.93	69.80	Good
11:52	SWFTS-MW09A	TOC	13.70	29.10	Good
11:57	SWFTS-MW09B	TOC	13.82	39.00	Good
16:02	SWFTS-MW10A	TOC	10.29	35.10	Good
15:58	SWFTS-MW10C	TOC	8.48	63.40	Good
17:21	SWFTS-MW11	TOC	16.34	39.30	Good
18:05	SWFTS-MW12	TOC	18.08	40.10	Good
17:59	SWFTS-MW13	TOC	23.32	47.50	Good
17:29	SWFTS-MW14	TOC	10.46	36.30	Good
17:10	SWFTS-MW15	TOC	13.78	33.80	Good
18:34	SWFTS-MW16	TOC	22.52	39.80	Good
18:12	SWFTS-MW17	TOC	26.34	51.45	Good
17:51	SWFTS-MW18	TOC	15.86	36.40	Good
15:11	SWFTS-MW19	TOC	9.98	30.30	Good
15:44	SWFTS-MW20	TOC	9.98	35.50	Good
18:09	SWFTS-MW21	TOC	16.98	38.00	Good
---	SWFTS-MW22	---	---	---	Obstructed by flood event.
11:38	SWFTS-MW23	TOC	12.73	36.20	Good
11:35	SWFTS-MW24	TOC	13.09	36.70	Good
11:46	SWFTS-MW25	TOC	10.76	43.20	Good

BMP = Below Measuring Point DP = Dedicated Pump OS = Offsite Storage TOC = Top of Casing (Well Riser)

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-22	**Well ID: PC-58**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 18.64	Screened Interval Top (ft): 7.8		Pump Intake Depth (ft): 22.60	
Well Depth (ft): 38.70	Screened/Open Interval Bottom (ft): 32.8		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:38				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:38	28.3		6.49		0.001		7.83		177.0		49.5		300	18.70		Clear
07:41	24.9		7.19		3.115		0.74		161.0		101.7		300	18.70	900	Clear
07:44	24.1		7.20		3.068		0.43		155.9		44.8		300	18.70	1800	Clear
07:47	24.3		7.19		3.085		0.30		151.3		62.2		300	18.70	2700	Clear
07:50	24.3		7.20		3.078		0.25		147.7		16.0		300	18.70	3600	Clear
07:53	24.4		7.20		3.079		0.25		144.6		17.4		300	18.70	4500	Clear
07:56	24.6		7.20		3.096		0.46		141.6		17.5		300	18.70	5400	Clear
07:59	24.5		7.21		3.083		0.47		139.6		21.0		300	18.70	6300	Clear
08:02	24.5	0%	7.21	0.0	3.087	0%	0.47	<0.5	137.4	1.8	4.8	<10	300	18.70	7200	Clear
08:05	24.6	0%	7.21	0.0	3.087	0%	0.43	<0.5	135.8	0.2	5.6	<10	300	18.70	8100	Clear
08:08	24.5	0%	7.21	0.0	3.080	0%	0.48	<0.5	133.7	1.9	7.7	<10	300	18.70	9000	Clear

Stop Purge Time: 08:09 | **Sample Time: 08:10** | **QA/QC Sample Time(s): n/a** | *PC-58*

Sample ID: PC-58-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-22	**Well ID: PC-88**
Field Samplers: J. Roman				
Transducer Removal Time: 07:27	Transducer Redeployment Time: 08:20		General Well Condition: Good	
Depth to Water (ft): 5.10	Screened Interval Top (ft): 40.0		Pump Intake Depth (ft): 44.90	
Well Depth (ft): 46.58	Screened/Open Interval Bottom (ft): 50.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:42				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:42	24.3		7.38		2.411		0.90		111.8		61.6		210	5.10		Clear/None
07:45	24.1		7.40		2.405		0.65		60.8		25.9		210	5.10	630	Clear/None
07:48	24.1		7.40		2.405		0.52		38.7		15.1		210	5.10	1260	Clear/None
07:53	24.1	0%	7.41	0.0	2.406	0%	0.43	<0.5	31.5	0.5	15.0	11%	210	5.10	2310	Clear/None
07:56	24.3	0%	7.42	0.0	2.416	0%	0.40	<0.5	32.1	0.1	17.0	0%	210	5.10	2940	Clear/None
07:59	24.4	0%	7.42	0.0	2.417	0%	0.38	<0.5	32.3	0.3	18.7	10%	210	5.10	3570	Clear/None

Stop Purge Time: 08:00 | **Sample Time: 08:15** | **QA/QC Sample Time(s): 08:15** | *PC-88*

Sample ID: PC-88-EM34 | **QA/QC Sample ID(s): PC-88-EM34-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: PC-91**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.24	Screened Interval Top (ft): 11.5		Pump Intake Depth (ft): 16.00	
Well Depth (ft): 20.10	Screened/Open Interval Bottom (ft): 21.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:39				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:39	28.1		6.57		3.014		2.10		-77.4		33.7		300	10.34		Clear/None
07:43	27.6		6.58		2.987		0.35		-123.3		43.8		240	10.34	960	Clear/None
07:46	27.6		6.57		2.988		0.23		-134.1		29.0		160	10.50	1440	Clear/None
07:49	27.8		6.57		3.002		0.20		-139.5		28.6		160	10.50	1920	Clear/None
07:52	27.7		6.57		3.006		0.17		-144.4		24.7		160	10.50	2400	Clear/None
07:56	27.7		6.57		3.009		0.14		-141.5		19.3		160	10.50	3040	Clear/None
07:59	27.6		6.57		3.014		0.12		-142.1		19.9		160	10.50	3520	Clear/None
08:03	28.1		6.61		3.054		1.26		-116.1		38.7		160	10.50	4160	Clear/None
08:07	27.8		6.57		3.046		0.20		-141.4		27.1		160	10.50	4800	Clear/None
08:10	27.8		6.58		3.058		0.13		-146.1		38.3		160	10.50	5280	Clear/None
08:13	27.7	0%	6.57	0.0	3.058	0%	0.11	<0.5	-152.1	5.4	17.8	5%	160	10.50	5760	Clear/None
08:17	27.7	0%	6.58	0.0	3.065	0%	0.06	<0.5	-158.8	1.3	16.3	3%	160	10.50	6400	Clear/None
08:20	27.7	0%	6.58	0.0	3.067	0%	0.04	<0.5	-161.6	4.1	16.6	1%	160	10.50	6880	Clear/None

Stop Purge Time: 08:21	**Sample Time: 08:25**	**QA/QC Sample Time(s): n/a**
	Sample ID: PC-91-EM34	**QA/QC Sample ID(s): n/a**

PC-91

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 4.0 mg/L **Hach Kit Ferrous Iron: 1.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: PC-92**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.76	Screened Interval Top (ft): 26.5		Pump Intake Depth (ft): 31.20	
Well Depth (ft): 37.20	Screened/Open Interval Bottom (ft): 36.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:04				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:04	28.5		7.51		3.055		4.00		26.6		27.3		200	9.90		Clear/None
09:08	25.3		7.23		2.765		0.83		23.7		61.4		180	9.90	720	Clear/None
09:11	25.0		7.23		2.749		0.56		16.0		53.6		180	9.90	1260	Clear/None
09:14	24.9		7.22		2.744		0.49		10.8		38.7		180	9.90	1800	Clear/None
09:17	24.9		7.22		2.739		0.42		6.8		38.0		180	9.90	2340	Clear/None
09:20	24.7		7.22		2.733		0.34		4.0		30.6		180	9.90	2880	Clear/None
09:24	24.8		7.22		2.733		0.30		1.3		29.3		180	9.90	3600	Clear/None
09:27	24.8		7.22		2.732		0.28		-1.5		21.5		180	9.90	4140	Clear/None
09:30	24.9		7.22		2.730		0.29		-2.4		18.7		180	9.90	4680	Clear/None
09:33	24.8	0%	7.22	0.0	2.727	0%	0.25	<0.5	-2.0	1.5	15.9	5%	180	9.90	5220	Clear/None
09:37	24.7	0%	7.22	0.0	2.724	0%	0.24	<0.5	-3.0	0.5	17.9	6%	180	9.90	5940	Clear/None
09:40	24.8	0%	7.22	0.0	2.731	0%	0.23	<0.5	-5.4	1.9	16.6	1%	180	9.90	6480	Clear/None

Stop Purge Time: 09:41	**Sample Time: 09:45**	**QA/QC Sample Time(s): n/a**	*PC-92*
	Sample ID: PC-92-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: PC-94**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.04	Screened Interval Top (ft): 9.5		Pump Intake Depth (ft): 16.30	
Well Depth (ft): 20.00	Screened/Open Interval Bottom (ft): 19.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:54				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:54	24.7		6.96		3.965		0.54		120.3		19.2		270	13.10		Clear/None
07:57	24.7		6.96		3.960		0.48		108.8		17.3		270	13.10	810	Clear/None
08:00	24.7	0%	6.97	0.0	3.958	0%	0.42	<0.5	103.9	4.3	16.3	4%	270	13.10	1620	Clear/None
08:03	24.7	0%	6.97	0.0	3.960	0%	0.40	<0.5	98.5	1.1	15.6	0%	270	13.10	2430	Clear/None
08:06	24.7	0%	6.97	0.0	3.961	0%	0.38	<0.5	96.4	3.2	15.1	3%	270	13.10	3240	Clear/None

Stop Purge Time: 08:07 | **Sample Time: 08:15** | **QA/QC Sample Time(s): n/a** | *PC-94*

Sample ID: PC-94-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: SWFTS-MW01**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 14.33	Screened Interval Top (ft): 24.2		Pump Intake Depth (ft): 31.30	
Well Depth (ft): 38.40	Screened/Open Interval Bottom (ft): 38.9		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:14				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:14	25.6		6.92		4.157		0.64		100.3		31.2		270	14.33		Clear/None
11:17	25.4		6.91		4.140		0.52		94.8		12.1		270	14.33	810	Clear/None
11:20	25.4		6.91		4.134		0.46		92.2		6.7		270	14.33	1620	Clear/None
11:23	25.4	0%	6.90	0.0	4.136	0%	0.40	<0.5	89.9	1.3	4.7	<10	270	14.33	2430	Clear/None
11:26	25.3	0%	6.90	0.0	4.124	0%	0.37	<0.5	88.7	0.1	4.1	<10	270	14.33	3240	Clear/None
11:29	25.4	0%	6.90	0.0	4.131	0%	0.36	<0.5	87.3	1.3	3.9	<10	270	14.33	4050	Clear/None

Stop Purge Time: 11:30 | **Sample Time: 11:30** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW01*

Sample ID: SWFTS-MW01-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-21	**Well ID: SWFTS-MW02**
Field Samplers: S. Henning				
Transducer Removal Time: 10:48	Transducer Redeployment Time: 00:00		General Well Condition: Good	
Depth to Water (ft): 11.68	Screened Interval Top (ft): 18.4		Pump Intake Depth (ft): 25.50	
Well Depth (ft): 31.30	Screened/Open Interval Bottom (ft): 33.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:00				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:00	32.7		6.88		7.019		3.64		105.2		65.4		300	11.85		Cloudy brown
11:07	28.0		6.67		6.914		0.47		63.5		55.8		300	11.85	2100	Cloudy brown
11:11	28.0		6.66		6.927		0.32		51.8		43.2		300	11.85	3300	Cloudy brown
11:14	27.8		6.66		6.926		0.28		44.1		43.6		300	11.85	4200	Cloudy brown
11:18	27.7		6.66		6.932		0.72		35.4		42.1		300	11.85	5400	Cloudy brown
11:21	27.7		6.66		6.942		0.59		34.6		32.4		300	11.85	6300	Cloudy brown
11:24	27.7		6.66		6.966		0.56		34.0		28.5		300	11.85	7200	Cloudy brown
11:27	27.8	0%	6.66	0.0	6.979	0%	0.61	2%	33.5	0.4	22.7	3%	300	11.85	8100	Cloudy brown
11:31	27.7	0%	6.65	0.0	6.995	0%	0.60	3%	33.0	0.1	21.8	0%	300	11.85	9300	Cloudy brown
11:34	27.7	0%	6.65	0.0	7.011	0%	0.66	5%	32.7	0.4	21.0	3%	300	11.85	10200	Cloudy brown

Stop Purge Time: 11:35	**Sample Time: 11:40**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW02-EM34	**QA/QC Sample ID(s): n/a**

SWFTS-MW02

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-19	**Well ID: SWFTS-MW03**
Field Samplers: J. Roman				
Transducer Removal Time: 13:32	Transducer Redeployment Time: 14:20		General Well Condition: Good	
Depth to Water (ft): 13.55	Screened Interval Top (ft): 27.2		Pump Intake Depth (ft): 34.40	
Well Depth (ft): 41.60	Screened/Open Interval Bottom (ft): 42.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:50				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:50	25.7		6.81		5.791		0.76		144.3		41.1		300	13.56		Clear/None
13:53	25.6		6.80		5.772		0.56		133.2		36.7		300	13.56	900	Clear/None
13:56	25.4		6.80		5.746		0.43		125.2		22.8		300	13.56	1800	Clear/None
14:00	25.2	0%	6.80	0.0	5.722	0%	0.37	<0.5	119.8	3.3	22.0	7%	300	13.56	3000	Clear/None
14:03	25.4	0%	6.80	0.0	5.739	0%	0.32	<0.5	116.2	0.3	19.6	4%	300	13.56	3900	Clear/None
14:06	25.6	0%	6.79	0.0	5.765	0%	0.31	<0.5	113.6	2.9	20.0	2%	300	13.56	4800	Clear/None

Stop Purge Time: 14:07	**Sample Time: 14:15**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW03*
	Sample ID: SWFTS-MW03-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good, updated transducer serial number General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-21	**Well ID: SWFTS-MW04**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.78	Screened Interval Top (ft): 25.8		Pump Intake Depth (ft): 32.80	
Well Depth (ft): 39.80	Screened/Open Interval Bottom (ft): 40.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:54				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:54	24.7		7.15		3.609		0.39		66.5		38.0		300	9.80		Cloudy brown
09:57	24.8		7.15		3.639		0.29		54.5		42.9		300	9.80	900	Cloudy brown
10:01	24.7		7.14		3.655		0.23		47.3		39.7		300	9.80	2100	Cloudy brown
10:04	24.5		7.14		3.657		0.18		41.4		36.6		300	9.80	3000	Cloudy brown
10:07	24.4		7.14		3.644		0.15		36.1		40.5		300	9.80	3900	Cloudy brown
10:10	24.6	0%	7.14	0.0	3.676	0%	0.13	<0.5	32.2	3.5	36.2	5%	300	9.80	4800	Cloudy brown
10:13	24.5	0%	7.14	0.0	3.674	0%	0.12	<0.5	28.5	0.2	32.7	4%	300	9.80	5700	Cloudy brown
10:16	24.6	0%	7.14	0.0	3.681	0%	0.11	<0.5	25.5	3.2	34.3	0%	300	9.80	6600	Cloudy brown

Stop Purge Time: 10:17	**Sample Time: 10:20**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW04*
	Sample ID: SWFTS-MW04-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: SWFTS-MW05A**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.62	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.80	
Well Depth (ft): 28.20	Screened/Open Interval Bottom (ft): 29.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:37				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:37	26.1		6.77		5.658		0.65		103.5		5.9		240	17.70		Clear/None
13:40	26.2		6.77		5.655		0.53		100.6		5.4		240	17.70	720	Clear/None
13:43	26.0		6.77		5.633		0.47		99.4		5.2		240	17.70	1440	Clear/None
13:46	25.9	0%	6.77	0.0	5.625	0%	0.43	<0.5	98.1	1.0	4.3	<10	240	17.70	2160	Clear/None
13:49	26.0	0%	6.77	0.0	5.628	0%	0.40	<0.5	97.1	0.0	4.3	<10	240	17.70	2880	Clear/None
13:52	26.0	0%	6.77	0.0	5.633	0%	0.38	<0.5	96.2	0.9	4.2	<10	240	17.70	3600	Clear/None

Stop Purge Time: 13:53	**Sample Time: 14:00**		**QA/QC Sample Time(s): 14:00**	*SWFTS-MW05A*
	Sample ID: SWFTS-MW05A-EM34		**QA/QC Sample ID(s): SWFTS-MW05A-EM34-MS/MSD**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-21	**Well ID: SWFTS-MW05B**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.56	Screened Interval Top (ft): 32.3		Pump Intake Depth (ft): 36.60	
Well Depth (ft): 41.70	Screened/Open Interval Bottom (ft): 42.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:49				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:49	25.4		6.58		5.536		1.03		89.3		19.1		225	17.56		Clear/None
07:52	25.2		6.59		5.514		0.71		79.6		45.6		225	17.56	675	Clear/None
07:55	25.2		6.60		5.510		0.55		75.7		64.1		225	17.56	1350	Clear/None
07:58	25.2		6.61		5.507		0.48		74.0		100.8		225	17.56	2025	Clear/None
08:01	25.2	0%	6.61	0.0	5.507	0%	0.43	<0.5	72.5	0.7	15.0	33%	225	17.56	2700	Clear/None
08:05	25.2	0%	6.62	0.0	5.503	0%	0.41	<0.5	71.5	0.3	16.5	26%	225	17.56	3600	Clear/None
08:08	25.2	0%	6.62	0.0	5.509	0%	0.35	<0.5	71.4	0.4	36.3	60%	225	17.56	4275	Clear/None

Stop Purge Time: 08:09	**Sample Time: 08:15**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW05B*
	Sample ID: SWFTS-MW05B-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-19	**Well ID: SWFTS-MW06A**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 2.83	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 16.20	
Well Depth (ft): 21.20	Screened/Open Interval Bottom (ft): 21.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:03				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:03	31.1		7.35		3.426		5.38		138.0		22.2		300	2.70		Clear/None
13:06	26.1		7.18		3.123		1.07		127.0		96.0		300	2.86	900	Clear/None
13:09	25.6		7.17		3.078		0.49		108.6		84.9		300	2.86	1800	Clear/None
13:12	25.5		7.17		3.069		0.36		90.3		71.4		300	2.86	2700	Clear/None
13:15	25.4		7.17		3.062		0.29		72.2		56.5		300	2.86	3600	Clear/None
13:18	25.3	0%	7.17	0.0	3.059	0%	0.24	<0.5	56.9	9.8	46.6	0%	300	2.86	4500	Clear/None
13:21	25.4	0%	7.17	0.0	3.056	0%	0.21	<0.5	45.9	1.2	47.8	2%	300	2.86	5400	Clear/None
13:24	25.5	0%	7.17	0.0	3.067	0%	0.18	<0.5	38.6	8.5	46.1	1%	300	2.86	6300	Clear/None

Stop Purge Time: 13:25	**Sample Time: 13:30**	**QA/QC Sample Time(s): 13:30**
	Sample ID: SWFTS-MW06A-EM34	**QA/QC Sample ID(s): SWFTS-MW06A-EM34-FD**

SWFTS-MW06A

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-19	**Well ID: SWFTS-MW06B**
Field Samplers: S. Henning				
Transducer Removal Time: 13:56	Transducer Redeployment Time: 14:40		General Well Condition: Good	
Depth to Water (ft): 3.74	Screened Interval Top (ft): 25.9		Pump Intake Depth (ft): 30.30	
Well Depth (ft): 35.30	Screened/Open Interval Bottom (ft): 35.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 14:01				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
14:01	27.9		7.52		3.211		3.33		116.6		66.9		300	3.95		Clear/None
14:04	25.6		7.14		3.048		0.57		116.3		101.2		300	3.95	900	Clear/None
14:07	25.8		7.15		3.051		0.33		110.6		118.8		200	3.95	1500	Clear/None
14:10	25.9		7.16		3.070		0.30		105.9		106.9		200	3.95	2100	Clear/None
14:14	26.3		7.15		3.079		0.28		101.5		74.6		200	3.95	2900	Clear/None
14:17	27.6	1%	7.15	0.0	3.158	0%	0.33	<0.5	97.0	4.1	73.1	17%	100	4.00	3200	Clear/None
14:20	28.0	0%	7.15	0.0	3.193	0%	0.37	<0.5	92.9	0.0	59.1	4%	100	4.00	3500	Clear/None
14:23	28.4	1%	7.15	0.0	3.216	0%	0.35	<0.5	88.8	4.1	54.4	12%	100	4.00	3800	Clear/None

Stop Purge Time: 14:24	**Sample Time: 14:30**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW06B*
	Sample ID: SWFTS-MW06B-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-22	**Well ID: SWFTS-MW07A**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.01	Screened Interval Top (ft): 15.0		Pump Intake Depth (ft): 22.00	
Well Depth (ft): 30.10	Screened/Open Interval Bottom (ft): 29.5		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:11				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:11	26.1		7.05		5.060		1.60		140.7		2.5		300	12.03		Clear
10:15	25.0		6.97		4.909		0.90		137.3		1.9		300	12.03	1200	Clear
10:18	24.9		6.98		4.897		1.08		130.0		2.1		300	12.03	2100	Clear
10:21	24.8		6.99		4.885		0.99		121.2		2.0		300	12.03	3000	Clear
10:24	24.8		6.99		4.879		0.81		112.4		1.9		300	12.03	3900	Clear
10:27	24.7		6.99		4.888		0.92		102.9		2.2		300	12.03	4800	Clear
10:30	24.7		6.99		4.875		0.78		93.9		2.2		300	12.03	5700	Clear
10:33	24.8		6.99		4.904		0.88		85.1		2.2		300	12.03	6600	Clear
10:36	24.7		6.99		4.899		0.79		76.9		2.3		300	12.03	7500	Clear
10:39	24.7		6.99		4.899		0.76		70.6		2.4		300	12.03	8400	Clear
10:42	24.7	0%	6.99	0.0	4.898	0%	0.94	3%	64.7	5.8	2.3	<10	300	12.03	9300	Clear
10:45	24.8	0%	6.99	0.0	4.900	0%	0.89	2%	59.1	0.2	2.2	<10	300	12.03	10200	Clear
10:48	24.7	0%	6.99	0.0	4.901	0%	0.90	1%	52.9	6.0	2.2	<10	300	12.03	11100	Clear

Stop Purge Time: 10:49	**Sample Time: 10:50**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW07A*
	Sample ID: SWFTS-MW07A-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-22	**Well ID: SWFTS-MW07B**
Field Samplers: S. Henning				
Transducer Removal Time: 11:25	Transducer Redeployment Time: 00:30		General Well Condition: Good	
Depth to Water (ft): 11.69	Screened Interval Top (ft): 33.8		Pump Intake Depth (ft): 35.70	
Well Depth (ft): 38.70	Screened/Open Interval Bottom (ft): 38.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:35				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:35	36.1		7.12		5.366		4.42		134.6		7.3		240	11.80		Clear
11:40	28.6		6.86		5.957		0.60		80.8		8.8		285	11.80	1425	Clear
11:43	28.5		6.85		6.033		0.37		48.8		6.5		285	11.80	2280	Clear
11:46	28.1	0%	6.86	0.0	6.042	0%	0.30	<0.5	39.7	5.0	6.1	<10	285	11.80	3135	Clear
11:50	28.4	1%	6.86	0.0	6.082	0%	0.25	<0.5	33.8	0.9	5.5	<10	285	11.80	4275	Clear
11:53	27.8	1%	6.87	0.0	6.037	0%	0.21	<0.5	30.7	4.0	4.7	<10	285	11.80	5130	Clear

Stop Purge Time: 11:54 | **Sample Time: 12:00** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW07B*

Sample ID: SWFTS-MW07B-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-22	**Well ID: SWFTS-MW08A**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.50	Screened Interval Top (ft): 20.2		Pump Intake Depth (ft): 27.00	
Well Depth (ft): 34.80	Screened/Open Interval Bottom (ft): 34.8		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:45				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:45	24.4		7.08		4.891		0.73		129.3		2.6		250	15.60		Clear/None
08:48	24.4		7.08		4.895		0.67		110.2		2.5		250	15.60	750	Clear/None
08:51	24.4	0%	7.08	0.0	4.891	0%	0.60	4%	101.6	5.2	2.6	<10	250	15.60	1500	Clear/None
08:54	24.4	0%	7.08	0.0	4.894	0%	0.58	1%	98.4	2.0	2.5	<10	250	15.60	2250	Clear/None
08:57	24.4	0%	7.08	0.0	4.891	0%	0.54	5%	89.2	7.2	2.6	<10	250	15.60	3000	Clear/None

Stop Purge Time: 08:58	**Sample Time: 09:15**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW08A*
	Sample ID: SWFTS-MW08A-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: SWFTS-MW09A**
Field Samplers: J. Roman				
Transducer Removal Time: 09:49	Transducer Redeployment Time: 10:40		General Well Condition: Good	
Depth to Water (ft): 13.63	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.70	
Well Depth (ft): 28.98	Screened/Open Interval Bottom (ft): 28.9		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:05				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:05	25.3		6.97		4.073		0.80		205.7		3.2		270	13.63		Clear/None
10:08	25.2		6.97		4.058		0.61		202.7		3.5		270	13.63	810	Clear/None
10:11	25.3		6.97		4.055		0.52		200.2		4.4		270	13.63	1620	Clear/None
10:14	25.1	0%	6.97	0.0	4.044	0%	0.46	<0.5	198.3	1.8	5.5	<10	270	13.63	2430	Clear/None
10:17	25.2	0%	6.97	0.0	4.044	0%	0.41	<0.5	196.5	0.0	7.2	<10	270	13.63	3240	Clear/None
10:20	25.2	0%	6.97	0.0	4.050	0%	0.39	<0.5	194.6	1.9	9.0	<10	270	13.63	4050	Clear/None

Stop Purge Time: 10:21	**Sample Time: 10:30**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW09A-EM34	**QA/QC Sample ID(s): n/a**

SWFTS-MW09A

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: SWFTS-MW09B**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.76	Screened Interval Top (ft): 34.4		Pump Intake Depth (ft): 36.20	
Well Depth (ft): 39.04	Screened/Open Interval Bottom (ft): 39.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:02				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:02	25.6		7.07		4.180		1.01		118.8		3.5		210	13.76		Clear/None
09:05	25.3		7.06		4.151		0.80		92.2		3.5		210	13.76	630	Clear/None
09:08	25.5		7.06		4.160		0.67		88.3		3.6		210	13.76	1260	Clear/None
09:11	25.4		7.06		4.167		0.60		84.1		3.6		210	13.76	1890	Clear/None
09:14	25.6		7.06		4.178		0.53		78.9		3.8		210	13.76	2520	Clear/None
09:17	25.5	0%	7.06	0.0	4.164	0%	0.51	5%	79.5	0.1	4.3	<10	210	13.76	3150	Clear/None
09:20	25.8	0%	7.06	0.0	4.192	0%	0.48	<0.5	78.6	0.8	4.4	<10	210	13.76	3780	Clear/None
09:23	25.5	0%	7.06	0.0	4.170	0%	0.46	<0.5	80.1	0.7	4.5	<10	210	13.76	4410	Clear/None

Stop Purge Time: 09:24 | **Sample Time: 09:30** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW09B*

Sample ID: SWFTS-MW09B-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: SWFTS-MW10A**
Field Samplers: S. Henning				
Transducer Removal Time: 12:14	Transducer Redeployment Time: 13:45		General Well Condition: Good	
Depth to Water (ft): 10.23	Screened Interval Top (ft): 20.4		Pump Intake Depth (ft): 27.40	
Well Depth (ft): 35.10	Screened/Open Interval Bottom (ft): 35.0		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:24				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:24	31.4		7.49		5.124		5.78		80.2		11.7		300	10.30		Clear/None
12:28	26.5		6.93		4.770		0.39		83.5		3.0		300	10.30	1200	Clear/None
12:32	26.4	0%	6.94	0.0	4.754	0%	0.26	<0.5	83.6	0.4	3.6	<10	300	10.30	2400	Clear/None
12:35	26.2	0%	6.94	0.0	4.740	0%	0.21	<0.5	83.7	0.5	5.0	<10	300	10.30	3300	Clear/None
12:38	26.3	0%	6.94	0.0	4.743	0%	0.16	<0.5	82.2	1.0	7.0	<10	300	10.30	4200	Clear/None

Stop Purge Time: 12:39 | **Sample Time: 12:45** | **QA/QC Sample Time(s): 12:45** | *SWFTS-MW10A*

Sample ID: SWFTS-MW10A-EM34 | **QA/QC Sample ID(s): SWFTS-MW10A-EM34-MS/MSD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-22	**Well ID: SWFTS-MW11**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 16.35	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.60	
Well Depth (ft): 39.80	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:46				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:46	31.7		7.35		6.170		6.39		156.6		4.3		300	16.36		Clear
08:49	26.8		7.16		5.622		5.71		150.8		1.6		270	16.36	810	Clear
08:52	26.5		7.16		5.574		5.62		137.3		1.5		270	16.36	1620	Clear
08:55	26.5		7.16		5.573		5.60		122.3		1.5		270	16.36	2430	Clear
08:58	26.4	0%	7.16	0.0	5.571	0%	5.60	0%	110.8	11.0	1.5	<10	270	16.36	3240	Clear
09:01	26.3	0%	7.17	0.0	5.562	0%	5.58	0%	99.3	0.5	1.4	<10	270	16.36	4050	Clear
09:05	26.3	0%	7.17	0.0	5.557	0%	5.55	0%	89.3	10.5	1.4	<10	270	16.36	5130	Clear

Stop Purge Time: 09:06 | **Sample Time: 09:15** | **QA/QC Sample Time(s): 09:15** | *SWFTS-MW11*

Sample ID: SWFTS-MW11-EM34 | **QA/QC Sample ID(s): SWFTS-MW11-EM34-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-22	**Well ID: SWFTS-MW12**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.93	Screened Interval Top (ft): 15.8		Pump Intake Depth (ft): 27.90	
Well Depth (ft): 40.10	Screened/Open Interval Bottom (ft): 40.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:55				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:55	25.7		6.57		5.317		0.71		90.1		8.8		210	18.10		Clear/Slightly metallic
11:00	25.8		6.56		5.334		0.51		84.1		18.7		210	18.10	1050	Clear/Slightly metallic
11:03	26.0		6.56		5.345		0.45		83.6		30.1		210	18.10	1680	Clear/Slightly metallic
11:06	25.8		6.56		5.325		0.41		83.2		51.2		210	18.10	2310	Clear/Slightly metallic
11:09	26.0		6.56		5.341		0.38		78.4		61.9		210	18.10	2940	Clear/Slightly metallic
11:12	26.1	0%	6.57	0.0	5.358	0%	0.36	<0.5	77.5	0.2	76.6	155%	210	18.10	3570	Clear/Slightly metallic
11:15	26.2	0%	6.57	0.0	5.375	0%	0.35	<0.5	77.7	0.0	6.9	<10	210	18.10	4200	Clear/Slightly metallic
11:18	26.3	0%	6.57	0.0	5.379	0%	0.35	<0.5	77.9	0.2	6.6	<10	210	18.10	4830	Clear/Slightly metallic

Stop Purge Time: 11:19 | **Sample Time: 11:30** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW12*

Sample ID: SWFTS-MW12-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-22	**Well ID: SWFTS-MW13**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 23.20	Screened Interval Top (ft): 17.8		Pump Intake Depth (ft): 32.30	
Well Depth (ft): 47.50	Screened/Open Interval Bottom (ft): 47.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:48				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:48	25.8		7.26		6.545		5.17		147.8		2.5		210	23.20		Clear/None
09:51	25.9	0%	7.24	0.0	6.560	0%	4.82	2%	147.1	0.4	2.6	<10	210	23.20	630	Clear/None
09:54	25.8	0%	7.24	0.0	6.558	0%	4.66	0%	147.8	0.3	2.6	<10	210	23.20	1260	Clear/None
09:57	25.7	0%	7.24	0.0	6.550	0%	4.64	1%	147.6	0.1	2.7	<10	210	23.20	1890	Clear/None

Stop Purge Time: 09:58 | **Sample Time: 10:15** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW13*

Sample ID: SWFTS-MW13-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-21	**Well ID: SWFTS-MW14**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.38	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.40	
Well Depth (ft): 36.40	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:19				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:19	33.9		7.28		6.806		3.75		90.3		15.4		300	10.48		Cloudy brown
12:23	27.6		6.82		5.995		0.52		-58.7		21.2		270	10.48	1080	Cloudy brown
12:26	27.4		6.85		5.961		0.33		-56.5		31.9		270	10.48	1890	Cloudy brown
12:29	27.0		6.87		5.898		0.23		-62.0		40.2		270	10.48	2700	Cloudy brown
12:32	27.2		6.88		5.900		0.19		-66.3		56.5		270	10.48	3510	Cloudy brown
12:35	26.9		6.89		5.871		0.15		-69.6		80.9		270	10.48	4320	Cloudy brown
12:38	27.0		6.89		5.873		0.15		-72.7		10.3		270	10.48	5130	Cloudy brown
12:41	26.8	0%	6.89	0.0	5.859	0%	0.15	<0.5	-75.7	1.6	9.9	<10	270	10.48	5940	Clear
12:44	26.8	0%	6.89	0.0	5.851	0%	0.12	<0.5	-77.6	0.3	9.9	<10	270	10.48	6750	Cloudy brown
12:47	26.7	0%	6.90	0.0	5.827	0%	0.11	<0.5	-78.6	1.3	6.0	<10	270	10.48	7560	Cloudy brown

Stop Purge Time: 12:48	**Sample Time: 12:40**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW14*
	Sample ID: SWFTS-MW14-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-21	**Well ID: SWFTS-MW15**
Field Samplers: J. Roman				
Transducer Removal Time: 10:57	Transducer Redeployment Time: 11:50		General Well Condition: Good	
Depth to Water (ft): 13.44	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 24.40	
Well Depth (ft): 33.80	Screened/Open Interval Bottom (ft): 34.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:15				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:15	26.9		6.84		5.121		1.00		-40.3		9.6		240	13.44		Clear/Slightly sweet
11:18	26.8		6.84		5.101		0.71		-49.5		8.4		240	13.44	720	Clear/Slightly sweet
11:21	26.6		6.85		5.078		0.61		-55.3		8.8		240	13.44	1440	Clear/Slightly sweet
11:24	26.6		6.85		5.069		0.56		-60.8		6.9		240	13.44	2160	Clear/Slightly sweet
11:27	26.6	0%	6.84	0.0	5.060	0%	0.50	6%	-69.0	3.6	6.7	<10	240	13.44	2880	Clear/Slightly sweet
11:30	26.6	0%	6.84	0.0	5.063	0%	0.47	<0.5	-72.1	0.5	6.8	<10	240	13.44	3600	Clear/Slightly sweet
11:33	26.7	0%	6.84	0.0	5.060	0%	0.44	<0.5	-76.7	4.1	6.3	<10	240	13.44	4320	Clear/Slightly sweet

Stop Purge Time: 11:34	**Sample Time: 11:45**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW15*
	Sample ID: SWFTS-MW15-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good, bartroll 585310 also present General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 1.5** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-21	**Well ID: SWFTS-MW16**
Field Samplers: J. Roman				
Transducer Removal Time: 09:38	Transducer Redeployment Time: 10:40		General Well Condition: Good	
Depth to Water (ft): 22.23	Screened Interval Top (ft): 21.8		Pump Intake Depth (ft): 31.30	
Well Depth (ft): 39.48	Screened/Open Interval Bottom (ft): 41.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:57				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:57	26.6		6.84		4.581		1.03		29.2		62.1		200	22.23		Slightly Orange/None
10:00	26.4		6.85		4.557		0.74		25.1		72.8		200	22.23	600	Clear/None
10:03	26.2		6.85		4.546		0.60		22.3		65.8		200	22.23	1200	Clear/None
10:06	26.3		6.85		4.540		0.52		20.0		62.5		200	22.23	1800	Clear/None
10:09	26.0		6.85		4.520		0.46		18.0		65.5		200	22.23	2400	Clear/None
10:14	26.0	0%	6.86	0.0	4.527	0%	0.45	<0.5	16.8	2.7	45.0	5%	200	22.23	3400	Clear/None
10:17	26.1	0%	6.86	0.0	4.531	0%	0.41	<0.5	14.2	0.1	46.7	2%	200	22.23	4000	Clear/None
10:20	26.1	0%	6.86	0.0	4.537	0%	0.37	<0.5	11.2	2.9	51.3	7%	200	22.23	4600	Clear/None

Stop Purge Time: 10:21	**Sample Time: 10:30**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW16*
	Sample ID: SWFTS-MW16-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.5** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-21	**Well ID: SWFTS-MW17**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 26.25	Screened Interval Top (ft): 22.8		Pump Intake Depth (ft): 37.40	
Well Depth (ft): 51.42	Screened/Open Interval Bottom (ft): 52.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:48				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:48	26.7		7.31		4.548		5.02		94.9		7.4		300	26.25		Clear/None
12:51	26.4	0%	7.30	0.0	4.508	0%	4.94	0%	99.1	0.4	5.4	<10	300	26.25	900	Clear/None
12:54	26.7	0%	7.30	0.0	4.527	0%	4.91	0%	98.6	0.1	3.9	<10	300	26.25	1800	Clear/None
12:57	26.3	0%	7.29	0.0	4.488	0%	4.89	0%	98.5	0.2	2.9	<10	300	26.25	2700	Clear/None

Stop Purge Time: 12:58	**Sample Time: 13:15**		**QA/QC Sample Time(s): n/a**	*SWFTS-MW17*
	Sample ID: SWFTS-MW17-EM34		**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-21	**Well ID: SWFTS-MW18**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.59	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.10	
Well Depth (ft): 35.27	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:55				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:55	25.6		6.88		4.856		0.60		86.4		19.2		270	15.59		Clear/None
08:58	25.4		6.90		4.852		0.49		80.5		15.5		270	15.59	810	Clear/None
09:01	25.4		6.91		4.852		0.46		77.2		13.8		270	15.59	1620	Clear/None
09:04	25.6	0%	6.92	0.0	4.868	0%	0.40	<0.5	75.3	0.0	10.0	1%	270	15.59	2430	Clear/None
09:07	25.4	0%	6.93	0.0	4.843	0%	0.38	<0.5	75.2	0.1	9.9	<10	270	15.59	3240	Clear/None
09:10	25.4	0%	6.93	0.0	4.842	0%	0.34	<0.5	75.3	0.0	10.6	4%	270	15.59	4050	Clear/None

Stop Purge Time: 09:11 | **Sample Time: 09:15** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW18*

Sample ID: SWFTS-MW18-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: SWFTS-MW19**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.77	Screened Interval Top (ft): 11.3		Pump Intake Depth (ft): 21.00	
Well Depth (ft): 30.40	Screened/Open Interval Bottom (ft): 31.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:49				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:49	32.5		7.86		0.021		7.33		73.2		3.2		180	9.77		Clear/None
10:52	25.9		7.09		2.937		1.58		70.4		46.0		200	9.77	600	Clear/None
10:55	25.2		7.07		2.890		1.09		67.4		42.7		200	9.77	1200	Clear/None
10:58	25.3		7.07		2.895		0.92		64.2		25.1		200	9.77	1800	Clear/None
11:01	25.0		7.06		2.887		0.84		61.5		14.8		200	9.77	2400	Clear/None
11:04	25.1		7.06		2.880		0.73		57.6		8.0		200	9.77	3000	Clear/None
11:07	25.0	0%	7.06	0.0	2.873	0%	0.69	2%	53.6	1.6	5.4	<10	200	9.77	3600	Clear/None
11:11	25.1	0%	7.06	0.0	2.878	0%	0.67	0%	51.7	0.3	5.1	<10	200	9.77	4400	Clear/None
11:14	25.0	0%	7.06	0.0	2.872	0%	0.65	2%	50.7	1.3	6.9	<10	200	9.77	5000	Clear/None

Stop Purge Time: 11:15 | **Sample Time: 11:15** | **QA/QC Sample Time(s): 11:15** | *SWFTS-MW19*

Sample ID: SWFTS-MW19-EM34 | **QA/QC Sample ID(s): SWFTS-MW19-EM34-FD**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: SWFTS-MW20**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.84	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.80	
Well Depth (ft): 35.40	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:45				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:45	28.5		6.43		6.302		0.67		89.5		168.6		270	12.95		Clear/None
13:49	28.4		6.44		6.245		0.45		80.7		106.8		270	12.95	1080	Clear/None
13:52	28.2		6.45		6.204		0.36		74.5		72.4		270	12.95	1890	Clear/None
13:55	28.0		6.46		6.143		0.32		67.1		59.4		270	12.95	2700	Clear/None
13:58	28.2		6.46		6.128		0.31		63.2		45.9		270	12.95	3510	Clear/None
14:01	27.9		6.47		6.046		0.28		60.7		35.2		270	12.95	4320	Clear/None
14:04	28.0		6.47		5.993		0.26		56.3		31.5		270	12.95	5130	Clear/None
14:07	27.8		6.49		5.904		0.23		53.4		25.8		270	12.95	5940	Clear/None
14:10	27.9		6.49		5.866		0.22		50.5		22.8		270	12.95	6750	Clear/None
14:14	28.3		6.50		5.871		0.22		47.9		17.5		270	12.95	7830	Clear/None
14:17	27.7	1%	6.50	0.0	5.767	0%	0.20	<0.5	45.8	1.7	15.0	1%	270	12.95	8640	Clear/None
14:20	28.1	0%	6.50	0.0	5.782	0%	0.19	<0.5	44.3	0.2	15.3	3%	270	12.95	9450	Clear/None
14:23	28.2	0%	6.51	0.0	5.763	0%	0.18	<0.5	42.3	1.8	14.0	5%	270	12.95	10260	Clear/None

Stop Purge Time: 14:24	**Sample Time: 14:30**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW20*
	Sample ID: SWFTS-MW20-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-20	**Well ID: SWFTS-MW21**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.83	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.90	
Well Depth (ft): 38.12	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:19				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:19	26.1		6.93		5.126		0.91		112.6		61.4		210	15.85		Clear/None
12:22	25.6		6.93		5.082		0.62		100.3		41.1		210	15.85	630	Clear/None
12:26	25.7		6.92		5.100		0.53		96.1		29.1		210	15.85	1470	Clear/None
12:29	25.5		6.91		5.095		0.46		92.4		24.8		210	15.85	2100	Clear/None
12:32	25.5	0%	6.91	0.0	5.096	0%	0.42	<0.5	90.3	1.2	21.7	6%	210	15.85	2730	Clear/None
12:35	25.5	0%	6.90	0.0	5.098	0%	0.39	<0.5	89.1	0.0	19.0	7%	210	15.85	3360	Clear/None
12:38	25.5	0%	6.90	0.0	5.098	0%	0.38	<0.5	87.9	1.2	20.6	0%	210	15.85	3990	Clear/None

Stop Purge Time: 12:39 | **Sample Time: 12:45** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW21*

Sample ID: SWFTS-MW21-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-23	**Well ID: SWFTS-MW22**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Obstructed.	
Depth to Water (ft):	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft):	
Well Depth (ft):	Screened/Open Interval Bottom (ft): 31.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time:				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
		No sample due to: Obstructed														

Stop Purge Time: n/a	**Sample Time:n/a**	**QA/QC Sample Time(s): n/a**
	Sample ID: Not Sampled	**QA/QC Sample ID(s): n/a**

SWFTS-MW22

Observations/Comments:

HACH Kit Sulfide: n/a Hach Kit Ferrous Iron: n/a

Bottle Set Summary

	VOA w/HCl		125 mL Plastic		500 mL Plastic		40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
	125 mL w/EDA		250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-21	**Well ID: SWFTS-MW23**
Field Samplers: S. Henning				
Transducer Removal Time: 08:27	Transducer Redeployment Time: 09:45		General Well Condition: Good	
Depth to Water (ft): 12.56	Screened Interval Top (ft): 13.8		Pump Intake Depth (ft): 26.30	
Well Depth (ft): 38.10	Screened/Open Interval Bottom (ft): 33.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:39				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:39	24.3		7.17		3.080		0.94		98.9		78.2		300	12.62		Cloudy brown
08:42	24.0		7.14		3.050		0.46		92.7		31.9		300	12.62	900	Cloudy brown
08:45	23.9		7.14		3.046		0.33		89.9		19.0		300	12.62	1800	Cloudy brown
08:49	23.8		7.14		3.036		0.25		87.9		12.4		300	12.62	3000	Cloudy brown
08:52	23.8		7.14		3.035		0.20		86.0		9.9		300	12.62	3900	Cloudy brown
08:55	23.8	0%	7.14	0.0	3.036	0%	0.17	<0.5	84.3	1.7	8.6	<10	300	12.62	4800	Cloudy brown
08:58	23.8	0%	7.14	0.0	3.032	0%	0.15	<0.5	82.6	0.0	7.4	<10	300	12.62	5700	Cloudy brown
09:01	23.8	0%	7.13	0.0	3.035	0%	0.13	<0.5	81.0	1.6	7.0	<10	300	12.62	6600	Cloudy brown

Stop Purge Time: 09:02 | **Sample Time: 09:05** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW23*

Sample ID: SWFTS-MW23-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-19	**Well ID: SWFTS-MW24**
Field Samplers: J. Roman				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.08	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.90	
Well Depth (ft): 36.70	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:45				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:45	26.0		6.90		5.359		1.58		162.4		84.7		240	13.10		Clear/None
12:48	25.6		6.90		5.288		1.20		137.9		41.1		240	13.10	720	Clear/None
12:51	25.3		6.90		5.261		1.00		121.1		17.5		240	13.10	1440	Clear/None
12:54	25.2		6.89		5.248		0.99		109.7		11.1		240	13.10	2160	Clear/None
12:57	25.2	0%	6.89	0.0	5.245	0%	0.95	1%	102.8	4.0	9.4	<10	240	13.10	2880	Clear/None
13:00	25.4	0%	6.90	0.0	5.261	0%	0.96	0%	98.3	0.5	7.3	<10	240	13.10	3600	Clear/None
13:03	25.4	0%	6.90	0.0	5.264	0%	0.97	1%	95.3	3.5	5.9	<10	240	13.10	4320	Clear/None

Stop Purge Time: 13:04 | **Sample Time: 13:10** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW24*

Sample ID: SWFTS-MW24-EM34 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-07-21	**Well ID: SWFTS-MW25**
Field Samplers: S. Henning				
Transducer Removal Time: 07:02	Transducer Redeployment Time: 08:00		General Well Condition: Good	
Depth to Water (ft): 10.64	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 27.30	
Well Depth (ft): 43.20	Screened/Open Interval Bottom (ft): 42.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:19				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:19													300	10.75		Cloudy brown
07:20	24.9		6.91		5.264		0.56		109.7		530.8		300	10.75	300	Cloudy brown
07:24	24.7		6.88		5.243		0.33		110.7		437.6		300	10.75	1500	Cloudy brown
07:27	24.8		6.88		5.247		0.27		108.0		353.7		300	10.75	2400	Cloudy brown
07:30	24.8		6.88		5.248		0.21		105.8		286.2		300	10.75	3300	Cloudy brown
07:33	24.8		6.89		5.244		0.18		104.0		259.8		300	10.75	4200	Cloudy brown
07:36	24.8	0%	6.89	0.0	5.249	0%	0.15	<0.5	102.2	1.8	222.4	1%	300	10.75	5100	Cloudy brown
07:39	24.8	0%	6.89	0.0	5.250	0%	0.13	<0.5	100.5	0.1	237.6	4%	300	10.75	6000	Cloudy brown
07:42	24.8	0%	6.89	0.0	5.244	0%	0.11	<0.5	98.5	1.9	219.5	3%	300	10.75	6900	Cloudy brown

Stop Purge Time: 07:43	**Sample Time: 07:45**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW25*
	Sample ID: SWFTS-MW25-EM34	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good General Comments:

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

WELL WATER LEVEL MEASUREMENT LOG

Task Name: SWF Area Bioremediation Treatability Study	Task No: M11	Date: September 15, 2021
Task Manager: Dana Grady	Event: EM35	*Recorded by:* *G. Schuler* *A. Camacho*
Equipment Model/Type: Solinst Water Level Meter	*Serial Number: 10244* *211127*	

Time	Well ID	Measuring Point	Depth to Static Water Level (ft BMP)	Total Depth (ft BMP)	Condition of Well and Well Seal
09:45	PC-58	TOC	20.28	38.55	Good
07:32	PC-88	TOC	6.02	46.30	Good
06:58	PC-91	TOC	10.93	19.90	Good
07:10	PC-92	TOC	10.07	37.10	Good
07:23	PC-94	TOC	12.95	20.00	Good
07:42	SWFTS-MW01	TOC	14.26	38.35	Good
07:50	SWFTS-MW02	TOC	11.75	31.10	Good
07:58	SWFTS-MW03	TOC	13.03	41.50	Good
08:04	SWFTS-MW04	TOC	9.23	39.50	Good
08:13	SWFTS-MW05A	TOC	17.46	28.20	Good
08:16	SWFTS-MW05B	TOC	17.41	41.72	Good
08:32	SWFTS-MW06A	TOC	4.93	20.95	Good
08:36	SWFTS-MW06B	TOC	5.19	35.10	Good
08:59	SWFTS-MW07A	TOC	12.20	30.10	Good
09:03	SWFTS-MW07B	TOC	11.89	38.50	Good
09:28	SWFTS-MW08A	TOC	15.44	34.80	Good
09:32	SWFTS-MW08C	TOC	13.83	69.75	Good
09:13	SWFTS-MW09A	TOC	13.55	29.00	Good
09:17	SWFTS-MW09B	TOC	13.67	39.05	Good
09:33	SWFTS-MW10A	TOC	10.30	35.10	Good
09:36	SWFTS-MW10C	TOC	8.45	63.40	Good
09:04	SWFTS-MW11	TOC	16.15	39.80	Good
08:39	SWFTS-MW12	TOC	17.80	40.10	Good
08:24	SWFTS-MW13	TOC	23.05	47.50	Good
09:20	SWFTS-MW14	TOC	10.41	36.40	Good
08:57	SWFTS-MW15	TOC	13.45	33.80	Good
08:32	SWFTS-MW16	TOC	22.11	39.48	Good
08:14	SWFTS-MW17	TOC	26.10	51.42	Good
08:05	SWFTS-MW18	TOC	15.51	35.27	Good
07:39	SWFTS-MW19	TOC	9.98	30.40	Good
07:50	SWFTS-MW20	TOC	12.50	35.40	Good
07:59	SWFTS-MW21	TOC	15.72	38.12	Good
07:26	SWFTS-MW22	TOC	11.05	31.75	Good
07:32	SWFTS-MW23	TOC	12.40	38.10	Good
07:07	SWFTS-MW24	TOC	12.95	36.70	Good
07:18	SWFTS-MW25	TOC	10.40	43.20	Good

BMP = Below Measuring Point DP = Dedicated Pump OS = Offsite Storage TOC = Top of Casing (Well Riser)

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: PC-58**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 20.28	Screened Interval Top (ft): 7.8		Pump Intake Depth (ft): 22.60	
Well Depth (ft): 38.55	Screened/Open Interval Bottom (ft): 32.8		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:54				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:54	27.8		7.31		3.892		1.76		-22.8		93.2		300	20.28		Clear/None
11:57	25.5		7.23		3.716		0.43		-19.3		58.8		300	20.28	900	Clear/None
12:00	25.2		7.21		3.695		0.28		-18.4		49.4		300	20.28	1800	Clear/None
12:03	25.6	0%	7.21	0.0	3.719	0%	0.19	<0.5	-18.6	0.0	54.8	9%	300	20.28	2700	Clear/None
12:06	25.5	0%	7.20	0.0	3.714	0%	0.11	<0.5	-18.7	0.1	59.5	1%	300	20.28	3600	Clear/None
12:10	25.3	0%	7.20	0.0	3.712	0%	0.08	<0.5	-18.6	0.0	66.9	10%	300	20.28	4800	Clear/None

Stop Purge Time: 12:11	**Sample Time: 12:25**	**QA/QC Sample Time(s): n/a**	*PC-58*
	Sample ID: PC-58-EM35	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: PC-88**
Field Samplers: G. Schuler				
Transducer Removal Time: 10:13	Transducer Redeployment Time: 00:00		General Well Condition: Good	
Depth to Water (ft): 6.03	Screened Interval Top (ft): 40.0		Pump Intake Depth (ft): 44.90	
Well Depth (ft): 46.50	Screened/Open Interval Bottom (ft): 50.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:26				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:26	25.5		7.38		3.589		1.46		-68.2		284.2		240	6.03		Clear/None
10:29	24.5		7.26		3.513		0.36		-54.4		113.7		240	6.03	720	Clear/None
10:32	24.5		7.25		3.502		0.19		-53.2		78.2		240	6.03	1440	Clear/None
10:35	24.3		7.24		3.496		0.12		-52.9		63.6		240	6.03	2160	Clear/None
10:38	24.3		7.24		3.499		0.09		-52.8		56.2		240	6.03	2880	Clear/None
10:41	24.2		7.24		3.488		0.05		-52.8		50.1		240	6.03	3600	Clear/None
10:44	24.3	0%	7.24	0.0	3.496	0%	0.04	<0.5	-52.8	0.1	45.0	0%	240	6.03	4320	Clear/None
10:47	24.3	0%	7.23	0.0	3.493	0%	0.01	<0.5	-52.9	0.0	45.2	0%	240	6.03	5040	Clear/None
10:50	24.4	0%	7.23	0.0	3.501	0%	-0.01	<0.5	-52.9	0.0	45.7	0%	240	6.03	5760	Clear/None

Stop Purge Time: 10:51 | **Sample Time: 11:05** | **QA/QC Sample Time(s): 11:05** | *PC-88*

Sample ID: PC-88-EM35 | **QA/QC Sample ID(s): PC-88-EM35-FD**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: PC-91**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.60	Screened Interval Top (ft): 11.5		Pump Intake Depth (ft): 16.00	
Well Depth (ft): 19.90	Screened/Open Interval Bottom (ft): 21.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:48				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:48	28.4		6.65		3.779		0.86		-251.1		76.7		195	10.64		Clear/None
08:51	28.4		6.64		3.757		0.08		-287.0		56.4		195	10.64	585	Clear/None
08:55	28.4		6.63		3.767		0.00		-299.0		38.5		180	10.70	1305	Clear/None
08:58	28.5		6.63		3.807		-0.03		-303.2		25.1		180	10.70	1845	Clear/None
09:01	28.6		6.62		3.843		-0.06		-305.6		17.6		180	10.70	2385	Clear/None
09:04	28.6		6.62		3.896		-0.07		-309.6		12.5		180	10.70	2925	Clear/None
09:07	28.6	0%	6.62	0.0	3.942	0%	-0.09	<0.5	-313.5	4.0	8.0	<10	180	10.70	3465	Clear/None
09:10	28.7	0%	6.62	0.0	3.978	0%	-0.10	<0.5	-318.2	0.7	5.4	<10	150	10.79	3915	Clear/None
09:13	28.8	0%	6.61	0.0	4.007	0%	-0.11	<0.5	-320.9	3.4	3.6	<10	150	10.79	4365	Clear/None

Stop Purge Time: 09:14	**Sample Time: 09:25**	**QA/QC Sample Time(s): n/a**
	Sample ID: PC-91-EM35	**QA/QC Sample ID(s): n/a**

PC-91

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.6 mg/L **Hach Kit Ferrous Iron: 0.5** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: PC-92**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.07	Screened Interval Top (ft): 26.5		Pump Intake Depth (ft): 31.20	
Well Depth (ft): 37.00	Screened/Open Interval Bottom (ft): 36.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:28				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:28	24.1		7.15		4.551		3.29		118.1		63.0		165	10.11		Clear/None
07:35	24.3		7.06		4.743		0.72		38.4		49.1		165	10.11	1155	Clear/None
07:38	24.3		7.06		4.741		0.48		26.6		36.6		165	10.11	1650	Clear/None
07:41	24.2		7.06		4.738		0.36		20.7		29.7		165	10.11	2145	Clear/None
07:44	24.2		7.06		4.742		0.29		15.3		25.3		165	10.11	2640	Clear/None
07:47	24.2	0%	7.05	0.0	4.777	1%	0.25	<0.5	12.3	1.5	22.3	4%	165	10.11	3135	Clear/None
07:50	24.2	0%	7.05	0.0	4.843	0%	0.22	<0.5	11.5	0.7	20.6	3%	165	10.11	3630	Clear/None
07:53	24.2	0%	7.05	0.0	4.890	1%	0.19	<0.5	8.6	2.2	21.0	1%	165	10.11	4125	Clear/None

Stop Purge Time: 07:54	**Sample Time: 08:05**	**QA/QC Sample Time(s): n/a**
	Sample ID: PC-92-EM35	**QA/QC Sample ID(s): n/a**

PC-92

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-15	**Well ID: PC-94**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.93	Screened Interval Top (ft): 9.5		Pump Intake Depth (ft): 16.30	
Well Depth (ft): 20.00	Screened/Open Interval Bottom (ft): 19.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:33				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:33	26.3		6.81		5.599		1.02		107.1		174.8		255	13.06		Clear/None
10:37	25.9		6.81		5.559		0.50		87.7		104.1		255	13.06	1020	Clear/None
10:40	25.8		6.82		5.546		0.34		80.6		76.6		255	13.06	1785	Clear/None
10:43	25.7		6.83		5.545		0.23		76.3		60.6		255	13.06	2550	Clear/None
10:46	25.8		6.83		5.551		0.18		73.4		50.2		255	13.06	3315	Clear/None
10:49	25.8		6.83		5.551		0.15		70.1		42.5		255	13.06	4080	Clear/None
10:52	25.8	0%	6.83	0.0	5.547	0%	0.12	<0.5	65.5	4.0	36.9	8%	255	13.06	4845	Clear/None
10:55	25.7	0%	6.83	0.0	5.545	0%	0.09	<0.5	61.5	0.0	32.7	3%	255	13.06	5610	Clear/None
10:58	25.7	0%	6.84	0.0	5.539	0%	0.07	<0.5	57.6	3.9	32.0	5%	255	13.06	6375	Clear/None

Stop Purge Time: 10:59	**Sample Time: 11:25**	**QA/QC Sample Time(s): n/a**	*PC-94*
	Sample ID: PC-94-EM35	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-15	**Well ID: SWFTS-MW01**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 14.24	Screened Interval Top (ft): 24.2		Pump Intake Depth (ft): 31.30	
Well Depth (ft): 38.40	Screened/Open Interval Bottom (ft): 38.9		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:40				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:40	28.3		6.89		6.129		1.75		54.0		18.2		285	14.24		Clear/None
12:43	26.0		6.74		5.768		0.30		32.9		13.0		285	14.24	855	Clear/None
12:46	25.9	0%	6.74	0.0	5.727	0%	0.16	<0.5	33.7	2.0	7.5	<10	285	14.24	1710	Clear/None
12:49	25.8	0%	6.75	0.0	5.709	0%	0.11	<0.5	35.4	0.3	3.5	<10	285	14.24	2565	Clear/None
12:53	25.8	0%	6.74	0.0	5.704	0%	0.08	<0.5	38.1	2.4	3.3	<10	285	14.24	3705	Clear/None

Stop Purge Time: 12:54 | **Sample Time: 13:15** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW01*

Sample ID: SWFTS-MW01-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW02**
Field Samplers: T. Slazas				
Transducer Removal Time: 11:40	Transducer Redeployment Time: 13:30		General Well Condition: Good	
Depth to Water (ft): 11.75	Screened Interval Top (ft): 18.4		Pump Intake Depth (ft): 25.50	
Well Depth (ft): 31.30	Screened/Open Interval Bottom (ft): 33.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:53				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:53	27.8		6.92		6.452		1.62		170.6		74.5		200	11.75		Clear/None
11:56	27.1		6.83		6.315		0.81		175.4		65.8		200	11.75	600	Clear/None
11:59	26.9		6.82		6.284		0.65		176.5		44.1		200	11.75	1200	Clear/None
12:02	27.0		6.81		6.300		0.58		176.6		47.6		200	11.75	1800	Clear/None
12:05	26.9	0%	6.80	0.0	6.309	0%	0.53	6%	176.6	0.2	40.5	13%	200	11.75	2400	Clear/None
12:08	26.7	0%	6.80	0.0	6.304	0%	0.50	0%	176.4	0.0	34.0	5%	200	11.75	3000	Clear/None
12:11	26.8	0%	6.79	0.0	6.317	0%	0.47	<0.5	176.2	0.2	33.0	7%	200	11.75	3600	Clear/None

Stop Purge Time: 12:12	**Sample Time: 12:15**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW02*
	Sample ID: SWFTS-MW02-EM35	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-15	**Well ID: SWFTS-MW03**
Field Samplers: T. Slazas				
Transducer Removal Time: 12:29	Transducer Redeployment Time: 14:00		General Well Condition: Good	
Depth to Water (ft): 13.38	Screened Interval Top (ft): 27.2		Pump Intake Depth (ft): 34.40	
Well Depth (ft): 41.60	Screened/Open Interval Bottom (ft): 42.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:48				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:48	25.3		6.82		5.660		0.54		92.5		23.3		250	13.40		Clear/None
12:51	25.2		6.82		5.654		0.48		91.6		24.1		250	13.40	750	Clear/None
12:54	25.1		6.81		5.640		0.45		91.0		24.5		250	13.40	1500	Clear/None
12:57	25.1		6.81		5.643		0.42		90.6		27.8		250	13.40	2250	Clear/None
13:00	25.0	0%	6.81	0.0	5.631	0%	0.41	<0.5	90.2	0.2	31.2	11%	250	13.40	3000	Clear/None
13:03	24.9	0%	6.81	0.0	5.635	0%	0.39	<0.5	90.5	0.1	35.5	1%	250	13.40	3750	Clear/None
13:06	25.0	0%	6.81	0.0	5.634	0%	0.38	<0.5	90.4	0.0	38.6	9%	250	13.40	4500	Clear/None

Stop Purge Time: 13:07 | **Sample Time: 13:15** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW03*

Sample ID: SWFTS-MW03-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW04**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.26	Screened Interval Top (ft): 25.8		Pump Intake Depth (ft): 32.80	
Well Depth (ft): 39.80	Screened/Open Interval Bottom (ft): 40.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:31				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:31	24.2		7.22		4.130		1.52		170.6		80.5		200	9.26		Clear/None
10:34	24.1		7.15		4.240		0.84		172.8		37.9		200	9.26	600	Clear/None
10:37	23.9		7.14		4.256		0.69		173.3		25.1		200	9.26	1200	Clear/None
10:40	23.9		7.13		4.276		0.62		173.3		21.8		200	9.26	1800	Clear/None
10:43	23.8	0%	7.13	0.0	4.286	0%	0.54	6%	172.9	0.6	22.2	3%	200	9.26	2400	Clear/None
10:46	23.8	0%	7.13	0.0	4.300	0%	0.50	1%	172.3	0.0	21.0	2%	200	9.26	3000	Clear/None
10:49	23.9	0%	7.13	0.0	4.312	0%	0.48	<0.5	171.8	0.5	21.1	1%	200	9.26	3600	Clear/None

Stop Purge Time: 10:50 | **Sample Time: 10:55** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW04*

Sample ID: SWFTS-MW04-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-17	**Well ID: SWFTS-MW05A**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.49	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.80	
Well Depth (ft): 28.20	Screened/Open Interval Bottom (ft): 29.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:35				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:35	26.4		6.71		6.951		1.42		103.4		6.6		300	17.59		Clear/None
10:38	25.0		6.70		6.704		0.63		66.0		7.3		300	17.59	900	Clear/None
10:41	24.9		6.70		6.686		0.53		59.7		8.8		300	17.59	1800	Clear/None
10:44	24.8		6.69		6.688		0.47		59.3		10.1		300	17.59	2700	Clear/None
10:47	24.9		6.69		6.690		0.45		59.1		10.5		300	17.59	3600	Clear/None
10:51	25.0		6.70		6.707		0.42		57.3		10.3		300	17.59	4800	Clear/None
10:54	24.9	0%	6.70	0.0	6.694	0%	0.43	<0.5	56.5	1.7	9.3	<10	300	17.59	5700	Clear/None
10:57	24.9	0%	6.71	0.0	6.697	0%	0.41	<0.5	55.3	0.5	9.4	<10	300	17.59	6600	Clear/None
11:00	24.8	0%	6.71	0.0	6.697	0%	0.38	<0.5	52.5	2.3	7.9	<10	300	17.59	7500	Clear/None

Stop Purge Time: 11:01 | **Sample Time: 11:20** | **QA/QC Sample Time(s): 11:20** | *SWFTS-MW05A*

Sample ID: SWFTS-MW05A-EM35 | **QA/QC Sample ID(s): SWFTS-MW05A-EM35-MS/MSD**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW05B**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.41	Screened Interval Top (ft): 32.3		Pump Intake Depth (ft): 36.60	
Well Depth (ft): 41.70	Screened/Open Interval Bottom (ft): 42.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:14				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:14	26.4		6.76		6.193		1.03		-77.2		15.7		200	17.41		Clear/None
13:18	25.7		6.66		6.095		0.63		-50.8		34.0		200	17.41	800	Clear/None
13:21	25.6		6.64		6.093		0.52		-34.5		23.4		200	17.41	1400	Clear/None
13:24	25.5		6.64		6.074		0.49		-24.0		40.1		200	17.41	2000	Clear/None
13:27	25.4		6.64		6.068		0.45		-16.7		47.0		200	17.41	2600	Clear/None
13:30	25.4		6.64		6.066		0.43		-11.9		56.3		200	17.41	3200	Clear/None
13:33	25.4	0%	6.63	0.0	6.067	0%	0.41	<0.5	-9.1	2.4	8.7	<10	200	17.41	3800	Clear/None
13:36	25.5	0%	6.63	0.0	6.078	0%	0.39	<0.5	-6.6	0.1	18.5	26%	200	17.41	4400	Clear/None
13:39	25.3	0%	6.64	0.0	6.060	0%	0.38	<0.5	-4.3	2.4	16.8	14%	200	17.41	5000	Clear/None

Stop Purge Time: 13:40 | **Sample Time: 13:45** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW05B*

Sample ID: SWFTS-MW05B-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW06A**
Field Samplers: T. Slazas				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 5.00	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 16.20	
Well Depth (ft): 21.90	Screened/Open Interval Bottom (ft): 21.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:31				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:31	23.6		7.19		2.827		0.73		193.3		26.7		200	5.00		Clear/None
07:34	23.4		7.19		2.823		0.60		189.5		24.7		200	5.00	600	Clear/None
07:37	23.4		7.19		2.820		0.54		186.9		25.2		200	5.00	1200	Clear/None
07:40	23.4	0%	7.19	0.0	2.820	0%	0.50	5%	184.7	2.1	27.7	7%	200	5.00	1800	Clear/None
07:44	23.3	0%	7.19	0.0	2.819	0%	0.47	<0.5	182.7	0.1	31.0	3%	200	5.00	2600	Clear/None
07:47	23.4	0%	7.19	0.0	2.822	0%	0.45	<0.5	180.5	2.1	31.4	4%	200	5.00	3200	Clear/None

Stop Purge Time: 07:48 | **Sample Time: 07:55** | **QA/QC Sample Time(s): 07:55** | *SWFTS-MW06A*

Sample ID: SWFTS-MW06A-EM35 | **QA/QC Sample ID(s): SWFTS-MW06A-EM35-FD**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW06B**
Field Samplers: T. Slazas				
Transducer Removal Time: 08:35	Transducer Redeployment Time: 10:00		General Well Condition: Good	
Depth to Water (ft): 5.21	Screened Interval Top (ft): 25.9		Pump Intake Depth (ft): 30.30	
Well Depth (ft): 35.30	Screened/Open Interval Bottom (ft): 35.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:48				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:48	23.9		7.24		2.958		1.31		138.9		160.9		200	5.22		Clear/None
08:51	23.7		7.21		2.947		0.80		143.2		93.9		200	5.22	600	Clear/None
08:54	23.5		7.20		2.937		0.60		144.8		95.7		200	5.22	1200	Clear/None
08:57	23.5		7.20		2.933		0.55		145.7		86.4		200	5.22	1800	Clear/None
09:00	23.4		7.20		2.930		0.50		146.1		71.4		200	5.22	2400	Clear/None
09:03	23.4	0%	7.19	0.0	2.923	0%	0.47	<0.5	146.3	0.1	68.2	8%	200	5.22	3000	Clear/None
09:06	23.3	0%	7.19	0.0	2.920	0%	0.45	<0.5	146.5	0.1	61.7	1%	200	5.22	3600	Clear/None
09:09	23.3	0%	7.19	0.0	2.919	0%	0.43	<0.5	146.4	0.0	58.7	6%	200	5.22	4200	Clear/None

Stop Purge Time: 09:10	**Sample Time: 09:15**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW06B*
	Sample ID: SWFTS-MW06B-EM35	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW07A**
Field Samplers: A. Camacho				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.20	Screened Interval Top (ft): 15.0		Pump Intake Depth (ft): 22.00	
Well Depth (ft): 30.10	Screened/Open Interval Bottom (ft): 29.5		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:30				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:30	24.0		7.01		5.268		0.76		124.0		216.9		250	12.20		Clear/None
07:33	24.0		7.01		5.268		0.74		125.3		216.8		250	12.20	750	Clear/None
07:37	24.0		7.01		5.262		0.79		126.3		215.6		250	12.20	1750	Clear/None
07:44	24.9		6.95		5.315		2.57		144.0		-9.5		250	12.20	3500	Clear/None
07:47	24.1	0%	6.99	0.0	5.274	0%	0.99	4%	135.5	0.1	-2.2	<10	250	12.20	4250	Clear/None
07:50	24.1	0%	6.99	0.0	5.275	0%	0.91	3%	135.6	0.0	-2.4	<10	250	12.20	5000	Clear/None
07:53	24.1	0%	6.99	0.0	5.278	0%	0.93	1%	135.8	0.2	-3.1	<10	250	12.20	5750	Clear/None

Stop Purge Time: 07:54 | **Sample Time: 08:00** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW07A*

Sample ID: SWFTS-MW07A-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW07B**
Field Samplers: A. Camacho				
Transducer Removal Time: 08:26	Transducer Redeployment Time: 09:25		General Well Condition: Good	
Depth to Water (ft): 11.86	Screened Interval Top (ft): 33.8		Pump Intake Depth (ft): 35.70	
Well Depth (ft): 38.70	Screened/Open Interval Bottom (ft): 38.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:33				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:33	25.0		6.89		5.902		0.84		167.7		10.1		250	11.86		Clear/None
08:37	25.1	0%	6.89	0.0	6.130	1%	0.46	<0.5	165.3	1.7	14.8	7%	250	11.86	1000	Clear/None
08:40	25.0	0%	6.89	0.0	6.209	0%	0.30	<0.5	163.5	0.1	16.1	0%	250	11.86	1750	Clear/None
08:43	25.1	0%	6.90	0.0	6.245	0%	0.25	<0.5	162.1	1.5	17.3	7%	250	11.86	2500	Clear/None

Stop Purge Time: 08:44	**Sample Time: 08:55**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW07B*
	Sample ID: SWFTS-MW07B-EM35	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW08A**
Field Samplers: A. Camacho				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.40	Screened Interval Top (ft): 20.2		Pump Intake Depth (ft): 27.00	
Well Depth (ft): 34.80	Screened/Open Interval Bottom (ft): 34.8		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:10				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:10	25.3		6.95		6.496		0.76		226.3		-0.5		250	15.40		Clear/None
10:13	25.3		6.96		6.508		0.66		223.9		-0.8		250	15.40	750	Clear/None
10:16	25.2	0%	6.96	0.0	6.489	0%	0.58	1%	220.5	3.3	-0.8	<10	250	15.40	1500	Clear/None
10:19	25.0	0%	6.97	0.0	6.473	0%	0.60	2%	217.4	0.2	-1.2	<10	250	15.40	2250	Clear/None
10:22	25.2	0%	6.97	0.0	6.484	0%	0.58	1%	213.8	3.4	-1.2	<10	250	15.40	3000	Clear/None

Stop Purge Time: 10:23	**Sample Time: 10:35**	**QA/QC Sample Time(s): n/a**		*SWFTS-MW08A*
	Sample ID: SWFTS-MW08A-EM35	**QA/QC Sample ID(s): n/a**		

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-15	**Well ID: SWFTS-MW09A**
Field Samplers: A. Camacho				
Transducer Removal Time: 10:28	Transducer Redeployment Time: 11:35		General Well Condition: Good	
Depth to Water (ft): 13.55	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.70	
Well Depth (ft): 28.98	Screened/Open Interval Bottom (ft): 28.9		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:43				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:43	25.4	0%	6.81	0.0	5.784	0%	0.48	<0.5	166.0	0.6	4.1	<10	200	13.55		Clear/None
10:46	25.5	0%	6.81	0.0	5.787	0%	0.33	<0.5	165.3	0.1	6.1	<10	200	13.55	600	Clear/None
10:49	25.6	0%	6.81	0.0	5.793	0%	0.29	<0.5	164.8	0.6	9.4	<10	200	13.55	1200	Clear/None

Stop Purge Time: 10:50	**Sample Time: 11:00**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW09A*
	Sample ID: SWFTS-MW09A-EM35	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-15	**Well ID: SWFTS-MW09B**
Field Samplers: A. Camacho				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.61	Screened Interval Top (ft): 34.4		Pump Intake Depth (ft): 36.20	
Well Depth (ft): 39.04	Screened/Open Interval Bottom (ft): 39.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:43				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:43	26.5		6.92		5.856		0.75		171.3		4.2		200	13.61		Clear/None
11:46	26.1	0%	6.90	0.0	5.954	0%	0.46	<0.5	170.7	0.8	3.7	<10	200	13.61	600	Clear/None
11:49	25.8	0%	6.90	0.0	5.954	0%	0.33	<0.5	170.0	0.1	3.9	<10	200	13.61	1200	Clear/None
11:52	25.8	0%	6.89	0.0	5.962	0%	0.25	<0.5	168.9	1.0	3.7	<10	200	13.61	1800	Clear/None

Stop Purge Time: 11:53	**Sample Time: 12:00**		**QA/QC Sample Time(s): n/a**	*SWFTS-MW09B*
	Sample ID: SWFTS-MW09B-EM35		**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-15	**Well ID: SWFTS-MW10A**
Field Samplers: A. Camacho				
Transducer Removal Time: 12:48	Transducer Redeployment Time: 13:49		General Well Condition: Good	
Depth to Water (ft): 10.31	Screened Interval Top (ft): 20.4		Pump Intake Depth (ft): 27.40	
Well Depth (ft): 35.10	Screened/Open Interval Bottom (ft): 35.0		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:59				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:59	27.2		6.91		6.313		0.90		170.9		14.7		200	10.31		Clear/None
13:02	26.8		6.90		6.262		0.47		169.8		15.5		200	10.31	600	Clear/None
13:05	26.7	0%	6.90	0.0	6.248	0%	0.36	<0.5	168.9	0.8	18.1	59%	200	10.31	1200	Clear/None
13:08	26.6	0%	6.89	0.0	6.234	0%	0.23	<0.5	168.2	0.1	6.3	<10	200	10.31	1800	Clear/None
13:11	26.7	0%	6.89	0.0	6.239	0%	0.18	<0.5	167.3	0.8	9.6	<10	200	10.31	2400	Clear/None

Stop Purge Time: 13:12	**Sample Time: 13:20**	**QA/QC Sample Time(s): 13:20**	*SWFTS-MW10A*
	Sample ID: SWFTS-MW10A-EM35	**QA/QC Sample ID(s): SWFTS-MW10A-EM35-MS/MSD**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:
± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW11**
Field Samplers: A. Camacho				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 16.32	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.60	
Well Depth (ft): 39.80	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:15				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:15	27.2	1%	7.24	0.0	6.340	0%	5.41	1%	162.4	2.2	-0.9	<10	250	16.32		Clear/None
11:19	26.8	0%	7.24	0.0	6.293	0%	5.30	0%	164.9	0.3	-1.1	<10	250	16.32	1000	Clear/None
11:22	26.5	1%	7.24	0.0	6.247	0%	5.26	1%	166.6	2.0	-1.5	<10	250	16.32	1750	Clear/None

Stop Purge Time: 11:23 | **Sample Time: 11:30** | **QA/QC Sample Time(s): 11:30** | *SWFTS-MW11*

Sample ID: SWFTS-MW11-EM35 | **QA/QC Sample ID(s): SWFTS-MW11-EM35-FD**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-15	**Well ID: SWFTS-MW12**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.89	Screened Interval Top (ft): 15.8		Pump Intake Depth (ft): 27.90	
Well Depth (ft): 40.10	Screened/Open Interval Bottom (ft): 40.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:27				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:27	35.4		7.63		0.052		6.91		128.8		21.6		300	17.85		Clear/None
13:31	26.8		6.57		5.714		1.26		75.6		17.1		300	17.85	1200	Clear/None
13:34	26.2		6.57		5.636		1.08		76.3		24.2		300	17.85	2100	Clear/None
13:37	26.2		6.57		5.615		0.99		73.8		32.4		300	17.85	3000	Clear/None
13:46	26.4		6.57		5.665		0.88		61.2		57.4		300	17.85	5700	Clear/None
13:51	26.3		6.57		5.654		0.94		57.3		24.1		300	18.00	7200	Clear/None
13:54	26.4		6.56		5.679		0.70		54.7		29.7		300	18.00	8100	Clear/None
13:57	26.2		6.57		5.660		0.62		52.4		18.2		300	18.00	9000	Clear/None
14:00	26.4		6.56		5.680		0.59		49.9		11.2		300	18.00	9900	Clear/None
14:03	26.4	0%	6.57	0.0	5.683	0%	0.59	3%	48.1	1.5	7.6	<10	300	18.00	10800	Clear/None
14:06	26.3	0%	6.57	0.0	5.675	0%	0.57	0%	46.5	0.1	6.0	<10	300	18.00	11700	Clear/None
14:09	26.3	0%	6.57	0.0	5.668	0%	0.55	3%	45.1	1.5	7.1	<10	300	18.00	12600	Clear/None

Stop Purge Time: 14:10 | **Sample Time: 14:15** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW12*

Sample ID: SWFTS-MW12-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-15	**Well ID: SWFTS-MW13**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 23.08	Screened Interval Top (ft): 17.8		Pump Intake Depth (ft): 32.30	
Well Depth (ft): 47.60	Screened/Open Interval Bottom (ft): 47.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:23				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:23	28.4		7.23		7.910		6.12		130.5		2.4		285	23.10		Clear/None
12:26	26.5		7.18		7.597		5.92		120.1		2.6		285	23.10	855	Clear/None
12:30	26.2		7.17		7.563		5.84		112.8		3.0		285	23.10	1995	Clear/None
12:33	26.0	0%	7.16	0.0	7.564	0%	5.75	4%	102.7	5.5	3.7	<10	285	23.10	2850	Clear/None
12:36	26.0	0%	7.16	0.0	7.612	0%	5.52	0%	96.8	0.4	4.1	<10	285	23.10	3705	Clear/None
12:39	25.9	0%	7.15	0.0	7.644	0%	5.27	4%	92.1	5.1	4.3	<10	285	23.10	4560	Clear/None

Stop Purge Time: 12:40 | **Sample Time: 12:45** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW13*

Sample ID: SWFTS-MW13-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW14**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.46	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.40	
Well Depth (ft): 36.20	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:46				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:46	26.6		6.85		5.628		1.11		-1.5		9.1		270	10.50		Clear/None
10:49	26.4		6.83		5.578		0.86		-1.8		22.0		270	10.50	810	Clear/None
10:52	26.3		6.83		5.567		0.75		-1.9		30.3		270	10.50	1620	Clear/None
10:56	26.2		6.82		5.562		0.65		-3.6		3.5		270	10.50	2700	Clear/None
10:59	26.0		6.83		5.548		0.57		-6.2		6.0		270	10.50	3510	Clear/None
11:02	26.2		6.83		5.557		0.54		-8.8		11.7		270	10.50	4320	Clear/None
11:05	26.1	0%	6.83	0.0	5.551	0%	0.52	1%	-11.7	1.8	4.2	<10	270	10.50	5130	Clear/None
11:08	26.2	0%	6.83	0.0	5.567	0%	0.51	0%	-13.5	0.0	3.2	<10	270	10.50	5940	Clear/None
11:11	26.3	0%	6.83	0.0	5.581	0%	0.51	0%	-15.3	1.8	8.8	<10	270	10.50	6750	Clear/None

Stop Purge Time: 11:12	**Sample Time: 11:15**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW14*
	Sample ID: SWFTS-MW14-EM35	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW15**
Field Samplers: S. Henning				
Transducer Removal Time: 08:09	Transducer Redeployment Time: 10:16		General Well Condition: Good	
Depth to Water (ft): 13.51	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 24.40	
Well Depth (ft): 33.60	Screened/Open Interval Bottom (ft): 34.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:19				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:19	25.3		6.87		6.012		1.91		-90.0		73.1		270	13.51		Clear/None
08:22	25.2		6.86		6.029		1.19		-49.3		43.3		270	13.51	810	Clear/None
08:25	25.0		6.85		5.996		0.82		-40.0		29.0		270	13.51	1620	Clear/None
08:28	25.0		6.86		5.978		0.75		-35.3		20.4		270	13.51	2430	Clear/None
08:31	24.9		6.86		5.965		0.72		-30.6		14.9		270	13.51	3240	Clear/None
08:34	24.9	0%	6.86	0.0	5.949	0%	0.71	2%	-27.6	3.6	9.5	<10	270	13.51	4050	Clear/None
08:37	24.9	0%	6.86	0.0	5.944	0%	0.76	4%	-29.6	1.6	8.5	<10	270	13.51	4860	Clear/None
08:40	24.9	0%	6.85	0.0	5.943	0%	0.71	2%	-36.4	5.2	6.9	<10	270	13.51	5670	Clear/None

Stop Purge Time: 08:41 | **Sample Time: 08:45** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW15*

Sample ID: SWFTS-MW15-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW16**
Field Samplers: S. Henning				
Transducer Removal Time: 09:22	Transducer Redeployment Time: 11:30		General Well Condition: Good	
Depth to Water (ft): 22.16	Screened Interval Top (ft): 21.8		Pump Intake Depth (ft): 31.30	
Well Depth (ft): 39.50	Screened/Open Interval Bottom (ft): 41.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:39				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:39	26.1		7.01		5.447		5.59		-7.7		322.9		180	21.50		Clear/None
09:42	26.4		7.17		5.461		6.94		3.3		319.2		180	22.05	540	Clear/None
09:45	25.8		7.21		5.416		6.22		14.7		257.9		180	22.05	1080	Clear/None
09:48	25.5		7.19		5.380		5.77		23.9		220.7		180	22.05	1620	Clear/None
09:51	25.6		7.03		5.372		4.24		24.6		143.1		180	22.05	2160	Clear/None
09:54	25.6		6.99		5.369		3.51		22.5		123.9		180	22.05	2700	Clear/None
09:57	25.8		6.99		5.416		3.91		20.9		181.4		180	22.05	3240	Clear/None
10:00	25.7		6.97		5.397		3.11		19.6		92.5		180	22.05	3780	Clear/None
10:03	25.7	0%	6.93	0.0	5.388	0%	2.99	3%	19.6	2.3	70.7	1%	180	22.05	4320	Clear/None
10:06	26.1	1%	6.90	0.0	5.423	0%	2.79	3%	16.8	0.5	70.7	1%	180	22.05	4860	Clear/None
10:09	25.7	0%	6.90	0.0	5.388	0%	2.88	0%	15.6	1.7	67.4	3%	180	22.05	5400	Clear/None

Stop Purge Time: 10:10	**Sample Time: 10:15**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW16*
	Sample ID: SWFTS-MW16-EM35	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW17**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 26.12	Screened Interval Top (ft): 22.8		Pump Intake Depth (ft): 37.40	
Well Depth (ft): 51.50	Screened/Open Interval Bottom (ft): 52.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:12				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:12	28.4		7.19		5.254		5.37		140.2		5.3		310	26.15		Clear/None
12:15	26.9		7.14		5.136		4.99		129.7		4.3		310	26.15	930	Clear/None
12:18	26.6		7.14		5.105		4.93		113.0		3.6		310	26.15	1860	Clear/None
12:21	26.6		7.14		5.107		4.91		101.0		2.9		310	26.15	2790	Clear/None
12:24	26.9	0%	7.14	0.0	5.111	0%	4.90	0%	93.4	3.8	2.0	<10	310	26.15	3720	Clear/None
12:27	27.2	0%	7.14	0.0	5.131	0%	4.90	0%	88.4	1.2	1.7	<10	310	26.15	4650	Clear/None
12:30	27.2	0%	7.13	0.0	5.129	0%	4.93	0%	87.1	2.5	1.5	<10	310	26.15	5580	Clear/None

Stop Purge Time: 12:31 | **Sample Time: 12:35** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW17*

Sample ID: SWFTS-MW17-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW18**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.58	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.10	
Well Depth (ft): 35.20	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:13				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:13	25.7		6.62		5.471		2.27		110.2		23.3		300	15.60		Clear/None
07:17	25.3		6.60		5.607		1.09		56.4		27.8		270	15.60	1080	Clear/None
07:20	25.3		6.61		5.601		1.20		45.5		20.6		270	15.60	1890	Clear/None
07:23	25.2		6.63		5.592		1.37		39.5		16.1		270	15.60	2700	Clear/None
07:26	25.2		6.65		5.584		1.35		36.4		16.4		270	15.60	3510	Clear/None
07:30	25.1		6.66		5.575		1.52		35.4		13.4		270	15.60	4590	Clear/None
07:33	25.1		6.67		5.569		1.65		35.7		14.3		270	15.60	5400	Clear/None
07:36	25.0	0%	6.68	0.0	5.559	0%	1.32	1%	36.7	1.1	14.6	6%	270	15.60	6210	Clear/None
07:39	25.0	0%	6.69	0.0	5.554	0%	1.31	0%	38.0	0.2	13.5	1%	270	15.60	7020	Clear/None
07:42	25.0	0%	6.69	0.0	5.552	0%	1.27	2%	38.7	0.9	13.2	4%	270	15.60	7830	Clear/None

Stop Purge Time: 07:43 | **Sample Time: 07:45** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW18*

Sample ID: SWFTS-MW18-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW19**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.97	Screened Interval Top (ft): 11.3		Pump Intake Depth (ft): 21.00	
Well Depth (ft): 30.00	Screened/Open Interval Bottom (ft): 31.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:01				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:04	26.5		7.12		3.736		0.83		95.1		54.5		300	9.97	900	clear/none
13:07	26.4		7.08		3.730		0.68		90.5		52.9		300	9.97	1800	clear/none
13:10	26.3		7.07		3.706		0.68		82.1		29.0		300	9.97	2700	clear/none
13:13	26.2		7.06		3.707		0.60		77.4		23.2		300	9.97	3600	clear/none
13:16	26.1	0%	7.05	0.0	3.703	0%	0.56	4%	72.7	1.9	18.4	0%	300	9.97	4500	clear/none
13:19	26.0	0%	7.05	0.0	3.694	0%	0.53	1%	70.0	0.8	18.3	0%	300	9.97	5400	clear/none
13:22	26.0	0%	7.05	0.0	3.690	0%	0.52	3%	69.7	1.1	18.4	0%	300	9.97	6300	clear/none

Stop Purge Time: 13:23	**Sample Time: 13:30**	**QA/QC Sample Time(s): 13:30**	*SWFTS-MW19*
	Sample ID: SWFTS-MW19-EM35	**QA/QC Sample ID(s): SWFTS-MW19-EM35-FD**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	**8**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW20**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.57	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.80	
Well Depth (ft): 35.40	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:10				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:10	31.3		6.42		8.545		2.48		45.2		242.3		165	12.57		Clear/None
13:13	30.3		6.37		8.391		0.80		34.8		167.9		165	12.57	495	Clear/None
13:16	30.1		6.39		8.349		1.09		26.9		209.5		165	12.57	990	Clear/None
13:19	29.8		6.37		8.298		0.56		23.9		131.5		165	12.57	1485	Clear/None
13:22	29.7		6.37		8.283		0.40		22.4		107.0		165	12.57	1980	Clear/None
13:25	29.6		6.38		8.249		0.35		20.9		94.3		165	12.57	2475	Clear/None
13:28	29.4	0%	6.38	0.0	8.200	0%	0.31	<0.5	19.9	0.4	78.3	12%	165	12.57	2970	Clear/None
13:31	29.1	0%	6.38	0.0	8.146	0%	0.27	<0.5	19.5	0.0	67.9	2%	165	12.57	3465	Clear/None
13:34	29.0	0%	6.38	0.0	8.115	0%	0.25	<0.5	19.1	0.4	62.1	10%	165	12.57	3960	Clear/None

Stop Purge Time: 13:35 | **Sample Time: 13:45** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW20*

Sample ID: SWFTS-MW20-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW21**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.68	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.90	
Well Depth (ft): 37.70	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:43				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:46	26.5		7.06		5.619		0.63		134.4		143.8		300	15.68	900	clear/none
11:49	26.4		7.03		5.602		0.53		117.9		83.8		300	15.68	1800	clear/none
11:52	26.2		7.01		5.589		0.48		102.3		53.0		300	15.68	2700	clear/none
11:55	26.2	0%	7.00	0.0	5.589	0%	0.45	<0.5	91.4	5.2	53.2	0%	300	15.68	3600	clear/none
11:58	26.2	0%	6.99	0.0	5.588	0%	0.42	<0.5	83.8	2.4	53.4	0%	300	15.68	4500	clear/none
12:01	26.2	0%	6.99	0.0	5.587	0%	0.41	<0.5	83.4	2.8	52.5	1%	300	15.68	5400	clear/none

Stop Purge Time: 12:02 | **Sample Time: 12:10** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW21*

Sample ID: SWFTS-MW21-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW22**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 11.05	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 21.30	
Well Depth (ft): 31.50	Screened/Open Interval Bottom (ft): 31.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:38				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:41	26.1		7.29		3.737		1.68		132.4		160.7		300	11.05	900	clear/none
10:44	25.7		7.19		3.760		1.07		128.6		135.4		300	11.05	1800	clear/none
10:47	25.5		7.15		3.795		1.10		123.2		123.0		300	11.05	2700	clear/none
10:50	25.4		7.13		3.846		1.10		116.6		123.0		300	11.05	3600	clear/none
10:53	25.4		7.11		3.894		0.85		107.7		115.0		300	11.05	4500	clear/none
10:56	25.3	0%	7.09	0.0	3.938	0%	0.75	4%	101.4	4.5	96.0	5%	300	11.05	5400	clear/none
10:59	25.2	0%	7.08	0.0	3.959	0%	0.80	1%	96.0	0.9	88.8	2%	300	11.05	6300	clear/none
11:02	25.2	0%	7.08	0.0	3.972	0%	0.81	2%	93.4	3.5	88.9	2%	300	11.05	7200	clear/none

Stop Purge Time: 11:03 | **Sample Time: 11:05** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW22*

Sample ID: SWFTS-MW22-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW23**
Field Samplers: J. Bunkers				
Transducer Removal Time: 09:30	Transducer Redeployment Time: 10:35		General Well Condition: Good	
Depth to Water (ft): 12.42	Screened Interval Top (ft): 13.8		Pump Intake Depth (ft): 26.30	
Well Depth (ft): 35.95	Screened/Open Interval Bottom (ft): 33.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:40				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:43	25.9		7.45		2.804		1.04		151.0		157.6		300	12.42	900	clear/none
09:46	25.4		7.33		2.751		0.65		139.9		44.5		300	12.42	1800	clear/none
09:49	25.4		7.32		2.750		0.59		138.1		40.5		300	12.42	2700	clear/none
09:52	25.3		7.30		2.743		0.48		130.4		27.3		300	12.42	3600	clear/none
09:55	25.3		7.29		2.742		0.43		122.2		20.1		300	12.42	4500	clear/none
09:58	25.4	0%	7.29	0.0	2.739	0%	0.40	<0.5	114.1	3.4	17.0	2%	300	12.42	5400	clear/none
10:01	25.3	0%	7.29	0.0	2.742	0%	0.39	<0.5	110.4	0.3	16.5	0%	300	12.42	6300	clear/none
10:04	25.4	0%	7.29	0.0	2.739	0%	0.38	<0.5	107.7	3.0	16.1	2%	300	12.42	7200	clear/none

Stop Purge Time: 10:05 | **Sample Time: 10:10** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW23*

Sample ID: SWFTS-MW23-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW24**
Field Samplers: J. Bunkers				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.94	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.90	
Well Depth (ft): 36.60	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:40				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:43	25.6		7.05		4.740		2.08		170.6		325.5		300	12.95	900	clear/none
08:46	25.6		7.01		4.745		1.64		165.1		222.0		300	12.95	1800	clear/none
08:49	25.5		7.01		4.745		1.52		162.5		112.3		300	12.95	2700	clear/none
08:52	25.5		7.01		4.741		1.23		152.4		37.7		300	12.95	3600	clear/none
08:55	25.5		7.01		4.740		1.18		148.6		27.4		300	12.95	4500	clear/none
08:58	25.5	0%	7.01	0.0	4.739	0%	1.08	4%	145.7	2.5	21.8	2%	300	12.95	5400	clear/none
09:01	25.5	0%	7.01	0.0	4.739	0%	1.02	1%	142.7	0.5	20.5	3%	300	12.95	6300	clear/none
09:04	25.5	0%	7.01	0.0	4.738	0%	1.00	3%	141.2	2.0	21.2	0%	300	12.95	7200	clear/none

Stop Purge Time: 09:05	**Sample Time: 09:10**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW24*
	Sample ID: SWFTS-MW24-EM35	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-09-16	**Well ID: SWFTS-MW25**
Field Samplers: J. Bunkers				
Transducer Removal Time: 07:05	Transducer Redeployment Time: 08:05		General Well Condition: Good	
Depth to Water (ft): 10.46	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 27.30	
Well Depth (ft): 43.00	Screened/Open Interval Bottom (ft): 42.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	**N** New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:24				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:27	23.7		6.84		4.032		1.73		171.6		126.0		300	10.46	900	clear/none
07:30	23.8		6.92		4.266		2.42		166.1		756.1		300	10.46	1800	clear/none
07:33	23.8		6.95		4.374		2.21		161.7		633.7		300	10.46	2700	clear/none
07:36	23.8		6.98		4.458		1.82		155.2		469.8		300	10.46	3600	clear/none
07:39	23.8		6.98		4.468		1.58		153.9		411.9		300	10.46	4500	clear/none
07:42	23.9		6.99		4.501		1.43		149.4		380.9		300	10.46	5400	clear/none
07:45	23.9	0%	7.00	0.0	4.529	0%	1.13	0%	144.0	3.6	280.6	2%	300	10.46	6300	clear/none
07:48	23.9	0%	7.00	0.0	4.544	0%	1.13	0%	138.9	1.5	285.3	1%	300	10.46	7200	clear/none
07:51	23.9	0%	7.00	0.0	4.550	0%	1.13	0%	138.2	2.2	299.4	3%	300	10.46	8100	clear/none

Stop Purge Time: 07:52 | **Sample Time: 08:00** | **QA/QC Sample Time(s): n/a** | *SWFTS-MW25*

Sample ID: SWFTS-MW25-EM35 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	**4**	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4		250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

WELL WATER LEVEL MEASUREMENT LOG

Task Name: SWF Area Bioremediation Treatability Study	Task No: M11	Date: November 29, 2021
Task Manager: Dana Grady	Event: EM36	*Recorded by:* G. Schuler
Equipment Model/Type: Solinst Water Level Meter	*Serial Number: 306827*	

Time	Well ID	Measuring Point	Depth to Static Water Level (ft BMP)	Total Depth (ft BMP)	Condition of Well and Well Seal
12:43	PC-58	TOC	20.58	38.55	Good
10:08	PC-88	TOC	46.50	6.09	Good
10:23	PC-91	TOC	10.55	20.00	Good
10:29	PC-92	TOC	10.09	37.00	Good
08:54	PC-94	TOC	12.90	20.05	Good
09:43	SWFTS-MW01	TOC	14.36	38.40	Good
11:36	SWFTS-MW02	TOC	11.78	31.30	Good
08:42	SWFTS-MW03	TOC	13.40	41.30	Good
10:16	SWFTS-MW04	TOC	9.25	39.90	Good
11:03	SWFTS-MW05A	TOC	17.56	28.20	Good
11:06	SWFTS-MW05B	TOC	17.52	41.60	Good
09:18	SWFTS-MW06A	TOC	5.00	21.87	Good
09:25	SWFTS-MW06B	TOC	5.24	35.30	Good
11:57	SWFTS-MW07A	TOC	12.25	30.10	Good
12:01	SWFTS-MW07B	TOC	11.95	38.50	Good
12:13	SWFTS-MW08A	TOC	15.48	34.80	Good
12:10	SWFTS-MW08C	TOC	14.09	69.75	Good
09:29	SWFTS-MW09A	TOC	13.64	28.97	Good
09:37	SWFTS-MW09B	TOC	13.77	39.05	Good
10:35	SWFTS-MW10A	TOC	10.33	35.00	Good
10:47	SWFTS-MW10C	TOC	8.67	63.40	Good
12:06	SWFTS-MW11	TOC	12.33	39.80	Good
12:37	SWFTS-MW12	TOC	17.87	40.00	Good
12:33	SWFTS-MW13	TOC	23.09	47.50	Good
11:33	SWFTS-MW14	TOC	10.47	36.20	Good
11:21	SWFTS-MW15	TOC	13.54	33.50	Good
12:19	SWFTS-MW16	TOC	22.18	39.50	Good
12:30	SWFTS-MW17	TOC	26.13	51.50	Good
11:14	SWFTS-MW18	TOC	15.61	35.10	Good
09:59	SWFTS-MW19	TOC	10.05	30.00	Good
10:54	SWFTS-MW20	TOC	12.70	35.30	Good
11:11	SWFTS-MW21	TOC	15.81	37.83	Good
09:50	SWFTS-MW22	TOC	11.14	31.50	Good
09:12	SWFTS-MW23	TOC	12.52	35.95	Good
08:48	SWFTS-MW24	TOC	13.00	36.30	Good
09:02	SWFTS-MW25	TOC	10.50	42.95	Good

BMP = Below Measuring Point DP = Dedicated Pump OS = Offsite Storage TOC = Top of Casing (Well Riser)

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-03	**Well ID: PC-58**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 20.56	Screened Interval Top (ft): 7.8		Pump Intake Depth (ft): 22.60	
Well Depth (ft): 37.98	Screened/Open Interval Bottom (ft): 32.8		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:50				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:50	22.2		7.80		3.509		4.20		105.9		78.1		300	20.56		Clear/None
12:53	22.2		7.44		3.423		1.51		102.1		83.0		300	20.56	900	Clear/None
12:56	22.3	0%	7.38	0.0	3.434	0%	1.22	6%	101.9	0.8	38.7	42%	300	20.56	1800	Clear/None
12:59	22.3	0%	7.36	0.0	3.431	0%	1.12	2%	101.0	0.1	21.1	22%	300	20.56	2700	Clear/None
13:02	22.2	0%	7.35	0.0	3.418	0%	1.09	4%	100.3	0.8	21.6	20%	300	20.56	3600	Clear/None

Stop Purge Time: 13:03	**Sample Time: 13:20**	**QA/QC Sample Time(s): n/a**	*PC-58*
	Sample ID: PC-58-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-02	**Well ID: PC-88**
Field Samplers: S. Henning				
Transducer Removal Time: 09:00	Transducer Redeployment Time: 11:00		General Well Condition: Good	
Depth to Water (ft): 6.13	Screened Interval Top (ft): 40.0		Pump Intake Depth (ft): 44.90	
Well Depth (ft): 46.80	Screened/Open Interval Bottom (ft): 50.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:12				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:12	20.6		7.37		2.865		3.36		115.1		277.7		225	6.13		Clear/None
09:15	20.8		7.33		2.884		2.26		115.6		144.3		225	6.13	675	Clear/None
09:18	20.9		7.32		2.890		1.97		113.2		58.2		225	6.13	1350	Clear/None
09:21	21.0		7.32		2.898		1.80		109.3		26.3		225	6.13	2025	Clear/None
09:25	21.0		7.32		2.897		1.74		103.6		15.1		225	6.13	2925	Clear/None
09:28	21.0		7.31		2.903		1.66		99.3		25.9		225	6.13	3600	Clear/None
09:31	21.0	0%	7.31	0.0	2.897	0%	1.64	2%	96.5	2.3	8.3	<10	225	6.13	4275	Clear/None
09:34	21.1	0%	7.31	0.0	2.906	0%	1.60	0%	93.8	0.4	7.3	<10	225	6.13	4950	Clear/None
09:37	21.2	0%	7.31	0.0	2.909	0%	1.58	1%	92.4	1.8	7.5	<10	225	6.13	5625	Clear/None

Stop Purge Time: 09:38	**Sample Time: 09:45**	**QA/QC Sample Time(s): 09:45** *PC-88*
	Sample ID: PC-88-EM36	**QA/QC Sample ID(s): PC-88-EM36-FD**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

6	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

TETRA TECH

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-30	**Well ID: PC-91**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.96	Screened Interval Top (ft): 11.5		Pump Intake Depth (ft): 16.00	
Well Depth (ft): 20.05	Screened/Open Interval Bottom (ft): 21.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:11				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:11	20.0		6.14		3.175		2.37		-139.9		222.2		180	11.10		Clear/None
07:14	18.1		6.15		3.104		2.28		-157.0		206.3		60	11.00	180	Clear/None
07:17	18.4		6.17		3.054		2.21		-162.1		185.3		60	11.00	360	Clear/None
07:20	18.9		6.18		3.138		2.07		-170.1		172.0		60	11.00	540	Clear/None
07:23	19.6		6.19		3.192		1.97		-200.1		163.9		60	11.00	720	Clear/None
07:26	19.8	1%	6.19	0.0	3.224	1%	1.90	4%	-180.1	0.3	162.2	4%	60	11.00	900	Clear/None
07:31	20.2	0%	6.20	0.0	3.266	0%	1.80	1%	-176.0	3.8	152.0	2%	60	11.12	1200	Clear/None
07:34	20.3	0%	6.20	0.0	3.283	0%	1.78	2%	-183.3	3.5	152.7	1%	60	11.12	1380	Clear/None

Stop Purge Time: 07:35	**Sample Time: 07:40**	**QA/QC Sample Time(s): n/a**
	Sample ID: PC-91-EM36	**QA/QC Sample ID(s): n/a**

PC-91

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 2.0 mg/L **Hach Kit Ferrous Iron: 1.5** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-30	**Well ID: PC-92**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.32	Screened Interval Top (ft): 26.5		Pump Intake Depth (ft): 31.20	
Well Depth (ft): 37.30	Screened/Open Interval Bottom (ft): 36.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:02				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:02	21.3		6.70		4.573		3.58		-74.8		70.0		120	10.40		Clear/None
09:06	21.9		6.70		4.800		2.78		-79.2		64.5		120	10.40	480	Clear/None
09:09	21.6		6.71		4.793		2.55		-79.0		52.3		120	10.40	840	Clear/None
09:12	21.1		6.72		4.736		2.58		-77.0		42.6		120	10.40	1200	Clear/None
09:15	22.7		6.72		4.982		2.32		-82.7		73.1		120	10.40	1560	Clear/None
09:18	23.0	0%	6.73	0.0	5.061	0%	1.81	7%	-86.7	2.7	63.2	6%	120	10.40	1920	Clear/None
09:21	23.0	0%	6.74	0.0	5.064	0%	1.65	1%	-83.4	0.6	67.3	0%	120	10.40	2280	Clear/None
09:24	23.1	0%	6.75	0.0	5.077	0%	1.58	5%	-81.8	2.2	73.2	7%	120	10.40	2640	Clear/None

Stop Purge Time: 09:25	**Sample Time: 09:30**		**QA/QC Sample Time(s): n/a**	*PC-92*
	Sample ID: PC-92-EM36		**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-30	**Well ID: PC-94**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.22	Screened Interval Top (ft): 9.5		Pump Intake Depth (ft): 16.30	
Well Depth (ft): 20.20	Screened/Open Interval Bottom (ft): 19.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:16				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:16	21.9		6.66		5.868		3.74		-6.1		392.9		210	13.45		Clear/None
10:20	23.2		6.68		6.058		2.00		-11.7		350.3		210	13.45	840	Clear/None
10:23	23.4	0%	6.70	0.0	6.098	0%	1.75	5%	-10.2	0.5	243.8	16%	210	13.45	1470	Clear/None
10:26	23.5	0%	6.71	0.0	6.116	0%	1.64	1%	-9.4	0.3	183.3	12%	210	13.45	2100	Clear/None
10:29	23.5	0%	6.72	0.0	6.119	0%	1.58	4%	-9.6	0.1	201.2	3%	210	13.45	2730	Clear/None

Stop Purge Time: 10:30 | **Sample Time: 10:40** | **QA/QC Sample Time(s): n/a** | *PC-94*

Sample ID: PC-94-EM36 | **QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-30	**Well ID: SWFTS-MW01**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 14.36	Screened Interval Top (ft): 24.2		Pump Intake Depth (ft): 31.30	
Well Depth (ft): 39.40	Screened/Open Interval Bottom (ft): 38.9		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:32				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:32	24.3		7.41		6.255		3.74		131.0		11.2		300	14.36		Clear/None
12:35	23.9		6.93		6.131		3.72		130.6		8.5		300	14.36	900	Clear/None
12:38	23.8		6.87		6.104		4.34		130.3		7.6		300	14.36	1800	Clear/None
12:42	23.8		6.86		6.097		4.32		130.1		11.8		300	14.36	3000	Clear/None
13:06	23.9		7.02		5.990		6.46		135.6		22.5		300	14.36	10200	Clear/None
13:09	23.8		6.91		5.988		5.22		136.6		33.7		300	14.36	11100	Clear/None
13:40	24.3		7.31		6.257		5.62		128.4		42.1		300	14.36	20400	Clear/None
13:43	23.9		7.15		6.054		6.92		129.2		61.4		300	14.36	21300	Clear/None
13:46	23.8		7.06		6.032		6.25		130.9		72.8		300	14.36	22200	Clear/None
13:49	23.8	0%	6.97	0.0	6.023	0%	4.30	0%	132.9	1.1	45.1	1%	300	14.36	23100	Clear/None
13:52	23.8	0%	6.94	0.0	6.007	0%	4.30	0%	134.2	0.2	46.0	0%	300	14.36	24000	Clear/None
13:55	23.7	0%	6.92	0.0	5.987	0%	4.32	0%	135.0	1.0	46.1	0%	300	14.36	24900	Clear/None

Stop Purge Time: 13:56	**Sample Time: 14:10**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW01-EM36	**QA/QC Sample ID(s): n/a**

SWFTS-MW01

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-30	**Well ID: SWFTS-MW02**
Field Samplers: S. Henning				
Transducer Removal Time: 11:20	Transducer Redeployment Time: 00:30		General Well Condition: Good	
Depth to Water (ft): 11.98	Screened Interval Top (ft): 18.4		Pump Intake Depth (ft): 25.50	
Well Depth (ft): 31.20	Screened/Open Interval Bottom (ft): 33.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:27				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:27	25.9		6.73		6.812		2.31		56.1		147.7		240	12.00		Clear/None
11:31	26.0		6.68		6.840		1.74		23.3		154.8		240	12.00	960	Clear/None
11:34	26.0		6.67		6.867		1.60		7.2		131.7		240	12.00	1680	Clear/None
11:37	26.1		6.66		6.875		1.54		-6.7		101.6		240	12.00	2400	Clear/None
11:40	26.0		6.67		6.904		1.50		-30.1		75.7		240	12.00	3120	Clear/None
11:43	26.0	0%	6.66	0.0	6.923	0%	1.46	0%	-37.5	2.2	64.3	6%	240	12.00	3840	Clear/None
11:46	26.1	0%	6.67	0.0	6.926	0%	1.46	0%	-34.7	0.6	58.6	3%	240	12.00	4560	Clear/None
11:49	26.1	0%	6.67	0.0	6.926	0%	1.49	1%	-33.6	1.7	58.6	3%	240	12.00	5280	Clear/None

Stop Purge Time: 11:50	**Sample Time: 12:00**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW02*
	Sample ID: SWFTS-MW02-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-01	**Well ID: SWFTS-MW03**
Field Samplers: S. Henning				
Transducer Removal Time: 07:49	Transducer Redeployment Time: 09:30		General Well Condition: Good	
Depth to Water (ft): 13.64	Screened Interval Top (ft): 27.2		Pump Intake Depth (ft): 34.40	
Well Depth (ft): 41.70	Screened/Open Interval Bottom (ft): 42.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:02				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:02	20.9		6.80		5.557		3.95		147.1		18.4		315	13.70		Clear/None
08:06	22.3		6.77		5.961		2.15		96.8		22.8		315	13.70	1260	Clear/None
08:09	22.5		6.76		6.067		1.96		91.0		27.2		315	13.70	2205	Clear/None
08:12	22.5		6.76		6.086		1.79		88.7		27.9		315	13.70	3150	Clear/None
08:15	22.1		6.76		6.023		1.77		89.1		35.1		315	13.70	4095	Clear/None
08:18	22.5		6.75		6.093		1.65		82.3		46.0		315	13.70	5040	Clear/None
08:21	22.6	0%	6.75	0.0	6.106	0%	1.59	2%	83.6	0.3	57.7	3%	315	13.70	5985	Clear/None
08:24	22.7	0%	6.75	0.0	6.119	0%	1.55	0%	83.6	0.3	55.0	0%	315	13.70	6930	Clear/None
08:27	22.5	0%	6.75	0.0	6.105	0%	1.53	1%	82.7	0.6	53.8	3%	315	13.70	7875	Clear/None

Stop Purge Time: 08:28	**Sample Time: 08:35**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW03*
	Sample ID: SWFTS-MW03-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-02	**Well ID: SWFTS-MW04**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 9.44	Screened Interval Top (ft): 25.8		Pump Intake Depth (ft): 32.80	
Well Depth (ft): 39.75	Screened/Open Interval Bottom (ft): 40.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:56				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:56	20.6		7.27		3.804		4.34		119.1		37.6		285	9.55		Clear/None
07:59	21.9		7.14		4.243		2.16		106.0		65.5		285	9.55	855	Clear/None
08:03	21.9	0%	7.12	0.0	4.317	0%	1.78	7%	106.3	2.9	69.0	3%	285	9.55	1995	Clear/None
08:06	22.0	0%	7.12	0.0	4.316	0%	1.64	1%	102.6	0.8	66.7	0%	285	9.55	2850	Clear/None
08:09	21.9	0%	7.11	0.0	4.331	0%	1.57	5%	101.3	2.1	63.9	3%	285	9.55	3705	Clear/None

Stop Purge Time: 08:10	**Sample Time: 08:20**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW04*
	Sample ID: SWFTS-MW04-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-29	**Well ID: SWFTS-MW05A**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.56	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.80	
Well Depth (ft): 28.20	Screened/Open Interval Bottom (ft): 29.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:35				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:35	24.4		6.27		4.038		3.09		239.9		2.8		210	17.80		Clear/None
13:38	24.3		6.76		4.520		1.56		226.6		2.7		210	17.80	630	Clear/None
13:41	24.3		6.82		4.766		1.34		220.8		4.8		210	17.80	1260	Clear/None
13:44	24.2		6.83		4.934		1.23		216.4		7.8		210	17.80	1890	Clear/None
13:47	24.2	0%	6.82	0.0	5.062	1%	1.16	3%	212.2	4.4	10.5	6%	210	17.80	2520	Clear/None
13:50	24.2	0%	6.83	0.0	5.168	0%	1.11	0%	207.9	0.1	10.0	1%	210	17.80	3150	Clear/None
13:53	24.3	0%	6.84	0.0	5.250	1%	1.08	3%	203.3	4.5	9.1	<10	210	17.80	3780	Clear/None

Stop Purge Time: 13:54	**Sample Time: 14:20**	**QA/QC Sample Time(s): 14:20** *SWFTS-MW05A*
	Sample ID: SWFTS-MW05A-EM36	**QA/QC Sample ID(s): SWFTS-MW05A-EM36-MS/MSD**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

6	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-30	**Well ID: SWFTS-MW05B**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.54	Screened Interval Top (ft): 32.3		Pump Intake Depth (ft): 36.60	
Well Depth (ft): 41.70	Screened/Open Interval Bottom (ft): 42.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:49				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:49	20.3		6.48		5.471		4.80		31.7		36.9		300	17.56		Clear/None
07:53	22.2		6.49		6.007		2.38		25.4		316.9		300	17.56	1200	Clear/None
07:56	22.6		6.50		6.110		1.82		41.2		88.8		300	17.56	2100	Clear/None
07:59	22.6		6.52		6.114		1.55		50.0		156.1		300	17.56	3000	Clear/None
08:02	22.7	0%	6.54	0.0	6.117	0%	1.32	7%	55.7	4.1	104.8	26%	300	17.56	3900	Clear/None
08:05	22.7	0%	6.54	0.0	6.127	0%	1.21	1%	60.1	0.3	70.3	15%	300	17.56	4800	Clear/None
08:08	22.6	0%	6.54	0.0	6.108	0%	1.15	6%	63.6	3.8	73.5	11%	300	17.56	5700	Clear/None

Stop Purge Time: 08:09	**Sample Time: 08:25**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW05B*
	Sample ID: SWFTS-MW05B-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-01	**Well ID: SWFTS-MW06A**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 5.02	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 16.20	
Well Depth (ft): 21.10	Screened/Open Interval Bottom (ft): 21.4		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:31				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:31	23.5		7.32		3.154		4.11		-76.5		133.9		300	5.10		Clear/None
12:34	23.5		7.17		3.113		1.94		-61.8		118.4		300	5.10	900	Clear/None
12:37	23.7		7.15		3.117		1.64		-60.1		97.8		300	5.10	1800	Clear/None
12:40	23.7		7.15		3.111		1.51		-58.8		73.2		300	5.10	2700	Clear/None
12:43	23.5	0%	7.14	0.0	3.102	0%	1.45	2%	-57.8	0.3	66.7	10%	300	5.10	3600	Clear/None
12:46	23.6	0%	7.14	0.0	3.103	0%	1.42	0%	-57.4	0.1	57.7	4%	300	5.10	4500	Clear/None
12:49	23.6	0%	7.14	0.0	3.104	0%	1.38	2%	-57.3	0.2	57.0	5%	300	5.10	5400	Clear/None

Stop Purge Time: 12:50	**Sample Time: 13:00**	**QA/QC Sample Time(s): 13:00**
	Sample ID: SWFTS-MW06A-EM36	**QA/QC Sample ID(s): SWFTS-MW06A-EM36-FD**

SWFTS-MW06A

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

6	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-01	**Well ID: SWFTS-MW06B**
Field Samplers: S. Henning				
Transducer Removal Time: 13:20	Transducer Redeployment Time: 14:44		General Well Condition: Good	
Depth to Water (ft): 5.25	Screened Interval Top (ft): 25.9		Pump Intake Depth (ft): 30.30	
Well Depth (ft): 35.20	Screened/Open Interval Bottom (ft): 35.5		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:31				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:31	22.9		7.36		3.119		4.36		11.3		233.8		300	5.30		Clear/None
13:34	22.5		7.16		3.072		1.99		-7.5		245.0		300	5.30	900	Clear/None
13:37	22.5		7.15		3.062		1.72		-16.4		294.4		300	5.30	1800	Clear/None
13:40	22.5		7.14		3.060		1.58		-19.5		260.9		300	5.30	2700	Clear/None
13:43	22.5		7.14		3.058		1.53		-19.3		214.3		300	5.30	3600	Clear/None
13:46	22.5		7.14		3.051		1.49		-19.1		170.8		300	5.30	4500	Clear/None
13:50	22.5		7.14		3.051		1.46		-19.7		142.4		300	5.30	5700	Clear/None
13:53	22.4		7.14		3.045		1.44		-19.5		127.6		300	5.30	6600	Clear/None
13:56	22.4		7.14		3.044		1.41		-19.9		109.0		300	5.30	7500	Clear/None
13:59	22.4		7.14		3.043		1.40		-19.6		103.6		300	5.30	8400	Clear/None
14:02	22.4		7.14		3.044		1.38		-19.2		78.8		300	5.30	9300	Clear/None
14:05	22.4	0%	7.14	0.0	3.059	0%	1.45	2%	-19.4	0.4	84.2	22%	300	5.30	10200	Clear/None
14:08	22.4	0%	7.14	0.0	3.059	0%	1.39	1%	-20.3	0.5	63.0	8%	300	5.30	11100	Clear/None
14:11	22.4	0%	7.14	0.0	3.058	0%	1.39	1%	-19.8	0.0	59.1	14%	300	5.30	12000	Clear/None

Stop Purge Time: 14:12	**Sample Time: 14:15**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW06B*
	Sample ID: SWFTS-MW06B-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-03	**Well ID: SWFTS-MW07A**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.29	Screened Interval Top (ft): 15.0		Pump Intake Depth (ft): 22.00	
Well Depth (ft): 30.10	Screened/Open Interval Bottom (ft): 29.5		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:10				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:10	19.6		7.52		5.135		3.12		7.6		3.7		300	12.35		Clear/None
09:13	20.9		7.17		5.402		1.82		10.6		2.3		300	12.35	900	Clear/None
09:16	21.0		7.12		5.363		2.12		15.6		2.3		300	12.35	1800	Clear/None
09:19	21.1		7.10		5.373		2.36		20.2		2.4		300	12.35	2700	Clear/None
09:22	21.2		7.08		5.409		2.17		23.2		2.2		300	12.35	3600	Clear/None
09:25	21.3		7.07		5.409		2.43		26.1		2.1		300	12.35	4500	Clear/None
09:29	21.3		7.06		5.411		2.54		28.9		2.1		300	12.35	5700	Clear/None
09:32	21.4	0%	7.07	0.0	5.413	0%	3.03	3%	32.6	2.4	2.2	<10	300	12.35	6600	Clear/None
09:35	21.4	0%	7.07	0.0	5.415	0%	2.91	0%	35.0	0.0	2.2	<10	300	12.35	7500	Clear/None
09:38	21.3	0%	7.06	0.0	5.409	0%	2.83	3%	37.4	2.4	2.0	<10	300	12.35	8400	Clear/None

Stop Purge Time: 09:39	**Sample Time: 10:00**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW07A-EM36	**QA/QC Sample ID(s): n/a**

SWFTS-MW07A

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-03	**Well ID: SWFTS-MW07B**
Field Samplers: G. Schuler				
Transducer Removal Time: 10:10	Transducer Redeployment Time: 00:00		General Well Condition: Good	
Depth to Water (ft): 11.98	Screened Interval Top (ft): 33.8		Pump Intake Depth (ft): 35.70	
Well Depth (ft): 38.70	Screened/Open Interval Bottom (ft): 38.3		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:19				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:19	19.9		6.99		5.149		3.23		54.5		13.7		285	12.02		Clear/None
10:22	22.0		6.90		6.062		1.27		55.1		17.8		285	12.02	855	Clear/None
10:25	22.1	0%	6.91	0.0	6.130	0%	1.08	3%	53.4	0.7	10.2	4%	285	12.02	1710	Clear/None
10:28	22.0	0%	6.92	0.0	6.110	0%	1.04	0%	52.6	0.1	9.7	<10	285	12.02	2565	Clear/None
10:32	22.1	0%	6.91	0.0	6.129	0%	1.00	3%	52.1	0.6	9.5	<10	285	12.02	3705	Clear/None

Stop Purge Time: 10:33	**Sample Time: 10:50**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW07B-EM36	**QA/QC Sample ID(s): n/a**

SWFTS-MW07B

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-02	**Well ID: SWFTS-MW08A**
Field Samplers: A. Camacho				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.50	Screened Interval Top (ft): 20.2		Pump Intake Depth (ft): 27.00	
Well Depth (ft): 34.80	Screened/Open Interval Bottom (ft): 34.8		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:41				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:41	22.8		7.91		5.190		2.96		151.7		4104.7		240	15.50		Clear/None
13:44	22.8		7.14		5.160		1.23		153.0		4.8		240	15.50	720	Clear/None
13:47	22.7	0%	7.04	0.0	5.154	0%	1.03	5%	152.9	0.9	2.7	<10	240	15.50	1440	Clear/None
13:50	22.6	0%	7.00	0.0	5.151	0%	0.97	0%	152.2	0.2	2.9	<10	240	15.50	2160	Clear/None
13:53	22.6	0%	6.99	0.0	5.151	0%	0.93	4%	150.9	1.1	3.0	<10	240	15.50	2880	Clear/None

Stop Purge Time: 13:54	**Sample Time: 13:55**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW08A-EM36	**QA/QC Sample ID(s): n/a**

SWFTS-MW08A

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-02	**Well ID: SWFTS-MW09A**
Field Samplers: S. Henning				
Transducer Removal Time: 12:30	Transducer Redeployment Time: 14:00		General Well Condition: Good	
Depth to Water (ft): 13.82	Screened Interval Top (ft): 19.3		Pump Intake Depth (ft): 23.70	
Well Depth (ft): 29.20	Screened/Open Interval Bottom (ft): 28.9		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:41				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:41	23.7		6.94		6.148		3.50		129.4		12.5		300	13.85		Clear/None
12:44	23.9		6.81		6.472		1.92		128.0		13.9		300	13.85	900	Clear/None
12:47	24.0		6.81		6.477		1.69		125.8		16.1		300	13.85	1800	Clear/None
12:50	24.0	0%	6.81	0.0	6.475	0%	1.60	1%	123.6	2.0	20.2	0%	300	13.85	2700	Clear/None
12:53	24.0	0%	6.81	0.0	6.469	0%	1.57	0%	121.8	0.2	19.4	4%	300	13.85	3600	Clear/None
12:57	24.0	0%	6.81	0.0	6.468	0%	1.54	1%	119.4	2.2	21.3	4%	300	13.85	4800	Clear/None

Stop Purge Time: 12:58	**Sample Time: 13:00**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW09A-EM36	**QA/QC Sample ID(s): n/a**

SWFTS-MW09A

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-02	**Well ID: SWFTS-MW09B**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.95	Screened Interval Top (ft): 34.4		Pump Intake Depth (ft): 36.20	
Well Depth (ft): 39.20	Screened/Open Interval Bottom (ft): 39.0		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:25				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:25	23.8		7.22		5.877		4.04		119.5		16.7		270	14.00		Clear/None
13:28	23.9		6.91		6.667		2.08		65.2		13.2		270	14.00	810	Clear/None
13:31	23.9		6.90		6.667		1.80		63.7		10.3		270	14.00	1620	Clear/None
13:34	23.9	0%	6.90	0.0	6.661	0%	1.68	3%	68.6	1.5	8.7	<10	270	14.00	2430	Clear/None
13:37	24.0	0%	6.90	0.0	6.664	0%	1.69	2%	67.4	0.3	8.2	<10	270	14.00	3240	Clear/None
13:40	24.0	0%	6.90	0.0	6.661	0%	1.84	5%	65.2	1.9	7.6	<10	270	14.00	4050	Clear/None

Stop Purge Time: 13:41	**Sample Time: 13:50**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW09B*
	Sample ID: SWFTS-MW09B-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-30	**Well ID: SWFTS-MW10A**
Field Samplers: G. Schuler				
Transducer Removal Time: 08:50	Transducer Redeployment Time: 10:00		General Well Condition: Good	
Depth to Water (ft): 10.36	Screened Interval Top (ft): 20.4		Pump Intake Depth (ft): 27.40	
Well Depth (ft): 35.10	Screened/Open Interval Bottom (ft): 35.0		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 10:51				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
10:51	23.1		7.07		5.584		4.34		118.4		2.1		300	10.36		Clear/None
10:54	23.7		6.92		5.803		1.88		118.1		19.7		300	10.36	900	Clear/None
10:57	23.7		6.91		5.817		1.49		116.4		45.8		300	10.36	1800	Clear/None
11:00	23.7	0%	6.91	0.0	5.819	0%	1.31	8%	112.8	5.7	5.5	<10	300	10.36	2700	Clear/None
11:03	23.7	0%	6.90	0.0	5.818	0%	1.20	0%	108.9	1.8	5.0	<10	300	10.36	3600	Clear/None
11:06	23.6	0%	6.89	0.0	5.838	0%	1.10	8%	99.6	7.5	4.4	<10	300	10.36	4500	Clear/None

Stop Purge Time: 11:07	**Sample Time: 11:30**	**QA/QC Sample Time(s): 11:30**
	Sample ID: SWFTS-MW10A-EM36	**QA/QC Sample ID(s): SWFTS-MW10A-EM36-MS/MSD**

SWFTS-MW10A

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

6	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-03	**Well ID: SWFTS-MW11**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 16.35	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.60	
Well Depth (ft): 39.80	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:19				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:19	21.8		7.56		6.095		7.87		92.9		8.2		300	16.35		Clear/None
11:23	23.1		7.26		6.331		5.93		91.2		3.3		300	16.35	1200	Clear/None
11:26	23.3	0%	7.25	0.0	6.373	0%	5.84	0%	92.2	1.3	2.9	<10	300	16.35	2100	Clear/None
11:29	23.3	0%	7.25	0.0	6.384	0%	5.82	0%	93.6	0.1	2.7	<10	300	16.35	3000	Clear/None
11:32	23.4	0%	7.24	0.0	6.405	0%	5.81	0%	94.8	1.3	2.6	<10	300	16.35	3900	Clear/None

Stop Purge Time: 11:33	**Sample Time: 12:05**	**QA/QC Sample Time(s): 12:05**
	Sample ID: SWFTS-MW11-EM36	**QA/QC Sample ID(s): SWFTS-MW11-EM36-FD**

SWFTS-MW11

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

6	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-02	**Well ID: SWFTS-MW12**
Field Samplers: A. Camacho				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 17.85	Screened Interval Top (ft): 15.8		Pump Intake Depth (ft): 27.90	
Well Depth (ft): 40.10	Screened/Open Interval Bottom (ft): 40.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:26				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:26	22.2		6.86		5.085		2.01		42.7		27.6		300	17.85		Clear/None
09:29	22.5	0%	6.84	0.0	5.128	0%	1.68	7%	25.0	16.5	24.4	4%	300	17.85	900	Clear/None
09:33	22.6	0%	6.82	0.0	5.122	0%	1.57	0%	3.7	4.8	25.3	1%	300	17.85	2100	Clear/None
09:36	22.7	0%	6.82	0.0	5.122	0%	1.44	7%	-3.1	11.6	27.1	5%	300	17.85	3000	Clear/None

Stop Purge Time: 09:37	**Sample Time: 09:40**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW12*
	Sample ID: SWFTS-MW12-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-02	**Well ID: SWFTS-MW13**
Field Samplers: A. Camacho				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 23.11	Screened Interval Top (ft): 17.8		Pump Intake Depth (ft): 32.30	
Well Depth (ft): 47.60	Screened/Open Interval Bottom (ft): 47.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:10				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:10	21.5	0%	7.11	0.0	5.863	1%	5.97	2%	216.8	0.6	5.9	<10	300	23.11		Clear/None
08:13	21.6	0%	7.12	0.0	5.969	0%	5.80	0%	217.4	0.0	4.9	<10	300	23.11	900	Clear/None
08:16	21.7	0%	7.13	0.0	6.021	1%	5.70	2%	217.9	0.5	5.0	<10	300	23.11	1800	Clear/None

Stop Purge Time: 08:17	**Sample Time: 08:25**		**QA/QC Sample Time(s): n/a**	*SWFTS-MW13*
	Sample ID: SWFTS-MW13-EM36		**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-03	**Well ID: SWFTS-MW14**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.51	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.40	
Well Depth (ft): 36.20	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 07:50				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
07:50	21.1		6.72		5.230		3.45		15.1		8.0		300	10.51		Clear/None
07:53	21.9		6.85		5.532		1.62		-38.4		17.1		300	10.51	900	Clear/None
07:56	22.1		6.88		5.579		1.34		-54.3		38.6		300	10.51	1800	Clear/None
07:59	22.1		6.89		5.593		1.21		-64.1		50.2		300	10.51	2700	Clear/None
08:02	22.4	0%	6.89	0.0	5.610	0%	1.14	2%	-72.0	6.0	85.3	4%	300	10.51	3600	Clear/None
08:05	22.4	0%	6.89	0.0	5.625	0%	1.10	1%	-78.3	0.3	90.7	1%	300	10.51	4500	Clear/None
08:08	22.5	0%	6.90	0.0	5.629	0%	1.10	1%	-83.7	5.7	92.0	2%	300	10.51	5400	Clear/None

Stop Purge Time: 08:09	**Sample Time: 08:30**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW14*
	Sample ID: SWFTS-MW14-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.2 mg/L **Hach Kit Ferrous Iron: 2.5** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-30	**Well ID: SWFTS-MW15**
Field Samplers: S. Henning				
Transducer Removal Time: 12:21	Transducer Redeployment Time: 13:27		General Well Condition: Good	
Depth to Water (ft): 13.74	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 24.40	
Well Depth (ft): 33.60	Screened/Open Interval Bottom (ft): 34.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:34				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:34	24.6		6.77		6.846		2.90		-110.1		50.2		180	13.80		Clear/None
12:37	24.5		6.78		6.843		2.03		-66.2		35.0		180	13.80	540	Clear/None
12:40	24.5		6.79		6.838		1.92		-48.0		32.1		180	13.80	1080	Clear/None
12:43	24.4		6.80		6.833		1.86		-37.5		59.9		180	13.80	1620	Clear/None
12:46	24.4		6.81		6.825		1.84		-32.5		19.0		180	13.80	2160	Clear/None
12:50	24.4	0%	6.81	0.0	6.827	0%	1.82	0%	-28.5	1.7	15.4	27%	180	13.80	2880	Clear/None
12:53	24.4	0%	6.82	0.0	6.831	0%	1.81	0%	-26.7	0.1	10.1	16%	180	13.80	3420	Clear/None
12:56	24.5	0%	6.82	0.0	6.836	0%	1.82	0%	-25.1	1.7	10.6	11%	180	13.80	3960	Clear/None

Stop Purge Time: 12:57	**Sample Time: 13:00**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW15*
	Sample ID: SWFTS-MW15-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-30	**Well ID: SWFTS-MW16**
Field Samplers: S. Henning				
Transducer Removal Time: 13:29	Transducer Redeployment Time: 14:45		General Well Condition: Good	
Depth to Water (ft): 22.39	Screened Interval Top (ft): 21.8		Pump Intake Depth (ft): 31.30	
Well Depth (ft): 39.70	Screened/Open Interval Bottom (ft): 41.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:42				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:42	24.9		6.66		6.059		1.98		-81.8		224.2		210	22.40		Clear/None
13:45	24.8		6.65		6.022		1.64		-83.5		183.4		210	22.40	630	Clear/None
13:48	24.7		6.65		5.997		1.54		-84.6		154.7		210	22.40	1260	Clear/None
13:51	24.7		6.65		5.986		1.48		-85.6		132.2		210	22.40	1890	Clear/None
13:54	24.6	0%	6.66	0.0	5.975	0%	1.45	1%	-88.0	2.0	116.3	0%	210	22.40	2520	Clear/None
13:57	24.6	0%	6.67	0.0	5.961	0%	1.43	0%	-90.3	0.3	113.3	2%	210	22.40	3150	Clear/None
14:00	24.6	0%	6.67	0.0	5.958	0%	1.42	0%	-91.7	1.7	119.7	2%	210	22.40	3780	Clear/None

Stop Purge Time: 14:01	**Sample Time: 14:05**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW16*
	Sample ID: SWFTS-MW16-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.5** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-02	**Well ID: SWFTS-MW17**
Field Samplers: A. Camacho				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 26.15	Screened Interval Top (ft): 22.8		Pump Intake Depth (ft): 37.40	
Well Depth (ft): 51.50	Screened/Open Interval Bottom (ft): 52.6		Well Diameter (in): 4	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:51				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:51	23.5		7.35		4.294		5.17		146.0		53.2		300	26.15		Clear/None
12:54	23.4		7.38		4.332		5.20		146.9		46.9		300	26.15	900	Clear/None
12:57	23.4		7.39		4.348		5.20		148.1		35.4		300	26.15	1800	Clear/None
13:00	23.4	0%	7.40	0.0	4.363	0%	5.22	0%	148.8	0.7	31.3	14%	300	26.15	2700	Clear/None
13:03	23.4	0%	7.40	0.0	4.374	0%	5.22	0%	149.7	0.2	26.2	3%	300	26.15	3600	Clear/None
13:06	23.5	0%	7.42	0.0	4.380	0%	5.23	0%	150.0	0.5	24.3	10%	300	26.15	4500	Clear/None

Stop Purge Time: 13:07	**Sample Time: 13:10**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW17*
	Sample ID: SWFTS-MW17-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-01	**Well ID: SWFTS-MW18**
Field Samplers: G. Schuler				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 15.83	Screened Interval Top (ft): 16.8		Pump Intake Depth (ft): 26.10	
Well Depth (ft): 35.30	Screened/Open Interval Bottom (ft): 36.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:22				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:22	23.9		6.54		6.257		3.65		-42.6		57.3		300	15.90		Clear/None
11:25	24.9		6.49		6.475		1.80		-86.0		58.8		300	15.90	900	Clear/None
11:28	25.1		6.51		6.467		1.45		-100.3		39.6		300	15.90	1800	Clear/None
11:31	25.0		6.53		6.428		1.34		-117.5		29.4		300	15.90	2700	Clear/None
11:34	25.1		6.56		6.403		1.26		-130.6		33.9		300	15.90	3600	Clear/None
11:37	25.0	0%	6.58	0.0	6.359	0%	1.22	1%	-140.2	9.6	20.3	1%	300	15.90	4500	Clear/None
11:40	25.1	0%	6.60	0.0	6.335	0%	1.20	0%	-150.5	0.7	20.7	3%	300	15.90	5400	Clear/None
11:43	25.0	0%	6.61	0.0	6.320	0%	1.19	1%	-158.7	8.9	18.8	5%	300	15.90	6300	Clear/None

Stop Purge Time: 11:44	**Sample Time: 11:50**	**QA/QC Sample Time(s): n/a** *SWFTS-MW18*
	Sample ID: SWFTS-MW18-EM36	**QA/QC Sample ID(s): n/a**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.1 mg/L **Hach Kit Ferrous Iron: 0.2** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-01	**Well ID: SWFTS-MW19**
Field Samplers: A. Camacho				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 10.10	Screened Interval Top (ft): 11.3		Pump Intake Depth (ft): 21.00	
Well Depth (ft): 30.00	Screened/Open Interval Bottom (ft): 31.1		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 08:25				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
08:25	22.9		6.78		3.550		2.34		179.0		-5.5		300	10.10		Clear/None
08:28	23.2		6.84		3.593		1.69		178.3		-7.5		300	10.10	900	Clear/None
08:31	23.3		6.87		3.610		1.45		177.5		-8.0		300	10.10	1800	Clear/None
08:34	23.3		6.88		3.616		1.30		176.3		-8.6		300	10.10	2700	Clear/None
08:37	23.3		6.88		3.621		1.23		175.0		-8.7		300	10.10	3600	Clear/None
10:02	23.8	0%	6.90	0.0	3.566	0%	1.71	7%	182.9	0.8	2.9	<10	300	10.10	11100	Clear/None
10:05	23.7	0%	6.91	0.0	3.569	0%	1.56	2%	182.1	0.0	2.8	<10	300	10.10	12000	Clear/None
10:08	23.7	0%	6.92	0.0	3.574	0%	1.52	4%	181.2	0.9	2.8	<10	300	10.10	12900	Clear/None

Stop Purge Time: 10:09	**Sample Time: 10:15**	**QA/QC Sample Time(s): 10:15** *SWFTS-MW19*
	Sample ID: SWFTS-MW19-EM36	**QA/QC Sample ID(s): SWFTS-MW19-EM36-FD**

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

6	VOA w/HCl	**2**	125 mL Plastic		500 mL Plastic	8	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
2	125 mL w/EDA	**2**	250 mL Plastic		250 mL Plastic w/ H2SO4	**4**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-11-29	**Well ID: SWFTS-MW20**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 12.90	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.80	
Well Depth (ft): 35.40	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 13:40				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
13:40	25.5		6.67		7.445		3.23		124.1		66.4		120	12.75		Clear/None
13:43	25.6		6.57		7.420		3.06		114.5		61.0		120	12.75	360	Clear/None
13:46	25.6		6.59		7.285		3.00		103.9		54.8		120	12.75	720	Clear/None
13:50	25.6		6.61		7.162		2.96		95.8		54.1		120	12.75	1200	Clear/None
13:53	25.6	0%	6.64	0.0	7.012	2%	3.05	2%	88.7	4.4	41.4	17%	120	12.75	1560	Clear/None
13:56	25.6	0%	6.65	0.0	6.859	0%	2.79	5%	84.0	0.3	32.9	6%	120	12.75	1920	Clear/None
14:00	25.5	0%	6.69	0.0	6.702	2%	3.05	2%	80.1	4.2	31.2	11%	120	12.75	2400	Clear/None

Stop Purge Time: 14:01	**Sample Time: 14:05**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW20*
	Sample ID: SWFTS-MW20-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-01	**Well ID: SWFTS-MW21**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 16.00	Screened Interval Top (ft): 14.8		Pump Intake Depth (ft): 26.90	
Well Depth (ft): 38.05	Screened/Open Interval Bottom (ft): 39.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 09:12				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
09:12	23.2		6.85		6.613		3.02		128.1		103.4		285	16.10		Clear/None
09:15	24.1		6.81		6.778		1.94		112.5		123.1		285	16.10	855	Clear/None
09:18	24.3		6.80		6.799		1.69		103.6		89.6		285	16.10	1710	Clear/None
09:21	24.5		6.80		6.810		1.57		95.8		74.0		285	16.10	2565	Clear/None
09:24	24.4		6.79		6.820		1.51		89.3		52.6		285	16.10	3420	Clear/None
09:50	21.9		6.84		6.326		4.46		137.7		33.5		285	16.10	10830	Clear/None
09:54	24.5		6.78		6.830		1.82		69.3		23.7		285	16.10	11970	Clear/None
09:57	24.7		6.77		6.888		1.54		68.9		15.5		285	16.10	12825	Clear/None
10:00	24.7		6.76		6.905		1.44		70.6		12.9		285	16.10	13680	Clear/None
10:03	24.7	0%	6.77	0.0	6.907	0%	1.40	2%	69.6	1.7	12.0	2%	285	16.10	14535	Clear/None
10:06	24.7	0%	6.76	0.0	6.921	0%	1.36	0%	68.2	0.3	13.0	5%	285	16.10	15390	Clear/None
10:09	24.8	0%	6.76	0.0	6.928	0%	1.34	1%	65.8	2.1	11.8	3%	285	16.10	16245	Clear/None

Stop Purge Time: 10:10	**Sample Time: 10:15**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW21*
	Sample ID: SWFTS-MW21-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-02	**Well ID: SWFTS-MW22**
Field Samplers: S. Henning				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 11.34	Screened Interval Top (ft): 11.8		Pump Intake Depth (ft): 21.30	
Well Depth (ft): 31.60	Screened/Open Interval Bottom (ft): 31.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 06:49				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
06:49	18.8		7.09		3.827		4.81		142.1		376.6		180	11.40		Clear/None
06:52	21.7		7.04		4.304		2.57		143.4		316.3		180	11.40	540	Clear/None
06:55	22.7		7.00		4.492		2.08		138.4		238.1		180	11.40	1080	Clear/None
06:58	23.0		6.99		4.534		1.88		129.1		257.6		180	11.40	1620	Clear/None
07:01	23.0	0%	6.97	0.0	4.591	0%	1.77	2%	126.7	3.1	243.4	7%	180	11.40	2160	Clear/None
07:04	23.1	0%	6.96	0.0	4.643	0%	1.69	1%	122.9	0.7	224.5	0%	180	11.40	2700	Clear/None
07:07	22.9	0%	6.96	0.0	4.656	0%	1.70	1%	121.3	2.3	209.9	7%	180	11.40	3240	Clear/None

Stop Purge Time: 07:08	**Sample Time: 07:10**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW22-EM36	**QA/QC Sample ID(s): n/a**

SWFTS-MW22

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-02	**Well ID: SWFTS-MW23**
Field Samplers: A. Camacho				
Transducer Removal Time: 06:39	Transducer Redeployment Time: 08:00		General Well Condition: Good	
Depth to Water (ft): 12.52	Screened Interval Top (ft): 13.8		Pump Intake Depth (ft): 26.30	
Well Depth (ft): 35.95	Screened/Open Interval Bottom (ft): 33.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 06:49				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
06:49	20.5		7.09		2.510		2.01		198.9		21.6		300	12.52		Clear/None
06:52	20.8		7.08		2.537		1.43		201.3		10.7		300	12.52	900	Clear/None
06:55	20.9	0%	7.08	0.0	2.546	0%	1.26	5%	202.9	1.0	7.7	<10	300	12.52	1800	Clear/None
06:58	21.1	0%	7.08	0.0	2.558	0%	1.18	0%	204.0	0.1	6.9	<10	300	12.52	2700	Clear/None
07:01	21.0	0%	7.08	0.0	2.551	0%	1.13	5%	204.8	0.9	6.3	<10	300	12.52	3600	Clear/None

Stop Purge Time: 07:02	**Sample Time: 07:05**	**QA/QC Sample Time(s): n/a**
	Sample ID: SWFTS-MW23-EM36	**QA/QC Sample ID(s): n/a**

SWFTS-MW23

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-01	**Well ID: SWFTS-MW24**
Field Samplers: A. Camacho				
Transducer Removal Time: n/a	Transducer Redeployment Time: n/a		General Well Condition: Good	
Depth to Water (ft): 13.00	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 24.90	
Well Depth (ft): 36.60	Screened/Open Interval Bottom (ft): 37.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 11:25				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
11:25	24.3		7.07		5.225		2.69		177.0		165.0		300	13.00		Clear/None
11:28	24.3		6.94		5.214		2.22		177.3		198.0		300	13.00	900	Clear/None
11:31	24.2		6.91		5.199		1.99		177.1		75.1		300	13.00	1800	Clear/None
11:34	24.2		6.89		5.187		1.76		176.6		43.9		300	13.00	2700	Clear/None
11:37	24.2		6.88		5.192		1.49		176.1		24.3		300	13.00	3600	Clear/None
11:40	24.3	0%	6.87	0.0	5.198	0%	1.43	1%	175.5	0.4	19.5	10%	300	13.00	4500	Clear/None
11:43	24.3	0%	6.87	0.0	5.190	0%	1.43	1%	175.1	0.0	17.2	2%	300	13.00	5400	Clear/None
11:46	24.2	0%	6.87	0.0	5.179	0%	1.48	2%	174.7	0.4	16.2	8%	300	13.00	6300	Clear/None

Stop Purge Time: 11:47	**Sample Time: 11:50**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW24*
	Sample ID: SWFTS-MW24-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

NERT, Henderson, NV

Task Name: SWF Area Bio Treatability Study	Task Manager: D. Grady/ J. Dabbs	Task No.: M11	Date: 2021-12-01	**Well ID: SWFTS-MW25**
Field Samplers: A. Camacho				
Transducer Removal Time: 12:47	Transducer Redeployment Time: 14:00		General Well Condition: Good	
Depth to Water (ft): 10.45	Screened Interval Top (ft): 12.8		Pump Intake Depth (ft): 27.30	
Well Depth (ft): 43.00	Screened/Open Interval Bottom (ft): 42.6		Well Diameter (in): 2	
Pump/Tubing Type: QED Bladder Pump & TLPE/LDPE	GW Disposal: GW-11		Equipment Decon. Method: Alconox/DI Rinse SOP	
Y Dedicated Tubing Present? (Y/N)	N New Dedicated Tubing Placed? (Y/N)			
Purge Start Time: 12:56				

Time	Temp. (°C)		pH (pH Units)		Conductivity (mS/cm)		DO (mg/L)		ORP (mV)		Turbidity (NTU)		Purge Rate (ml/min)	Depth to Water (ft)	Cum. Vol. Purged (mL)	Color/Odor
	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*				
12:56	22.6		6.95		5.144		1.79		175.3		1617.3		300	10.45		Clear/None
12:59	22.8		6.87		5.151		1.37		177.0		1031.2		300	10.45	900	Clear/None
13:02	22.8		6.85		5.142		1.20		177.8		462.2		300	10.45	1800	Clear/None
13:05	22.7		6.84		5.130		1.13		178.0		329.2		300	10.45	2700	Clear/None
13:08	22.7		6.83		5.124		1.08		178.0		243.6		300	10.45	3600	Clear/None
13:11	22.8		6.83		5.158		1.04		177.9		227.2		300	10.45	4500	Clear/None
13:14	22.8		6.83		5.178		1.04		177.5		199.3		300	10.45	5400	Clear/None
13:17	22.8		6.83		5.178		1.14		177.1		221.1		300	10.45	6300	Clear/None
13:20	22.6		6.86		5.182		1.74		176.2		242.3		300	10.45	7200	Clear/None
13:23	22.6		6.83		5.177		1.07		176.4		186.7		300	10.45	8100	Clear/None
13:26	22.6	0%	6.83	0.0	5.169	0%	0.99	2%	176.3	0.3	176.7	7%	300	10.45	9000	Clear/None
13:29	22.6	0%	6.83	0.0	5.165	0%	0.97	0%	176.0	0.0	157.6	4%	300	10.45	9900	Clear/None
13:33	22.7	0%	6.83	0.0	5.164	0%	0.95	2%	175.7	0.3	159.1	3%	300	10.45	11100	Clear/None

Stop Purge Time: 13:34	**Sample Time: 13:40**	**QA/QC Sample Time(s): n/a**	*SWFTS-MW25*
	Sample ID: SWFTS-MW25-EM36	**QA/QC Sample ID(s): n/a**	

Observations/Comments: Well Condition: Good

HACH Kit Sulfide: 0.0 mg/L **Hach Kit Ferrous Iron: 0.0** mg/L

Bottle Set Summary

3	VOA w/HCl	**1**	125 mL Plastic		500 mL Plastic	4	40 mL Amber VOA w/ HCl		250 mL Amber Glass w/H2S04
1	125 mL w/EDA	**1**	250 mL Plastic		250 mL Plastic w/ H2SO4	**2**	250 mL Plastic w/HNO3		500 mL Amber Glass w/ H2SO4

*INDICATOR PARAMETERS HAVE STABLIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN:

± 0.1 for pH; ± 3% for Cond and Temp; ± 10 mv for ORP; ± 10% or <0.5 mg/L for DO; ± 10% or <10 NTU Turbidity

Appendix C
Data Validation Summary Report

Data Validation Summary Report
(DVSR ID: TetraTech-M11-2022)
Seep Well Field Area Bioremediation Treatability Study - 2021 Annual Progress Report
Nevada Environmental Response Trust Site
Henderson, Nevada

PREPARED FOR

Nevada Environmental Response Trust
35 E. Wacker Drive, Suite 690
Chicago, IL 60601

PRESENTED BY

Tetra Tech, Inc.
150 S. 4th Street, Unit A
Henderson, NV 89015

August 17, 2022

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APPENDICES

Appendix 1 Validation Checklists
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LIST OF ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
BW	blank water
CCB	continuing calibration blank
CCV	continuing calibration verification
DL	detection limit
DMC	deuterated monitoring compound
DQO	data quality objectives
DUP	duplicate
DVSR	data validation summary report
EB	equipment blank
EDD	electronic data delivery
FB	field blank
FD	field duplicate
GC-MS	gas chromatography-mass spectroscopy
ICAL	initial calibration
ICB	initial calibration blank
ICS	interference check samples
ICV	initial calibration verification
LCS	laboratory control sample
MDL	method detection limit
MS/MSD	matrix spike/matrix spike duplicate
NORM	normal field sample
NDEP	Nevada Division of Environmental Protection
NERT	Nevada Environmental Response Trust
NFG	National Functional Guidelines
%C	percent completeness
%D	percent difference or drift
%R	percent recovery
%RSD	percent relative standard deviation
PARCCS	precision, accuracy, representativeness, comparability, completeness, sensitivity
PQL	practical quantitation limit
QA	quality assurance
QAPP	quality assurance project plan

Acronyms/Abbreviations	Definition
QC	quality control
RL	reporting limit
RPD	relative percent difference
RRF	relative response factor
SDG	sample delivery group
SQL	sample quantitation limit
Tetra Tech	Tetra Tech, Inc.
Treatability Study	Seep Well Field Area Bioremediation Treatability Study
USEPA	United States Environmental Protection Agency
µg/L	micrograms per liter
WG	groundwater
WQ	water quality assurance sample

1.0 INTRODUCTION

On behalf of the Nevada Environmental Response Trust (NERT), Tetra Tech, Inc. (Tetra Tech) has prepared this Data Validation Summary Report (DVSR) to assess the validity and usability of laboratory analytical data from the samples associated with the Seep Well Field Area Bioremediation Treatability Study (Treatability Study) for the NERT site, located in Clark County, Nevada. Sampling protocol can be found in *Final Seep Well Field Area Bioremediation Treatability Study Work Plan* (Tetra Tech, 2016). In 2021 Tetra Tech performed the treatability study extension work described in the NDEP-approved *Treatability/Pilot Study Modification No. 6 – Seep Well Field Area Bioremediation Treatability Study*, which included the collection and analyses of groundwater samples to assess the effectiveness of the ongoing treatability study extension activities and additional quality assurance and quality control (QA/QC) samples to aid in assessing data quality. Tetra Tech collected and validated 227 groundwater, 12 equipment blank, and 12 field blank samples from February 2021 through December 2021 as part of the treatability study extension activities.

TestAmerica, Inc. provided laboratory analytical services. The analyses were performed by the methods shown in Table 1.

The laboratory assigns job numbers, also called sample delivery groups (SDGs), to all samples. The samples associated with QA/QC are designed to document the data quality of the samples in each sampling round or within an SDG. Table 2 cross-references each validated sample with its laboratory analysis, SDG, collection date, client sample number, laboratory sample number, QC type, matrix, and stage of validation. Samples in Table 2 are submitted in the DVSR electronic data deliverable (EDD) along with associated, unvalidated field readings and microbial data. The EDD contains 251 samples consisting of 227 validated groundwater, 12 validated equipment blanks, 12 validated field blanks.

The laboratory analytical data were verified and validated in accordance with procedures described in the *Quality Assurance Project Plan, Revision 5* (Ramboll, 2020), *Quality Assurance Project Plan, Revision 6* (Ramboll, 2021), *NDEP Data Verification and Validation Requirements* (NDEP, 2018), and the references contained therein. The samples, all aqueous, were validated to Stage 2A. The review process uses professional judgment and National Functional Guidelines (NFG) guidance to determine the final qualifiers, which are added to the database and presented in the DVSR tables.

The validation checklists are found in Appendix 1. Laboratory data packages may be found in Appendix 2. A database of the analytical results is provided in Appendix 3.

This report summarizes the QA/QC evaluation of the data using precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) relative to the project data quality objectives (DQOs). This report provides a quantitative and qualitative assessment of the data and identifies potential sources of error, uncertainty, and bias that may affect the overall usability of the data.

2.0 PRECISION AND ACCURACY OF ENVIRONMENTAL DATA

Environmental data quality depends on sample collection procedures, analytical methods and instrumentation, documentation, and sample matrix properties. Both sampling procedures and laboratory analyses contain potential sources of uncertainty, error, and/or bias, which may affect the overall quality of a measurement. Errors for sample data may result from incomplete equipment decontamination, inappropriate sampling techniques, sample heterogeneity, improper filtering, and improper preservation. The accuracy of analytical results is dependent on selecting appropriate analytical methods, maintaining equipment properly, and complying with QC requirements. The sample matrix also is an important factor in the ability to obtain precise and accurate results within a given medium.

Environmental and laboratory QA/QC samples provide information on the effects of sampling procedures and evaluate laboratory contamination, laboratory performance, and matrix effects. Field QA/QC samples include equipment blanks (EBs), field blanks (FBs), field duplicates (FDs), and matrix spike/matrix spike duplicates (MS/MSDs). Laboratory QA/QC samples include method blanks, laboratory control samples (LCSs), laboratory duplicates (DUP), and additional MS/MSDs needed to meet method requirements.

2.1 PRECISION

Precision is a measure of the agreement of analytical results under a given set of conditions. It is a quantity that is not measured directly but is calculated from concentrations. Precision can be expressed as the relative percent difference (RPD) between two measurements:

$$RPD = \frac{(C1 - C2)*100}{(C1 + C2)/2}$$

where:
C1 = reported concentration for the sample
C2 = reported concentration for the duplicate

Precision can be expressed as the percent relative standard deviation (%RSD) between three or more measurements:

$$\%RSD = (s/\bar{a})*100$$

where:
%RSD = percent relative standard deviation
s = standard deviation
$\bar{a}$ = mean of replicate analyses

Precision is assessed by calculating %RSD during an initial calibration (ICAL) and RPD from the percent recoveries of the spiked compounds for each sample in the MS/MSD pair. In the absence of an MS/MSD pair, a laboratory duplicate can be analyzed as an alternative means of assessing precision. An additional measure of sampling precision is obtained by collecting and analyzing FD samples, which are compared using the RPD results as the evaluation criteria.

MS and MSD samples are field samples which have been spiked by the laboratory with target analytes prior to preparation and analysis. These samples measure the appropriateness of the analytical method and effectiveness in recovering target analytes from a specific environmental matrix. The LCS sample is spiked with the same target analytes as the MS/MSD using an interference-free matrix instead of a field sample aliquot. The LCS measures laboratory efficiency in recovering target analytes in the absence of matrix interferences. It is used to verify that the analyses are being performed in control.

The laboratory analyzes laboratory replicates. A field sample is analyzed and an unspiked duplicate of that sample is also analyzed. The data reviewer compares the reported results of the primary analysis and the laboratory duplicate and calculates RPDs to assess laboratory precision.

Calibration precision is determined by calculating %RSD. Laboratory and field sampling precision are evaluated by calculating RPDs for field sample duplicate pairs, if collected. The sampler collects two field samples at the same location and under identical conditions. The laboratory then analyzes the samples under identical conditions.

An RPD outside the allowed limit between MS/MSD samples or DUP samples indicates imprecision. Imprecision is the variance in the consistency with which the laboratory arrives at a reported result. The actual analyte concentration may be higher or lower than the reported result.

Possible causes of poor precision include sample heterogeneity, sample matrix interference, improper sample collection or handling, inconsistent sample preparation, instrument column fouling, and poor instrument stability. In duplicate pairs, results may be reported in either the primary or duplicate samples at levels below the practical quantitation limit (PQL) or non-detected. Since these values are estimated, RPD exceedances from these duplicate pairs do not suggest a significant impact to data quality.

2.2 ACCURACY

Accuracy is a measure of the closeness of agreement between a measured value and the true value of an analytical parameter. It may be used to identify bias in each measurement system. Recoveries outside acceptable QC limits may be caused by factors such as instrumentation, analyst error, or matrix interference. Accuracy is assessed through the analysis of continuing calibrations, MS, MSD, LCS, and surrogates. In some cases, samples from multiple SDGs were within one QC batch and therefore are associated with the same laboratory QC samples. Accuracy is determined using the percent recovery (%R) of MS and LCS analyses.

Percent recovery is calculated using the following equation:

$$\%R = (A-B)/C \times 100$$

where:
A = measured concentration in the spiked sample
B = measured native concentration in the unspiked sample
C = concentration of the spike

The percent recovery of each analyte spiked in MS/MSD samples and LCS is evaluated with the acceptance criteria specified by the QAPPs and laboratory limits. Spike recoveries outside the acceptable QC accuracy limits provide an indication of bias, where the reported data may overestimate or underestimate the actual concentration of compounds detected or quantitation limits reported for environmental samples.

2.3 REPRESENTATIVENESS

Representativeness is a qualitative parameter that expresses the degree to which the sample data are characteristic of a population. It is evaluated by reviewing the QC results of blanks, samples, and holding times. Positive detects of compounds in the blank samples identify compounds that may have been introduced into the samples during sample collection, transport, preparation, or analysis. The QA/QC blanks collected and analyzed are method blanks, calibration blanks, EBs, and FBs.

A method blank is a laboratory grade water or solid matrix that contains the method reagents and has undergone the same preparation and analysis as the environmental samples. The method blank provides a measure of the combined contamination derived from the laboratory source water, glassware, instruments, reagents, and sample preparation steps. Method blanks are prepared for each sample of a similar matrix extracted by the same method at a similar concentration level.

Several methods require the use of initial calibration blanks (ICBs) and continuing calibration blanks (CCBs). ICBs and CCBs are laboratory-grade water samples that are analyzed at the beginning, during, and at the end of sample analysis runs. The frequency is dependent on the analytical method. These blanks estimate residual contaminants from the previous sample or standards analysis and measure baseline shifts that commonly occur in emission and absorption spectroscopy.

EBs consist of analyte-free water poured over or through the sample collection equipment. The water is collected in a sample container for laboratory analysis. These blanks are collected after the sampling equipment is decontaminated; they are used to measure effectiveness of the decontamination procedure. Equipment blanks are collected and analyzed for all target analytes.

FBs consist of analyte-free source water stored at the sample collection site. The water is collected from each source water used during each sampling event. Field blanks were collected and analyzed for all target analytes.

Contaminants found in both the environmental sample and the blank sample are assumed to be laboratory artifacts if one or both values are less than the PQL or if a sample result and blank contaminant value are greater than the PQL and the sample result is less than 10 times the blank contaminant value.

Holding times are evaluated to assure that the sample integrity is intact for accurate sample preparation and analysis. Holding times are specific for each method and matrix analyzed. Holding time exceedance can cause loss of sample constituents due to biodegradation, precipitation, volatilization, and chemical degradation. Sample results for analyses that were performed after the method holding time are qualified according to NDEP requirements using the qualifiers and bias recommendations found in the NFGs.

2.4 COMPARABILITY

Comparability is a qualitative characteristic that defines the extent to which the data for a chemical parameter measurement are consistent with, and may be compared with, data from other sampling events. Comparability is dependent upon the design of the sampling plans and execution of activities consistent with approved plans. Factors affecting comparability include sample collection and handling techniques, matrix type, and analytical method. Comparability is achieved through the use of standard techniques to collect representative samples, consistent application of analytical method protocols, and use of appropriate units in reporting analytical results. Comparability is also dependent upon other PARCCS criteria, because only when precision, accuracy, and representativeness are known can datasets be compared with confidence.

2.5 COMPLETENESS

Completeness is defined as the percentage of acceptable sample results compared to the total number of sample results. Completeness is evaluated to determine if an acceptable amount of usable data were obtained so that a valid scientific site assessment can be completed. Completeness equals the total number of sample results for each fraction minus the total number of rejected sample results divided by the total number of sample results multiplied by 100. As specified in the project DQOs, the goal for completeness for target analytes in each analytical fraction is 90 percent.

Percent completeness is calculated using the following equation:

$$\%C = (T - R)/T \times 100$$

where:
%C = percent completeness
T = total number of sample results
R = total number of rejected sample results

Completeness is also determined by comparing the planned number of samples per method and matrix as specified in the QAPPs, with the number determined above. In cases where multiple results are reported for a

single analyte due to dilutions or re-analysis using a single method, the most technically sound value will be reported, and the other result will be qualified “R”. Data rejected in favor of alternate results are not used in the completion calculation.

2.6 SENSITIVITY

Sensitivity is the ability of an analytical method or instrument to discriminate between measurement responses representing different concentrations. It is generally used to describe the instrument detection limits (DLs) or PQLs established to meet project DQOs. The method detection limit (MDL) represents the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. Sample quantitation limits (SQLs) are adjusted MDL values that reflect sample-specific actions, such as dilutions or varying aliquot sizes. The laboratory data reports show MDL in place of the SQL. The MDL was adjusted to reflect the sample analysis conditions. The PQL is the minimum concentration that can be reported based on the analysis of a specific matrix. The PQL is often the lowest acceptable calibration point for the analyte.

For this project, the laboratory data reports show reporting limit (RL) in place of the PQL. The laboratory reported detected analytes down to the adjusted MDL/SQL. All results reported between the SQL and PQL were qualified “J” by the laboratory. Sample results are compared to method and field quality blank results to identify possible effects of laboratory background and field procedures on sensitivity.

3.0 VALIDATION RESULTS AND PARCCS

This section discusses the validation results and the associated PARCCS criteria. Before conducting the PARCCS evaluation, the analytical data were validated to Stage 2A.

Samples not meeting the acceptance criteria were denoted with a validation qualifier that indicates a deficiency with the data. Table 3 contains validation qualifiers used in data validation.

When more than one validation qualifier is applicable to a data point, the final validation qualifier applied is based on the following hierarchy:

R > J	R takes precedence over the J qualifier.
J+	The high bias (J+) qualifier is applied to detected results only.
J > J+ or J-	The unbiased (J) qualifier supersedes biased (J+ or J-) qualifiers since it is not possible to assess the direction of the potential bias.
J = J+ plus J-	Adding biased (J+ or J-) qualifiers with opposite signs results in an unbiased qualifier (J).
UJ = U plus J	The UJ qualifier is used when a non-detected (U) flag is added to a (J) flag.

Table 4 identifies the QC elements reviewed for Stage 2A validation. The actual elements are method-dependent.

Table 5 lists the reason codes used. Reason codes explain why data were qualified and identify possible limitations of data use. Reason codes are cumulative except when one of the flags is R. In that case, only the reason code associated with the R flag is used.

Table 6 presents the overall qualified results after the validation qualifiers and associated reason codes were applied.

3.1 PRECISION

3.1.1 Instrument Calibration

The objective of the ICAL is to ensure that an instrument can produce acceptable qualitative and quantitative data by determining the ratio of instrument response to analyte concentration. %RSD is used to evaluate ICAL results in RSK-175 and provides a means of evaluating precision within an analytical system.

ICAL data are not reviewed during Stage 2A validation.

3.1.2 MS/MSD and Laboratory Duplicate Samples

No data were qualified for MS/MSD or lab duplicate RPD outliers.

3.1.3 Field Duplicate Samples

For results > 5X the PQL, the FDs were evaluated for acceptable precision with RPDs. For waters, the allowable RPD is 30%. For results < 5X the PQL, samples were evaluated by the difference between the two measurements. Two results were qualified for FD imprecision. In SDG 550-167639-1, sulfate was detected and qualified "J" in SWFTS-MW11-EM34 and SWFTS-MW11-EM34-FD. The RPD between the results was 73%. Results qualified for FD imprecision are found in Table 6 with reason code “fd”.

3.2 ACCURACY

3.2.1 Calibration and Continuing Calibration

As stated previously, the objective of initial calibration is to ensure that an instrument is capable of producing acceptable qualitative and quantitative data by determining the ratio of instrument response to analyte concentrations. Typically, inorganic methods use regression models for initial calibration. Regression may also be used in organic analyses. The correlation coefficient indicates the linearity of the calibration curve. The coefficient of determination is an overall measure of the accuracy of the regression calibration curve. The objective of continuing calibration is to ensure that the instrument continues to meet the sensitivity and linearity criteria throughout each analytical sequence. Initial and continuing calibration verification (CCV) results provide a means of evaluating accuracy. Percent difference or drift (%D), percent recovery (%R), correlation coefficient, and coefficient of determination are the parameters used to measure the effectiveness of instrument calibration. %R and %D are used to verify the ongoing calibration acceptability of the analytical system.

Calibration data are usually not reviewed in Stage 2A validation. In SDGs 550-161146-1 and 550-170815-1, 19 nitrate results were qualified. The case narratives stated that CCVs for nitrate were not analyzed at the correct frequency. CCVs are required after 10 samples. Due to instrument sequencing errors, a CCV was analyzed after 20 samples in SDG 550-161146-1 and after 16 samples in SDG 550-170815-1. The opening and closing CCVs were acceptable, so the data were qualified as estimated and assigned “J” or “UJ” qualifiers. They are found in Table 6 with reason code “c”.

3.2.2 MS/MSD Samples

Several MS/MSD %Rs were outside of acceptance criteria shown in the QAPPs. MS/MSD %R exceedances can be found in Table 7. Analytes that were present in the parent sample in concentrations greater than 4 times the amount spiked were not qualified and are not shown in the table. In cases where the recoveries were high and the parent sample was non-detect, no qualification was applied. Qualifiers were applied to parent samples only, unless FD samples or samples of known similarity were analyzed in the same SDG. Table 7 contains the spiked parent sample only. Per the inorganic NFG, MS/MSD recoveries < 30 percent result in rejection of the non-detected data point. In cases where dilutions caused the low recoveries, the data were not rejected or qualified. The effect of dilution on matrix spike recoveries is determined on a case-by-case-basis using professional judgment, knowledge of the lab’s procedures, and input from the lab. For some analyses, the lab may dilute the sample prior to preparation for analyses and prior to addition of the matrix spike compounds. The lab also approaches this on a case-by-case basis. Twenty-three results were qualified “J-“, “J”, “J+”, and “UJ” for MS/MSD %Rs. The results qualified for MS/MSD recoveries can be found in Table 6 with reason code “m”.

3.2.3 LCS Samples

No data were qualified for LCS %R outliers.

3.2.4 Serial Dilutions

The serial dilution is used to determine whether physical or chemical interferences exist due to matrix. The serial dilution %Ds were less than 10 percent as required in the inorganic NFG.

3.2.5 Interference Check Samples

Interference check samples (ICS) are analyzed in the following methods: EPA 314.0, SW-6010B, and SW-6020. All interference check %Rs met acceptance criteria of 80 to 120 percent.

3.2.6 Surrogates

Surrogates are added to all samples analyzed by EPA 300.1B to measure the efficiency of the analytical method. The acceptance limits are 90 to 115 percent. Twenty chlorate samples had surrogate recoveries outside the

limits. Eighteen results were qualified “J”, “J+”, or “UJ” for surrogate %Rs. Two chlorate results were rejected because the surrogate %Rs were below 10 percent and they were non-detect for chlorate. Surrogate %R exceedances can be found in Table 8. The affected results are found in Table 6 with reason code “s”.

3.2.7 Analyte Quantitation and Target Identification

Three sulfate results were re-analyzed because the reported values did not reflect historical results. The unused results were assigned validation qualifier “R” and are shown with reason code “brr” in Table 6. Sulfate in PC-91-EM34 was re-analyzed in duplicate outside the 28-day holding time to confirm the initial result. The two sulfate re-analyses confirmed the original result. The original, unqualified result was used. The re-analyses were rejected.

Sulfate in SWFTS-MW25-EM31 was re-analyzed outside the 28-day holding time to confirm the initial result. The result was not confirmed. The lab determined that the sulfate peak was mis-identified in the original analysis. The original result was rejected. The re-analysis result was reported.

The rejected results are shown in Table 9 with a comment describing the logic for using the alternate result. Data rejected in favor of alternate results are not used in the completion calculation.

Multiple results in all analyses were detected between the SQL and the PQL. All were qualified “J”, estimated, and are shown with reason code “sp” in Table 6.

3.3 REPRESENTATIVENESS

3.3.1 Sample Preservation and Holding Times

Sample preservation, including temperature, and holding times were evaluated to verify compliance with the analytical methods.

Thirty results in SDG 550-164872-1 were qualified for sample receipt temperature exceedances. The cooler temperature when received at the laboratory was at 7.8 degrees C. The results were qualified “UJ” or “J-“ in validation and are designated with reason code “st” in Table 6.

One TOC result was qualified for both preservation and holding time infractions. It is designated with reason codes “h, pH” in Table 6. Sample PC-91-EM32 was collected in bottles containing HCl, but when checked, the pH was >2. The lab adjusted the pH of the sample to pH < 2 prior to analysis. Since the sample was not analyzed within the 4-hour holding time for unpreserved samples, the holding time was grossly exceeded. The TOC result was qualified “J-“ in validation.

Three nitrate samples were analyzed past their 48-hour holding time. One sulfate sample was re-analyzed past its 28-day holding time to verify the original analysis. The results were qualified “J-“ in validation and are designated with reason code “h” in Table 6.

The preservation exceedances are shown in Table 10. The holding time exceedances are shown in Table 11.

3.3.2 Blanks

Method blanks, EBs, and FBs were analyzed to evaluate representativeness. The concentration of an analyte in any blank was used for data qualification. If contaminants were detected in a blank, the blank concentration was compared to the sample results. If the analyte was not detected in the sample, no qualification was applied to the sample. If the sample concentration was greater than 10 times the amount in the blank, after dilutions were considered, no qualification was applied.

For concentrations detected in the sample below the PQL, the sample result was qualified “J”. Based on hierarchy of validation qualification, the “J” qualifier, in this case applied to detected results below the PQL, supersedes the positive bias associated with blank contamination. For concentrations detected in the sample above the PQL and less than 10 times the amount in the blank, the sample result was qualified “J+”.

3.3.2.1 Method Blanks

Metals were detected in multiple method blanks. One-hundred-eighty sample results were qualified because of metals found in both the samples and the method blanks. Qualified results are shown in Table 6 with reason codes “bl”. Laboratory blank detections that resulted in qualification are shown in Table 12. Method blanks may have been reported in more than one SDG.

3.3.2.2 Equipment Blanks and Field Blanks

There were several detections in the EBs and FBs. One-hundred-one results were qualified because of EB detections. The qualified results are shown in Table 6 with reason code “be”. One-hundred-twelve results were qualified because of FB detections. Qualified results are shown in Table 6 with reason code “bf”.

EB and FB detections that resulted in qualification are shown in Table 13 with the associated samples. EB and FB detections were associated with all samples in the SDG in which they appear. Samples may be associated with more than one EB and FB.

3.4 COMPARABILITY

The laboratory used standard analytical methods for all analyses and appropriate units for reporting. Comparability is acceptable.

3.5 COMPLETENESS

The overall completeness level attained for the field samples, EBs, and FBs is 99.95 percent and meets the project goal of 90 percent. The percentage was calculated as the total number of accepted (non-rejected) sample results divided by the total number of sample results multiplied by 100. Completeness by method is presented in Table 14. Two chlorate results were rejected for low surrogate recoveries. Data rejected in favor of alternate results such as dilution runs are not used in the completion calculation.

3.6 SENSITIVITY

Instrument sensitivity was determined to be technically acceptable. Due to high analyte concentrations and matrix effects, many analytical runs were analyzed at dilutions. For diluted analyses, SQLs and PQLs were elevated.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The sample data were qualified for multiple data issues. Sample results were qualified for imprecision between a sample and its field duplicate. Sample results were qualified for %Rs of MS/MSD samples and surrogates. These issues affect accuracy. Qualifications that affected representativeness include blank contamination, temperature exceedance, insufficient preservation, and missed holding times. Comparability was achieved by using approved sampling and analytical methods. Although two chlorate results were rejected because of low surrogate %Rs, the evaluation established that the project analytical completeness was met for groundwater. The sensitivity of the analytical methods was affected by the matrix of the samples. Dilutions raised the associated SQLs and PQLs in many samples.

The analytical data quality assessment for the laboratory results generated during the Seep Well Field Area Bioremediation Treatability Study at the NERT site in Henderson, Nevada established that the overall project analytical requirements were met.

5.0 REFERENCES

Nevada Division of Environmental Protection (NDEP). (2018). *NDEP Data Verification and Validation Requirements*.

Ramboll. (2020). *Quality Assurance Project Plan, Revision 5, Nevada Environmental Response Trust Site, Henderson, Nevada.*

Ramboll. (2021). *Quality Assurance Project Plan, Revision 6, Nevada Environmental Response Trust Site, Henderson, Nevada.*

Tetra Tech. (2016). *Final Seep Well Field Area Bioremediation Treatability Study Work Plan.*

Tables

Table 1 Analytical Methods

Method	Parameters	Number of Water Samples	Number of Soil Samples
EPA 300.0	Nitrate [as N]	251	0
EPA 300.0	Sulfate	251	0
EPA 300.1B	Chlorate	251	0
EPA 314.0	Perchlorate	251	0
RSK175	Methane	42	0
SM5310B	Total Organic Carbon	251	0
SW-6010B	Dissolved Metals*	84	0
SW-6010B	Total Manganese	84	0
SW-6020	Dissolved Antimony, Arsenic, Selenium, Thallium	84	0

*Dissolved metals include aluminum, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, molybdenum, nickel, phosphorus, potassium, silicon, silver, sodium, strontium, tin, titanium, tungsten, vanadium, zinc

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	EPA 300.0	EPA 300.1B	EPA 314.0	RSK175	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020 Dissolved
550-157577-1	PC-91-EM31	550-157577-1	WG	NORM	2/1/21	Stage 2A	X	X	X		X			
550-157577-1	PC-92-EM31	550-157577-2	WG	NORM	2/1/21	Stage 2A	X	X	X		X			
550-157577-1	PC-94-EM31	550-157577-3	WG	NORM	2/1/21	Stage 2A	X	X	X		X			
550-157577-1	SWFTS-20210201-FB	550-157577-4	BW	FB	2/1/21	Stage 2A	X	X	X		X			
550-157577-1	SWFTS-20210201-EB	550-157577-5	BW	EB	2/1/21	Stage 2A	X	X	X		X			
550-157577-1	PC-58-EM31	550-157577-6	WG	NORM	2/1/21	Stage 2A	X	X	X		X			
550-157577-1	SWFTS-MW09B-EM31	550-157577-7	WG	NORM	2/1/21	Stage 2A	X	X	X		X			
550-157577-1	SWFTS-MW10A-EM31	550-157577-8	WG	NORM	2/1/21	Stage 2A	X	X	X		X			
550-157577-1	SWFTS-MW11-EM31	550-157577-9	WG	NORM	2/1/21	Stage 2A	X	X	X		X			
550-157577-1	SWFTS-MW11-EM31-FD	550-157577-10	WG	FD	2/1/21	Stage 2A	X	X	X		X			
550-157679-1	PC-88-EM31	550-157679-1	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	PC-88-EM31-FD	550-157679-2	WG	FD	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW01-EM31	550-157679-3	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW02-EM31	550-157679-4	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW03-EM31	550-157679-5	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW04-EM31	550-157679-6	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW05A-EM31	550-157679-7	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW05B-EM31	550-157679-8	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW12-EM31	550-157679-9	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW13-EM31	550-157679-10	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-202102-EB	550-157679-11	BW	EB	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-202102-FB	550-157679-12	BW	FB	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW14-EM31	550-157679-13	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW15-EM31	550-157679-14	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW16-EM31	550-157679-15	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157679-1	SWFTS-MW17-EM31	550-157679-16	WG	NORM	2/2/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW18-EM31	550-157817-1	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW19-EM31	550-157817-2	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW19-EM31-FD	550-157817-3	WG	FD	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW20-EM31	550-157817-4	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW21-EM31	550-157817-5	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW22-EM31	550-157817-6	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW23-EM31	550-157817-7	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW24-EM31	550-157817-8	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW06A-EM31	550-157817-9	WG	NORM	2/3/21	Stage 2A	X	X	X		X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	EPA 300.0	EPA 300.1B	EPA 314.0	RSK175	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020 Dissolved
550-157817-1	SWFTS-MW06A-EM31-FD	550-157817-10	WG	FD	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW06B-EM31	550-157817-11	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW07A-EM31	550-157817-12	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW07B-EM31	550-157817-13	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW08A-EM31	550-157817-14	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157817-1	SWFTS-MW09A-EM31	550-157817-15	WG	NORM	2/3/21	Stage 2A	X	X	X		X			
550-157924-1	SWFTS-MW25-EM31	550-157924-1	WG	NORM	2/4/21	Stage 2A	X	X	X		X			
550-160937-1	PC-91-EM32	550-160937-1	WG	NORM	3/29/21	Stage 2A	X	X	X		X			
550-160937-1	PC-92-EM32	550-160937-2	WG	NORM	3/29/21	Stage 2A	X	X	X		X			
550-160937-1	PC-94-EM32	550-160937-3	WG	NORM	3/29/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW24-EM32	550-160995-1	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW25-EM32	550-160995-2	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW23-EM32	550-160995-3	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW22-EM32	550-160995-4	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW21-EM32	550-160995-5	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW20-EM32	550-160995-6	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW19-EM32	550-160995-7	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW19-EM32-FD	550-160995-8	WG	FD	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	PC-88-EM32	550-160995-10	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	PC-88-EM32-FD	550-160995-11	WG	FD	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW01-EM32	550-160995-12	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW02-EM32	550-160995-13	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW03-EM32	550-160995-14	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW04-EM32	550-160995-15	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW05A-EM32	550-160995-16	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW05B-EM32	550-160995-17	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-160995-1	SWFTS-MW18-EM32	550-160995-9	WG	NORM	3/30/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-MW06A-EM32	550-161063-1	WG	NORM	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-MW06A-EM32-FD	550-161063-2	WG	FD	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-EM32-EB1	550-161063-3	BW	EB	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-EM32-FB1	550-161063-4	BW	FB	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-MW06B-EM32	550-161063-5	WG	NORM	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-MW07A-EM32	550-161063-6	WG	NORM	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-MW07B-EM32	550-161063-7	WG	NORM	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-MW08A-EM32	550-161063-8	WG	NORM	3/31/21	Stage 2A	X	X	X		X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	EPA 300.0	EPA 300.1B	EPA 314.0	RSK175	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020 Dissolved
550-161063-1	SWFTS-MW17-EM32	550-161063-9	WG	NORM	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-MW16-EM32	550-161063-10	WG	NORM	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-MW15-EM32	550-161063-11	WG	NORM	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-MW14-EM32	550-161063-12	WG	NORM	3/31/21	Stage 2A	X	X	X		X			
550-161063-1	SWFTS-MW13-EM32	550-161063-13	WG	NORM	3/31/21	Stage 2A	X	X	X		X			
550-161146-1	SWFTS-MW09A-EM32	550-161146-1	WG	NORM	4/1/21	Stage 2A	X	X	X		X			
550-161146-1	SWFTS-MW09B-EM32	550-161146-2	WG	NORM	4/1/21	Stage 2A	X	X	X		X			
550-161146-1	SWFTS-EM32-FB2	550-161146-3	BW	FB	4/1/21	Stage 2A	X	X	X		X			
550-161146-1	SWFTS-EM32-EB2	550-161146-4	BW	EB	4/1/21	Stage 2A	X	X	X		X			
550-161146-1	SWFTS-MW10A-EM32	550-161146-5	WG	NORM	4/1/21	Stage 2A	X	X	X		X			
550-161146-1	SWFTS-MW11-EM32	550-161146-6	WG	NORM	4/1/21	Stage 2A	X	X	X		X			
550-161146-1	SWFTS-MW11-EM32-FD	550-161146-7	WG	FD	4/1/21	Stage 2A	X	X	X		X			
550-161146-1	SWFTS-MW12-EM32	550-161146-8	WG	NORM	4/1/21	Stage 2A	X	X	X		X			
550-161146-1	PC-58-EM32	550-161146-9	WG	NORM	4/1/21	Stage 2A	X	X	X		X			
550-164699-1	SWFTS-MW09A-EM33	550-164699-1/2	WG	NORM	6/1/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW20-EM33	550-164869-1/2	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW19-EM33	550-164869-3/4	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW19-EM33-FD	550-164869-5/6	WG	FD	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW18-EM33	550-164869-7/8	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW17-EM33	550-164869-9/10	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW16-EM33	550-164869-11/12	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW15-EM33	550-164869-13/14	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW03-EM33	550-164869-15/16	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW05A-EM33	550-164869-17/18	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW05B-EM33	550-164869-19/20	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW02-EM33	550-164869-21/22	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	SWFTS-MW04-EM33	550-164869-23/24	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	PC-88-EM33	550-164869-25/26	WG	NORM	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164869-1	PC-88-EM33-FD	550-164869-27/28	WG	FD	6/3/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	SWFTS-MW09B-EM33	550-164872-1/2	WG	NORM	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	SWFTS-MW23-EM33	550-164872-3/4	WG	NORM	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	SWFTS-MW25-EM33	550-164872-5/6	WG	NORM	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	SWFTS-MW24-EM33	550-164872-7/8	WG	NORM	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	SWFTS-EM33-EB1	550-164872-9/10	BW	EB	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	SWFTS-MW22-EM33	550-164872-11/12	WG	NORM	6/2/21	Stage 2A	X	X	X		X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	EPA 300.0	EPA 300.1B	EPA 314.0	RSK175	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020 Dissolved
550-164872-1	SWFTS-EM33-FB1	550-164872-13/14	BW	FB	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	SWFTS-MW21-EM33	550-164872-15/16	WG	NORM	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	PC-91-EM33	550-164872-17/18	WG	NORM	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	PC-92-EM33	550-164872-19/20	WG	NORM	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	PC-94-EM33	550-164872-21/22	WG	NORM	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164872-1	PC-58-EM33	550-164872-23/24	WG	NORM	6/2/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW14-EM33	550-164930-1/2	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW13-EM33	550-164930-3/4	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW12-EM33	550-164930-5/6	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW11-EM33	550-164930-7/8	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW11-EM33-FD	550-164930-9/10	WG	FD	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-EM33-FB2	550-164930-11/12	BW	FB	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW10A-EM33	550-164930-13/14	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-EM33-EB2	550-164930-15/16	BW	EB	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW01-EM33	550-164930-17/18	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW06A-EM33	550-164930-19/20	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW06A-EM33-FD	550-164930-21/22	WG	FD	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW06B-EM33	550-164930-23/24	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW07A-EM33	550-164930-25/26	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW07B-EM33	550-164930-27/28	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-164930-1	SWFTS-MW08A-EM33	550-164930-29/30	WG	NORM	6/4/21	Stage 2A	X	X	X		X	X	X	X
550-167353-1	SWFTS-MW24-EM34	550-167353-1	WG	NORM	7/19/21	Stage 2A	X	X	X		X			
550-167353-1	SWFTS-MW03-EM34	550-167353-2	WG	NORM	7/19/21	Stage 2A	X	X	X		X			
550-167353-1	SWFTS-MW06A-EM34	550-167353-3	WG	NORM	7/19/21	Stage 2A	X	X	X		X			
550-167353-1	SWFTS-MW06A-EM34-FD	550-167353-4	WG	FD	7/19/21	Stage 2A	X	X	X		X			
550-167353-1	SWFTS-MW06B-EM34	550-167353-5	WG	NORM	7/19/21	Stage 2A	X	X	X		X			
550-167449-1	PC-94-EM34	550-167449-1	WG	NORM	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	SWFTS-MW09B-EM34	550-167449-2	WG	NORM	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	SWFTS-MW09A-EM34	550-167449-3	WG	NORM	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	SWFTS-EM34-EB1	550-167449-4	BW	EB	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	SWFTS-MW01-EM34	550-167449-5	WG	NORM	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	SWFTS-MW21-EM34	550-167449-6	WG	NORM	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	SWFTS-MW05A-EM34	550-167449-7	WG	NORM	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	PC-91-EM34	550-167449-8	WG	NORM	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	PC-92-EM34	550-167449-9	WG	NORM	7/20/21	Stage 2A	X	X	X		X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	EPA 300.0	EPA 300.1B	EPA 314.0	RSK175	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020 Dissolved
550-167449-1	SWFTS-MW19-EM34	550-167449-10	WG	NORM	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	SWFTS-MW19-EM34-FD	550-167449-11	WG	FD	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	SWFTS-MW10A-EM34	550-167449-12	WG	NORM	7/20/21	Stage 2A	X	X	X		X			
550-167449-1	SWFTS-MW20-EM34	550-167449-13	WG	NORM	7/20/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-MW05B-EM34	550-167523-1	WG	NORM	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-MW18-EM34	550-167523-2	WG	NORM	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-MW16-EM34	550-167523-3	WG	NORM	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-MW15-EM34	550-167523-4	WG	NORM	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-MW17-EM34	550-167523-5	WG	NORM	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-EM34-FB2	550-167523-6	BW	FB	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-MW25-EM34	550-167523-7	WG	NORM	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-MW23-EM34	550-167523-8	WG	NORM	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-MW04-EM34	550-167523-9	WG	NORM	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-EM34-FB1	550-167523-10	BW	FB	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-MW02-EM34	550-167523-11	WG	NORM	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-MW14-EM34	550-167523-12	WG	NORM	7/21/21	Stage 2A	X	X	X		X			
550-167523-1	SWFTS-EM34-EB2	550-167523-13	BW	EB	7/21/21	Stage 2A	X	X	X		X			
550-167639-1	PC-88-EM34	550-167639-1	WG	NORM	7/22/21	Stage 2A	X	X	X		X			
550-167639-1	PC-88-EM34-FD	550-167639-2	WG	FD	7/22/21	Stage 2A	X	X	X		X			
550-167639-1	SWFTS-MW08A-EM34	550-167639-3	WG	NORM	7/22/21	Stage 2A	X	X	X		X			
550-167639-1	SWFTS-MW13-EM34	550-167639-4	WG	NORM	7/22/21	Stage 2A	X	X	X		X			
550-167639-1	SWFTS-MW12-EM34	550-167639-5	WG	NORM	7/22/21	Stage 2A	X	X	X		X			
550-167639-1	PC-58-EM34	550-167639-6	WG	NORM	7/22/21	Stage 2A	X	X	X		X			
550-167639-1	SWFTS-MW11-EM34	550-167639-7	WG	NORM	7/22/21	Stage 2A	X	X	X		X			
550-167639-1	SWFTS-MW11-EM34-FD	550-167639-8	WG	FD	7/22/21	Stage 2A	X	X	X		X			
550-167639-1	SWFTS-MW07A-EM34	550-167639-9	WG	NORM	7/22/21	Stage 2A	X	X	X		X			
550-167639-1	SWFTS-MW07B-EM34	550-167639-10	WG	NORM	7/22/21	Stage 2A	X	X	X		X			
550-170733-1	SWFTS-MW03-EM35	550-170733-1	WG	NORM	9/15/21	Stage 2A	X	X	X		X			
550-170733-1	SWFTS-EM35-EB1	550-170733-2	BW	EB	9/15/21	Stage 2A	X	X	X		X			
550-170733-1	SWFTS-MW13-EM35	550-170733-3	WG	NORM	9/15/21	Stage 2A	X	X	X		X			
550-170733-1	SWFTS-MW12-EM35	550-170733-4	WG	NORM	9/15/21	Stage 2A	X	X	X		X			
550-170733-1	SWFTS-MW09A-EM35	550-170733-5	WG	NORM	9/15/21	Stage 2A	X	X	X		X			
550-170733-1	SWFTS-MW09B-EM35	550-170733-6	WG	NORM	9/15/21	Stage 2A	X	X	X		X			
550-170733-1	SWFTS-MW10A-EM35	550-170733-7	WG	NORM	9/15/21	Stage 2A	X	X	X		X			
550-170733-1	PC-94-EM35	550-170733-8	WG	NORM	9/15/21	Stage 2A	X	X	X		X			

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	EPA 300.0	EPA 300.1B	EPA 314.0	RSK175	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020 Dissolved
550-170733-1	SWFTS-EM35-FB1	550-170733-9	BW	FB	9/15/21	Stage 2A	X	X	X		X			
550-170733-1	SWFTS-MW01-EM35	550-170733-10	WG	NORM	9/15/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW06A-EM35	550-170815-1	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW06A-EM35-FD	550-170815-2	WG	FD	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW06B-EM35	550-170815-3	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW04-EM35	550-170815-4	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW02-EM35	550-170815-5	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-EM35-EB2	550-170815-6	BW	EB	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW05B-EM35	550-170815-7	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW07A-EM35	550-170815-8	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW07B-EM35	550-170815-9	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW08A-EM35	550-170815-10	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW11-EM35	550-170815-11	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW11-EM35-FD	550-170815-12	WG	FD	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW18-EM35	550-170815-13	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW15-EM35	550-170815-14	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW16-EM35	550-170815-15	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW14-EM35	550-170815-16	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW17-EM35	550-170815-17	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-EM35-FB2	550-170815-18	BW	FB	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	PC-92-EM35	550-170815-19	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	PC-91-EM35	550-170815-20	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	PC-88-EM35	550-170815-21	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	PC-88-EM35-FD	550-170815-22	WG	FD	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	PC-58-EM35	550-170815-23	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW20-EM35	550-170815-24	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW25-EM35	550-170815-25	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW24-EM35	550-170815-26	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW23-EM35	550-170815-27	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW22-EM35	550-170815-28	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW21-EM35	550-170815-29	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW19-EM35	550-170815-30	WG	NORM	9/16/21	Stage 2A	X	X	X		X			
550-170815-1	SWFTS-MW19-EM35-FD	550-170815-31	WG	FD	9/16/21	Stage 2A	X	X	X		X			
550-170881-1	SWFTS-MW05A-EM35	550-170881-1	WG	NORM	9/17/21	Stage 2A	X	X	X		X			
550-174897-1	SWFTS-MW20-EM36	550-174897-1/2	WG	NORM	11/29/21	Stage 2A	X	X	X	X	X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	EPA 300.0	EPA 300.1B	EPA 314.0	RSK175	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020 Dissolved
550-174897-1	SWFTS-MW05A-EM36	550-174897-3/4	WG	NORM	11/29/21	Stage 2A	X	X	X	X	X	X	X	X
550-174968-1	PC-91-EM36	550-174968-1/2	WG	NORM	11/30/21	Stage 2A	X	X	X	X	X	X	X	X
550-174968-1	PC-92-EM36	550-174968-3/4	WG	NORM	11/30/21	Stage 2A	X	X	X	X	X	X	X	X
550-174968-1	PC-94-EM36	550-174968-5/6	WG	NORM	11/30/21	Stage 2A	X	X	X	X	X	X	X	X
550-174968-1	SWFTS-MW02-EM36	550-174968-7/8	WG	NORM	11/30/21	Stage 2A	X	X	X	X	X	X	X	X
550-174968-1	SWFTS-MW15-EM36	550-174968-9/10	WG	NORM	11/30/21	Stage 2A	X	X	X	X	X	X	X	X
550-174968-1	SWFTS-MW16-EM36	550-174968-11/12	WG	NORM	11/30/21	Stage 2A	X	X	X	X	X	X	X	X
550-174968-1	SWFTS-EM36-FB1	550-174968-13/14	BW	FB	11/30/21	Stage 2A	X	X	X	X	X	X	X	X
550-174968-1	SWFTS-MW05B-EM36	550-174968-15/16	WG	NORM	11/30/21	Stage 2A	X	X	X	X	X	X	X	X
550-174968-1	SWFTS-MW10A-EM36	550-174968-17/18	WG	NORM	11/30/21	Stage 2A	X	X	X	X	X	X	X	X
550-174968-1	SWFTS-MW01-EM36	550-174968-19/20	WG	NORM	11/30/21	Stage 2A	X	X	X	X	X	X	X	X
550-175045-1	SWFTS-MW03-EM36	550-175045-1/2	WG	NORM	12/1/21	Stage 2A	X	X	X	X	X	X	X	X
550-175045-1	SWFTS-MW21-EM36	550-175045-3/4	WG	NORM	12/1/21	Stage 2A	X	X	X	X	X	X	X	X
550-175045-1	SWFTS-MW18-EM36	550-175045-5/6	WG	NORM	12/1/21	Stage 2A	X	X	X	X	X	X	X	X
550-175045-1	SWFTS-MW06A-EM36	550-175045-7/8	WG	NORM	12/1/21	Stage 2A	X	X	X	X	X	X	X	X
550-175045-1	SWFTS-MW06A-EM36-FD	550-175045-9/10	WG	FD	12/1/21	Stage 2A	X	X	X	X	X	X	X	X
550-175045-1	SWFTS-MW06B-EM36	550-175045-11/12	WG	NORM	12/1/21	Stage 2A	X	X	X	X	X	X	X	X
550-175045-1	SWFTS-MW19-EM36	550-175045-13/14	WG	NORM	12/1/21	Stage 2A	X	X	X	X	X	X	X	X
550-175045-1	SWFTS-MW19-EM36-FD	550-175045-15/16	WG	FD	12/1/21	Stage 2A	X	X	X	X	X	X	X	X
550-175045-1	SWFTS-MW24-EM36	550-175045-17/18	WG	NORM	12/1/21	Stage 2A	X	X	X	X	X	X	X	X
550-175045-1	SWFTS-MW25-EM36	550-175045-19/20	WG	NORM	12/1/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-MW22-EM36	550-175153-1/2	WG	NORM	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-MW04-EM36	550-175153-3/4	WG	NORM	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	PC-88-EM36	550-175153-5/6	WG	NORM	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	PC-88-EM36-FD	550-175153-7/8	WG	FD	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-MW09A-EM36	550-175153-9/10	WG	NORM	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-MW09B-EM36	550-175153-11/12	WG	NORM	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-EM36-EB1	550-175153-13/14	BW	EB	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-MW23-EM36	550-175153-15/16	WG	NORM	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-MW13-EM36	550-175153-17/18	WG	NORM	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-MW12-EM36	550-175153-19/20	WG	NORM	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-MW17-EM36	550-175153-21/22	WG	NORM	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-MW08A-EM36	550-175153-23/24	WG	NORM	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-EM36-EB2	550-175153-25/26	BW	EB	12/2/21	Stage 2A	X	X	X	X	X	X	X	X
550-175153-1	SWFTS-EM36-FB2	550-175153-27/28	BW	FB	12/2/21	Stage 2A	X	X	X	X	X	X	X	X

Table 2 Sample Cross-Reference

SDG	Sample ID	Lab Sample ID	Matrix	QC Type	Sample Date	Validation Stage	EPA 300.0	EPA 300.1B	EPA 314.0	RSK175	SM5310B	SW-6010B Dissolved	SW-6010B Total	SW-6020 Dissolved
550-175222-1	SWFTS-MW14-EM36	550-175222-1/2	WG	NORM	12/3/21	Stage 2A	X	X	X	X	X	X	X	X
550-175222-1	SWFTS-MW07A-EM36	550-175222-3/4	WG	NORM	12/3/21	Stage 2A	X	X	X	X	X	X	X	X
550-175222-1	SWFTS-MW07B-EM36	550-175222-5/6	WG	NORM	12/3/21	Stage 2A	X	X	X	X	X	X	X	X
550-175222-1	SWFTS-MW11-EM36	550-175222-7/8	WG	NORM	12/3/21	Stage 2A	X	X	X	X	X	X	X	X
550-175222-1	SWFTS-MW11-EM36-FD	550-175222-9/10	WG	FD	12/3/21	Stage 2A	X	X	X	X	X	X	X	X
550-175222-1	PC-58-EM36	550-175222-11/12	WG	NORM	12/3/21	Stage 2A	X	X	X	X	X	X	X	X

Table 3 Validation Qualifiers and Definitions

Validation Qualifier	Definition
J-	The result is an estimated quantity, but the result may be biased low.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 4 Validation Checks for Stage 2A

Verification and Validation Checks	Stage 2A
Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses.	X
Requested analytical methods were performed and the analysis dates are present.	X
Requested target analyte results are reported along with the original laboratory data qualifiers and data qualifier definitions for each reported result (and the uncertainty of each result and clear indication of the type of uncertainty reported if required, e.g., for radiochemical analyses).	X
Requested target analyte result units are reported (along with their associated uncertainty units if required, e.g., for radiochemical analyses).	X
Requested reporting limits for all samples are present and results at and below the requested (required) reporting limits are clearly identified (including sample detection limits if required).	X
Sampling dates (including times if needed), date and time of laboratory receipt of samples, and sample conditions upon receipt at the laboratory (including preservation, pH, and temperature) are documented.	X
For radiochemical analyses, the sample-specific critical values (sometimes called "critical level," "decision level," or "detection threshold") and sample-specific minimum detectable value, activity, or concentration for all samples are reported, and results at and below the requested (required) critical values are clearly identified.	X
For radiochemical analyses, the chemical yield (if applicable to the method) and reference date and time (especially for short lived isotopes) are reported for all samples (as appropriate).	X
Sample results are evaluated by comparing sample conditions upon receipt at the laboratory (e.g., preservation checks) and sample characteristics (e.g., percent moisture) to the requirements and guidelines present in national or regional data validation documents, analytical method(s), or contract.	X
Requested methods (handling, preparation, cleanup, and analytical) are performed.	X
Method dates (including dates, times and duration of analysis for radiation counting measurements and other methods, if needed) for handling (e.g., Toxicity Characteristic Leaching Procedure), preparation, cleanup and analysis are present, as appropriate.	X
Sample-related QC data and QC acceptance criteria (e.g., method blanks, surrogate recoveries, deuterated monitoring compound (DMC) recoveries, laboratory control sample (LCS) recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials) are provided and linked to the reported field samples (including the field quality control samples such as trip and equipment blanks).	X
Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate.	X
Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated.	X
Frequency of QC samples is checked for appropriateness (e.g., one LCS per 20 samples in a preparation batch).	X
Sample results are evaluated by comparing holding times and sample-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract.	X

Table 5 Reason Codes

Reason Code	Description of Qualification
a	Qualified due to low abundance (radiochemical activity)
be	Qualified due to equipment blank contamination
bf	Qualified due to field blank contamination
bl	Qualified due to lab blank contamination
bt	Qualified due to trip blank contamination
bp	Qualified due to pump blank contamination (for wells without dedicated pumps)
br	Qualified due to filter blank contamination (aqueous hexavalent chromium and dissolved sample fractions)
brr	Better result was reported
c	Qualified due to calibration problems
cp	Qualified due to insufficient ingrowth (radiochemical only)
dc	Dual column confirmation % difference exceeded
e	Sample concentration exceeded the calibration range
fd	Qualified due to field duplicate imprecision
h	Qualified due to holding time exceedance
i	Qualified due to internal standard areas or retention times
k	Qualified as Estimated Maximum Possible Concentrations (dioxins and PCB congeners)
l	Qualified due to LCS recoveries
ld	Qualified due to lab duplicate imprecision (matrix duplicate, MSD, LCSD)
m	Qualified due to matrix spike recoveries
nb	Qualified due to negative lab blank contamination (nondetect results only)
nd	Qualified due to non-detected target analyte
o	Other
p	Qualified as a false positive due to contamination during shipping
pH	Sample preservation not within acceptance range
q	Qualified due to quantitation problem
s	Qualified due to surrogate recoveries
sd	Serial dilution did not meet control criteria
sp	Detected value reported between MDL/SQL and RL/PQL
st	Sample receipt temperature exceeded
t	Qualified due to elevated helium tracer concentrations
vh	Headspace detected in aqueous sample containers submitted for volatile analysis
x	Qualified due to low % solids
z	Qualified due to interference check sample results

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
550-157577-1	PC-91-EM31	2/1/21	EPA 300.1B	Total	Chlorate	14	ug/L	J	4.9	20	J	sp	Detect < PQL
550-157577-1	PC-92-EM31	2/1/21	EPA 300.1B	Total	Chlorate	33000	ug/L	J	9800	40000	J	sp	Detect < PQL
550-157577-1	SWFTS-20210201-EB	2/1/21	EPA 300.0	Total	Sulfate	1.2	mg/L	J	0.43	2.0	J	sp	Detect < PQL
550-157577-1	SWFTS-MW09B-EM31	2/1/21	EPA 300.1B	Total	Chlorate	21000	ug/L		490	2000	J+	s	Surrogate Recovery
550-157577-1	SWFTS-MW10A-EM31	2/1/21	EPA 300.0	Total	Nitrate [as N]	8.6	mg/L		0.014	0.050	J-	m	MS Recovery
550-157577-1	SWFTS-MW10A-EM31	2/1/21	EPA 300.0	Total	Sulfate	1500	mg/L		8.5	40	J-	m	MS Recovery
550-157577-1	SWFTS-MW10A-EM31	2/1/21	EPA 300.1B	Total	Chlorate	20000	ug/L	F1	240	1000	J+	m,s	MS Recovery, Surrogate Recovery
550-157577-1	SWFTS-MW11-EM31-FD	2/1/21	EPA 300.1B	Total	Chlorate	27000	ug/L		490	2000	J+	s	Surrogate Recovery
550-157679-1	PC-88-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	2.6	mg/L		0.26	0.50	J+	be	EB
550-157679-1	PC-88-EM31-FD	2/2/21	SM5310B	Total	Total Organic Carbon	2.7	mg/L		0.26	0.50	J+	be	EB
550-157679-1	SWFTS-202102-EB	2/2/21	SM5310B	Total	Total Organic Carbon	0.31	mg/L	J	0.26	0.50	J	sp	Detect < PQL
550-157679-1	SWFTS-MW01-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	1.6	mg/L		0.26	0.50	J+	be	EB
550-157679-1	SWFTS-MW02-EM31	2/2/21	EPA 300.1B	Total	Chlorate	11000	ug/L		240	1000	J+	s	Surrogate Recovery
550-157679-1	SWFTS-MW02-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	2.3	mg/L	D	1.0	2.0	J+	be	EB
550-157679-1	SWFTS-MW03-EM31	2/2/21	EPA 300.1B	Total	Chlorate	49	ug/L	J	24	100	J	s,sp	Surrogate Recovery, Detect < PQL
550-157679-1	SWFTS-MW03-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	1.5	mg/L		0.26	0.50	J+	be	EB
550-157679-1	SWFTS-MW04-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	2.7	mg/L	D	1.0	2.0	J+	be	EB
550-157679-1	SWFTS-MW05A-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	1.1	mg/L		0.26	0.50	J+	be	EB
550-157679-1	SWFTS-MW05B-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	1.8	mg/L		0.26	0.50	J+	be	EB
550-157679-1	SWFTS-MW12-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	2.6	mg/L		0.26	0.50	J+	be	EB
550-157679-1	SWFTS-MW13-EM31	2/2/21	EPA 300.1B	Total	Chlorate	28000	ug/L		980	4000	J+	s	Surrogate Recovery
550-157679-1	SWFTS-MW13-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	0.95	mg/L		0.26	0.50	J+	be	EB
550-157679-1	SWFTS-MW14-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	2.2	mg/L		0.26	0.50	J+	be	EB
550-157679-1	SWFTS-MW15-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	1.5	mg/L		0.26	0.50	J+	be	EB
550-157679-1	SWFTS-MW16-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	2.8	mg/L	D	1.0	2.0	J+	be	EB
550-157679-1	SWFTS-MW17-EM31	2/2/21	EPA 300.1B	Total	Chlorate	8000	ug/L		490	2000	J+	s	Surrogate Recovery
550-157679-1	SWFTS-MW17-EM31	2/2/21	SM5310B	Total	Total Organic Carbon	1.1	mg/L		0.26	0.50	J+	be	EB
550-157817-1	SWFTS-MW06A-EM31	2/3/21	EPA 300.1B	Total	Chlorate	71	ug/L	J	24	100	J	s,sp	Surrogate Recovery, Detect < PQL
550-157817-1	SWFTS-MW06A-EM31-FD	2/3/21	EPA 300.1B	Total	Chlorate	78	ug/L	J	24	100	J	s,sp	Surrogate Recovery, Detect < PQL
550-157817-1	SWFTS-MW18-EM31	2/3/21	EPA 300.1B	Total	Chlorate	12000	ug/L		490	2000	J+	s	Surrogate Recovery
550-157817-1	SWFTS-MW22-EM31	2/3/21	SM5310B	Total	Total Organic Carbon	2.1	mg/L	F1	0.26	0.50	J-	m	MS Recovery
550-157817-1	SWFTS-MW24-EM31	2/3/21	EPA 300.1B	Total	Chlorate	4800	ug/L		490	2000	J+	s	Surrogate Recovery
550-157924-1	SWFTS-MW25-EM31	2/4/21	EPA 300.0	Total	Sulfate	0.43	mg/L	U	0.43	2.0	R	brr	Better result reported
550-157924-1	SWFTS-MW25-EM31	2/4/21	EPA 300.0	Total	Sulfate	1400	mg/L	H	21	100	J-	h	Holding Time
550-157924-1	SWFTS-MW25-EM31	2/4/21	EPA 300.1B	Total	Chlorate	9200	ug/L		490	2000	J+	s	Surrogate Recovery
550-160937-1	PC-91-EM32	3/29/21	EPA 300.1B	Total	Chlorate	24	ug/L	UD	24	100	UJ	s	Surrogate Recovery
550-160937-1	PC-91-EM32	3/29/21	SM5310B	Total	Total Organic Carbon	530	mg/L	P2	2.6	5.0	J-	h,pH	Holding Time, Preservation
550-160937-1	PC-94-EM32	3/29/21	EPA 300.1B	Total	Chlorate	9400	ug/L		490	2000	J+	s	Surrogate Recovery
550-160995-1	PC-88-EM32	3/30/21	EPA 300.1B	Total	Chlorate	900	ug/L	J	240	1000	J	sp	Detect < PQL
550-160995-1	SWFTS-MW05A-EM32	3/30/21	SM5310B	Total	Total Organic Carbon	1.0	mg/L	F1	0.26	0.50	J-	m	MS Recovery
550-160995-1	SWFTS-MW18-EM32	3/30/21	EPA 300.1B	Total	Chlorate	1100	ug/L		240	1000	J+	s	Surrogate Recovery
550-160995-1	SWFTS-MW20-EM32	3/30/21	EPA 300.1B	Total	Chlorate	24	ug/L	UD	24	100	R	s	Surrogate Recovery
550-160995-1	SWFTS-MW21-EM32	3/30/21	EPA 300.1B	Total	Chlorate	24	ug/L	UD	24	100	R	s	Surrogate Recovery
550-160995-1	SWFTS-MW22-EM32	3/30/21	EPA 300.1B	Total	Chlorate	5200	ug/L		490	2000	J+	s	Surrogate Recovery
550-160995-1	SWFTS-MW23-EM32	3/30/21	EPA 300.1B	Total	Chlorate	50	ug/L		9.8	40	J+	s	Surrogate Recovery
550-160995-1	SWFTS-MW24-EM32	3/30/21	EPA 300.1B	Total	Chlorate	4900	ug/L		490	2000	J+	s	Surrogate Recovery
550-161063-1	SWFTS-MW06A-EM32	3/31/21	EPA 300.1B	Total	Chlorate	83	ug/L	J	24	100	J	sp	Detect < PQL
550-161063-1	SWFTS-MW06A-EM32-FD	3/31/21	EPA 300.1B	Total	Chlorate	82	ug/L	J	24	100	J	sp	Detect < PQL
550-161063-1	SWFTS-MW07A-EM32	3/31/21	EPA 300.1B	Total	Chlorate	23000	ug/L	F1	490	2000	J+	m	MS Recovery
550-161063-1	SWFTS-MW13-EM32	3/31/21	EPA 300.1B	Total	Chlorate	27000	ug/L	F1	980	4000	J+	m	MS Recovery
550-161146-1	PC-58-EM32	4/1/21	EPA 300.0	Total	Nitrate [as N]	9.4	mg/L	cn	0.014	0.050	J	c	Calibration
550-161146-1	SWFTS-EM32-EB2	4/1/21	EPA 300.0	Total	Nitrate [as N]	0.018	mg/L	Jcn	0.014	0.050	J	c,sp	Calibration, Detect < PQL
550-161146-1	SWFTS-EM32-FB2	4/1/21	EPA 300.0	Total	Sulfate	0.53	mg/L	J	0.43	2.0	J	sp	Detect < PQL
550-161146-1	SWFTS-MW10A-EM32	4/1/21	EPA 300.0	Total	Nitrate [as N]	10	mg/L	F1cn	0.014	0.050	J	c,m	Calibration, MS Recovery

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
550-161146-1	SWFTS-MW10A-EM32	4/1/21	EPA 300.1B	Total	Chlorate	19000	ug/L	F1	490	2000	J-	m	MS Recovery
550-161146-1	SWFTS-MW10A-EM32	4/1/21	EPA 314.0	Total	Perchlorate	14000	ug/L	F1	160	500	J-	m	MS Recovery
550-161146-1	SWFTS-MW10A-EM32	4/1/21	SM5310B	Total	Total Organic Carbon	1.8	mg/L	F1	0.26	0.50	J-	m	MS Recovery
550-161146-1	SWFTS-MW11-EM32	4/1/21	EPA 300.0	Total	Nitrate [as N]	13	mg/L	cn	0.014	0.050	J	c	Calibration
550-161146-1	SWFTS-MW11-EM32-FD	4/1/21	EPA 300.0	Total	Nitrate [as N]	13	mg/L	cn	0.014	0.050	J	c	Calibration
550-161146-1	SWFTS-MW12-EM32	4/1/21	EPA 300.0	Total	Nitrate [as N]	0.014	mg/L	Ucn	0.014	0.050	UJ	c	Calibration
550-161146-1	SWFTS-MW12-EM32	4/1/21	EPA 314.0	Total	Perchlorate	0.97	ug/L	J	0.31	1.0	J	sp	Detect < PQL
550-164699-1	SWFTS-MW09A-EM33	6/1/21	SW-6010B	Dissolved	Cobalt	0.0030	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164699-1	SWFTS-MW09A-EM33	6/1/21	SW-6010B	Dissolved	Iron	0.028	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164699-1	SWFTS-MW09A-EM33	6/1/21	SW-6010B	Dissolved	Tungsten	0.0032	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164699-1	SWFTS-MW09A-EM33	6/1/21	SW-6010B	Dissolved	Zinc	0.0079	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164699-1	SWFTS-MW09A-EM33	6/1/21	SW-6020B	Dissolved	Antimony	0.22	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	PC-88-EM33	6/3/21	SW-6010B	Dissolved	Aluminum	0.11	mg/L	J	0.080	0.20	J	sp	Detect < PQL
550-164869-1	PC-88-EM33	6/3/21	SW-6010B	Dissolved	Barium	0.0094	mg/L	B	0.00057	0.0050	J+	bl	Lab Blank
550-164869-1	PC-88-EM33	6/3/21	SW-6010B	Dissolved	Beryllium	0.00022	mg/L	J	0.00019	0.0010	J	sp	Detect < PQL
550-164869-1	PC-88-EM33	6/3/21	SW-6010B	Dissolved	Copper	0.0033	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164869-1	PC-88-EM33	6/3/21	SW-6010B	Dissolved	Phosphorus, Total	0.042	mg/L	J	0.011	0.40	J	sp	Detect < PQL
550-164869-1	PC-88-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.0035	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	PC-88-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0055	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	PC-88-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.25	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	PC-88-EM33-FD	6/3/21	SW-6010B	Dissolved	Aluminum	0.12	mg/L	J	0.080	0.20	J	sp	Detect < PQL
550-164869-1	PC-88-EM33-FD	6/3/21	SW-6010B	Dissolved	Barium	0.0090	mg/L	B	0.00057	0.0050	J+	bl	Lab Blank
550-164869-1	PC-88-EM33-FD	6/3/21	SW-6010B	Dissolved	Cobalt	0.0049	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164869-1	PC-88-EM33-FD	6/3/21	SW-6010B	Dissolved	Copper	0.0030	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164869-1	PC-88-EM33-FD	6/3/21	SW-6010B	Dissolved	Phosphorus, Total	0.047	mg/L	J	0.011	0.40	J	sp	Detect < PQL
550-164869-1	PC-88-EM33-FD	6/3/21	SW-6010B	Dissolved	Tungsten	0.0030	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	PC-88-EM33-FD	6/3/21	SW-6010B	Dissolved	Zinc	0.0057	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	PC-88-EM33-FD	6/3/21	SW-6020B	Dissolved	Antimony	0.43	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW02-EM33	6/3/21	SW-6010B	Dissolved	Cobalt	0.0020	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW02-EM33	6/3/21	SW-6010B	Dissolved	Iron	0.034	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164869-1	SWFTS-MW02-EM33	6/3/21	SW-6010B	Dissolved	Titanium	0.00049	mg/L	J	0.00028	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW02-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.0061	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW02-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0068	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW02-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.57	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW03-EM33	6/3/21	SW-6010B	Dissolved	Barium	0.024	mg/L	B	0.00057	0.0050	J+	bl	Lab Blank
550-164869-1	SWFTS-MW03-EM33	6/3/21	SW-6010B	Dissolved	Copper	0.0012	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW03-EM33	6/3/21	SW-6010B	Dissolved	Iron	0.041	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164869-1	SWFTS-MW03-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.0071	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW03-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0034	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW03-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.55	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW04-EM33	6/3/21	SW-6010B	Dissolved	Aluminum	0.18	mg/L	J	0.080	0.20	J	sp	Detect < PQL
550-164869-1	SWFTS-MW04-EM33	6/3/21	SW-6010B	Dissolved	Cobalt	0.0025	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW04-EM33	6/3/21	SW-6010B	Dissolved	Copper	0.0024	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW04-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.0058	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW04-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0037	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW04-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.41	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Barium	0.025	mg/L	B	0.00057	0.0050	J+	bl	Lab Blank
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Beryllium	0.00072	mg/L	J	0.00019	0.0010	J	sp	Detect < PQL
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Cadmium	0.00097	mg/L	J	0.00072	0.0010	J	sp	Detect < PQL
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Copper	0.0026	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Iron	0.064	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Lead	0.0025	mg/L	UF1	0.0025	0.010	UJ	m	MS Recovery
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Manganese	0.011	mg/L	J	0.0083	0.020	J	sp	Detect < PQL
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Potassium	71	mg/L	F1	0.081	1.0	J+	m	MS Recovery

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Titanium	0.0042	mg/L	J	0.00028	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.0067	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0072	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW05A-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.70	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW05B-EM33	6/3/21	SW-6010B	Dissolved	Nickel	0.0044	mg/L	J	0.0028	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW05B-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.014	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW05B-EM33	6/3/21	SW-6010B	Dissolved	Vanadium	0.0028	mg/L	J	0.00069	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW05B-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0028	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW05B-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.71	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW15-EM33	6/3/21	SW-6010B	Dissolved	Iron	0.14	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164869-1	SWFTS-MW15-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.0035	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW15-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0071	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW15-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.41	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW15-EM33	6/3/21	SW-6020B	Dissolved	Thallium	0.017	ug/L	J	0.013	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW16-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.0054	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW16-EM33	6/3/21	SW-6010B	Dissolved	Vanadium	0.0027	mg/L	J	0.00069	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW16-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0070	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW16-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.38	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW17-EM33	6/3/21	SW-6010B	Dissolved	Barium	0.021	mg/L	B	0.00057	0.0050	J+	bl	Lab Blank
550-164869-1	SWFTS-MW17-EM33	6/3/21	SW-6010B	Dissolved	Copper	0.0042	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW17-EM33	6/3/21	SW-6010B	Dissolved	Iron	0.044	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164869-1	SWFTS-MW17-EM33	6/3/21	SW-6010B	Dissolved	Titanium	0.00075	mg/L	JB	0.00028	0.0050	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW17-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.0050	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW17-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0046	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW17-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.59	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW17-EM33	6/3/21	SW-6020B	Dissolved	Thallium	0.084	ug/L	J	0.013	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW18-EM33	6/3/21	SW-6010B	Dissolved	Cobalt	0.0035	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW18-EM33	6/3/21	SW-6010B	Dissolved	Iron	0.037	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164869-1	SWFTS-MW18-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.0053	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW18-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0069	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW18-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.80	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW18-EM33	6/3/21	SW-6020B	Dissolved	Thallium	0.077	ug/L	J	0.013	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW19-EM33	6/3/21	SW-6010B	Dissolved	Barium	0.014	mg/L	B	0.00057	0.0050	J+	bl	Lab Blank
550-164869-1	SWFTS-MW19-EM33	6/3/21	SW-6010B	Dissolved	Beryllium	0.00022	mg/L	JB	0.00019	0.0010	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW19-EM33	6/3/21	SW-6010B	Dissolved	Cobalt	0.0030	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW19-EM33	6/3/21	SW-6010B	Dissolved	Copper	0.0017	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW19-EM33	6/3/21	SW-6010B	Dissolved	Iron	0.023	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164869-1	SWFTS-MW19-EM33	6/3/21	SW-6010B	Dissolved	Titanium	0.00037	mg/L	JB	0.00028	0.0050	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW19-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.0021	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW19-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0032	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW19-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.58	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW19-EM33	6/3/21	SW-6020B	Dissolved	Thallium	0.049	ug/L	J	0.013	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW19-EM33-FD	6/3/21	SW-6010B	Dissolved	Barium	0.013	mg/L	B	0.00057	0.0050	J+	bl	Lab Blank
550-164869-1	SWFTS-MW19-EM33-FD	6/3/21	SW-6010B	Dissolved	Cobalt	0.0030	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164869-1	SWFTS-MW19-EM33-FD	6/3/21	SW-6010B	Dissolved	Iron	0.025	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164869-1	SWFTS-MW19-EM33-FD	6/3/21	SW-6010B	Dissolved	Tungsten	0.0023	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW19-EM33-FD	6/3/21	SW-6010B	Dissolved	Zinc	0.0066	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW19-EM33-FD	6/3/21	SW-6020B	Dissolved	Antimony	0.83	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW19-EM33-FD	6/3/21	SW-6020B	Dissolved	Thallium	0.048	ug/L	J	0.013	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW20-EM33	6/3/21	SW-6010B	Dissolved	Barium	0.023	mg/L	B	0.00057	0.0050	J+	bl	Lab Blank
550-164869-1	SWFTS-MW20-EM33	6/3/21	SW-6010B	Dissolved	Iron	0.13	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164869-1	SWFTS-MW20-EM33	6/3/21	SW-6010B	Dissolved	Titanium	0.00068	mg/L	JB	0.00028	0.0050	J	bl,sp	Lab Blank, Detect < PQL
550-164869-1	SWFTS-MW20-EM33	6/3/21	SW-6010B	Dissolved	Tungsten	0.016	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164869-1	SWFTS-MW20-EM33	6/3/21	SW-6010B	Dissolved	Zinc	0.0082	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
550-164869-1	SWFTS-MW20-EM33	6/3/21	SW-6020B	Dissolved	Antimony	0.79	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	PC-58-EM33	6/2/21	EPA 300.0	Total	Nitrate [as N]	8.9	mg/L		0.014	0.050	J-	st	Temperature
550-164872-1	PC-58-EM33	6/2/21	EPA 300.0	Total	Sulfate	810	mg/L		21	100	J-	st	Temperature
550-164872-1	PC-58-EM33	6/2/21	EPA 300.1B	Total	Chlorate	6900	ug/L		980	4000	J-	st	Temperature
550-164872-1	PC-58-EM33	6/2/21	EPA 314.0	Total	Perchlorate	680	ug/L		63	200	J-	st	Temperature
550-164872-1	PC-58-EM33	6/2/21	SM5310B	Total	Total Organic Carbon	2.6	mg/L		0.26	0.50	J-	st	Temperature
550-164872-1	PC-58-EM33	6/2/21	SW-6010B	Dissolved	Aluminum	0.19	mg/L	J	0.080	0.20	J	sp	Detect < PQL
550-164872-1	PC-58-EM33	6/2/21	SW-6010B	Dissolved	Barium	0.017	mg/L	B	0.00057	0.0050	J+	bf	FB
550-164872-1	PC-58-EM33	6/2/21	SW-6010B	Dissolved	Iron	0.025	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164872-1	PC-58-EM33	6/2/21	SW-6010B	Total	Manganese	0.0092	mg/L	J	0.0083	0.020	J	sp	Detect < PQL
550-164872-1	PC-58-EM33	6/2/21	SW-6010B	Dissolved	Zinc	0.0085	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164872-1	PC-58-EM33	6/2/21	SW-6020B	Dissolved	Antimony	0.19	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	PC-58-EM33	6/2/21	SW-6020B	Dissolved	Thallium	0.022	ug/L	J	0.013	0.10	J	sp	Detect < PQL
550-164872-1	PC-91-EM33	6/2/21	EPA 300.0	Total	Nitrate [as N]	0.014	mg/L	U	0.014	0.050	UJ	st	Temperature
550-164872-1	PC-91-EM33	6/2/21	EPA 300.0	Total	Sulfate	65	mg/L	cn	0.43	2.0	J-	st	Temperature
550-164872-1	PC-91-EM33	6/2/21	EPA 300.1B	Total	Chlorate	200	ug/L		4.9	20	J-	st	Temperature
550-164872-1	PC-91-EM33	6/2/21	EPA 314.0	Total	Perchlorate	0.31	ug/L	Ucn	0.31	1.0	UJ	st	Temperature
550-164872-1	PC-91-EM33	6/2/21	SM5310B	Total	Total Organic Carbon	110	mg/L		2.6	5.0	J-	st	Temperature
550-164872-1	PC-91-EM33	6/2/21	SW-6010B	Dissolved	Aluminum	0.12	mg/L	J	0.080	0.20	J	sp	Detect < PQL
550-164872-1	PC-91-EM33	6/2/21	SW-6010B	Dissolved	Phosphorus, Total	0.11	mg/L	J	0.011	0.40	J	sp	Detect < PQL
550-164872-1	PC-91-EM33	6/2/21	SW-6010B	Dissolved	Vanadium	0.0030	mg/L	J	0.00069	0.0050	J	sp	Detect < PQL
550-164872-1	PC-91-EM33	6/2/21	SW-6010B	Dissolved	Zinc	0.0089	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164872-1	PC-91-EM33	6/2/21	SW-6020B	Dissolved	Antimony	0.12	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	PC-91-EM33	6/2/21	SW-6020B	Dissolved	Selenium	0.39	ug/L	J	0.074	0.50	J	bf,sp	FB, Detect < PQL
550-164872-1	PC-92-EM33	6/2/21	EPA 300.0	Total	Nitrate [as N]	4.8	mg/L		0.014	0.050	J-	st	Temperature
550-164872-1	PC-92-EM33	6/2/21	EPA 300.0	Total	Sulfate	1100	mg/L		21	100	J-	st	Temperature
550-164872-1	PC-92-EM33	6/2/21	EPA 300.1B	Total	Chlorate	21000	ug/L		4900	20000	J-	st	Temperature
550-164872-1	PC-92-EM33	6/2/21	EPA 314.0	Total	Perchlorate	6400	ug/L		63	200	J-	st	Temperature
550-164872-1	PC-92-EM33	6/2/21	SM5310B	Total	Total Organic Carbon	2.5	mg/L		0.26	0.50	J-	st	Temperature
550-164872-1	PC-92-EM33	6/2/21	SW-6010B	Dissolved	Barium	0.018	mg/L	B	0.00057	0.0050	J+	bf	FB
550-164872-1	PC-92-EM33	6/2/21	SW-6010B	Dissolved	Cobalt	0.0014	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164872-1	PC-92-EM33	6/2/21	SW-6010B	Dissolved	Iron	0.042	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164872-1	PC-92-EM33	6/2/21	SW-6010B	Dissolved	Tungsten	0.0073	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164872-1	PC-92-EM33	6/2/21	SW-6010B	Dissolved	Zinc	0.0040	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164872-1	PC-92-EM33	6/2/21	SW-6020B	Dissolved	Antimony	0.25	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	PC-94-EM33	6/2/21	EPA 300.0	Total	Nitrate [as N]	6.4	mg/L	H	0.014	0.050	J-	h,st	Holding Time, Temperature
550-164872-1	PC-94-EM33	6/2/21	EPA 300.0	Total	Sulfate	1300	mg/L		21	100	J-	st	Temperature
550-164872-1	PC-94-EM33	6/2/21	EPA 300.1B	Total	Chlorate	13000	ug/L		490	2000	J-	st	Temperature
550-164872-1	PC-94-EM33	6/2/21	EPA 314.0	Total	Perchlorate	5300	ug/L		63	200	J-	st	Temperature
550-164872-1	PC-94-EM33	6/2/21	SM5310B	Total	Total Organic Carbon	1.4	mg/L	F1	0.26	0.50	J-	m,st	MS Recovery, Temperature
550-164872-1	PC-94-EM33	6/2/21	SW-6010B	Dissolved	Cobalt	0.0040	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164872-1	PC-94-EM33	6/2/21	SW-6010B	Dissolved	Iron	0.031	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164872-1	PC-94-EM33	6/2/21	SW-6010B	Dissolved	Tungsten	0.0042	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164872-1	PC-94-EM33	6/2/21	SW-6010B	Dissolved	Zinc	0.0058	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164872-1	PC-94-EM33	6/2/21	SW-6020B	Dissolved	Antimony	0.20	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-EM33-EB1	6/2/21	EPA 300.0	Total	Sulfate	0.44	mg/L	Jcn	0.43	2.0	J	sp	Detect < PQL
550-164872-1	SWFTS-EM33-EB1	6/2/21	SW-6010B	Dissolved	Barium	0.0025	mg/L	JB	0.00057	0.0050	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-EM33-EB1	6/2/21	SW-6010B	Dissolved	Calcium	0.15	mg/L	JB	0.015	0.40	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-EM33-EB1	6/2/21	SW-6010B	Dissolved	Magnesium	0.057	mg/L	J	0.054	0.40	J	sp	Detect < PQL
550-164872-1	SWFTS-EM33-EB1	6/2/21	SW-6010B	Dissolved	Silicon	0.036	mg/L	JB	0.016	0.10	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-EM33-EB1	6/2/21	SW-6010B	Dissolved	Sodium	0.50	mg/L	B	0.039	0.40	J+	bl	Lab Blank
550-164872-1	SWFTS-EM33-EB1	6/2/21	SW-6010B	Dissolved	Strontium	0.0037	mg/L	JB	0.00032	0.010	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-EM33-EB1	6/2/21	SW-6010B	Dissolved	Zinc	0.0092	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-EM33-EB1	6/2/21	SW-6020B	Dissolved	Arsenic	0.30	ug/L	J	0.25	1.0	J	sp	Detect < PQL

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
550-164872-1	SWFTS-EM33-FB1	6/2/21	SW-6010B	Dissolved	Barium	0.0016	mg/L	JB	0.00057	0.0050	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-EM33-FB1	6/2/21	SW-6010B	Dissolved	Beryllium	0.00021	mg/L	J	0.00019	0.0010	J	sp	Detect < PQL
550-164872-1	SWFTS-EM33-FB1	6/2/21	SW-6010B	Dissolved	Calcium	0.16	mg/L	J	0.015	0.40	J	sp	Detect < PQL
550-164872-1	SWFTS-EM33-FB1	6/2/21	SW-6010B	Dissolved	Magnesium	0.086	mg/L	J	0.054	0.40	J	sp	Detect < PQL
550-164872-1	SWFTS-EM33-FB1	6/2/21	SW-6010B	Dissolved	Molybdenum	0.0011	mg/L	J	0.00052	0.010	J	sp	Detect < PQL
550-164872-1	SWFTS-EM33-FB1	6/2/21	SW-6010B	Dissolved	Strontium	0.0041	mg/L	J	0.00032	0.010	J	sp	Detect < PQL
550-164872-1	SWFTS-EM33-FB1	6/2/21	SW-6010B	Dissolved	Titanium	0.0012	mg/L	JB	0.00028	0.0050	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-EM33-FB1	6/2/21	SW-6010B	Dissolved	Zinc	0.0082	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW09B-EM33	6/2/21	SW-6010B	Dissolved	Chromium	0.0038	mg/L	J	0.0011	0.0050	J	sp	Detect < PQL
550-164872-1	SWFTS-MW09B-EM33	6/2/21	SW-6010B	Dissolved	Cobalt	0.0014	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164872-1	SWFTS-MW09B-EM33	6/2/21	SW-6010B	Dissolved	Iron	0.026	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164872-1	SWFTS-MW09B-EM33	6/2/21	SW-6010B	Dissolved	Titanium	0.00051	mg/L	J	0.00028	0.0050	J	sp	Detect < PQL
550-164872-1	SWFTS-MW09B-EM33	6/2/21	SW-6010B	Dissolved	Tungsten	0.0060	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164872-1	SWFTS-MW09B-EM33	6/2/21	SW-6010B	Dissolved	Zinc	0.0055	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW09B-EM33	6/2/21	SW-6020B	Dissolved	Antimony	0.33	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW21-EM33	6/2/21	EPA 300.0	Total	Nitrate [as N]	2.0	mg/L		0.014	0.050	J-	st	Temperature
550-164872-1	SWFTS-MW21-EM33	6/2/21	EPA 300.0	Total	Sulfate	2200	mg/L		21	100	J-	st	Temperature
550-164872-1	SWFTS-MW21-EM33	6/2/21	EPA 300.1B	Total	Chlorate	9.8	ug/L	UD	9.8	40	UJ	st	Temperature
550-164872-1	SWFTS-MW21-EM33	6/2/21	EPA 314.0	Total	Perchlorate	600	ug/L		63	200	J-	st	Temperature
550-164872-1	SWFTS-MW21-EM33	6/2/21	SM5310B	Total	Total Organic Carbon	1.4	mg/L		0.26	0.50	J-	st	Temperature
550-164872-1	SWFTS-MW21-EM33	6/2/21	SW-6010B	Dissolved	Cobalt	0.0029	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164872-1	SWFTS-MW21-EM33	6/2/21	SW-6010B	Dissolved	Copper	0.0021	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164872-1	SWFTS-MW21-EM33	6/2/21	SW-6010B	Dissolved	Iron	0.046	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164872-1	SWFTS-MW21-EM33	6/2/21	SW-6010B	Dissolved	Tungsten	0.0053	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164872-1	SWFTS-MW21-EM33	6/2/21	SW-6010B	Dissolved	Zinc	0.0033	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW21-EM33	6/2/21	SW-6020B	Dissolved	Antimony	0.26	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW21-EM33	6/2/21	SW-6020B	Dissolved	Thallium	0.072	ug/L	J	0.013	0.10	J	sp	Detect < PQL
550-164872-1	SWFTS-MW22-EM33	6/2/21	EPA 300.0	Total	Nitrate [as N]	2.3	mg/L		0.014	0.050	J-	st	Temperature
550-164872-1	SWFTS-MW22-EM33	6/2/21	EPA 300.0	Total	Sulfate	940	mg/L		21	100	J-	st	Temperature
550-164872-1	SWFTS-MW22-EM33	6/2/21	EPA 300.1B	Total	Chlorate	6300	ug/L		490	2000	J-	st	Temperature
550-164872-1	SWFTS-MW22-EM33	6/2/21	EPA 314.0	Total	Perchlorate	3200	ug/L		63	200	J-	st	Temperature
550-164872-1	SWFTS-MW22-EM33	6/2/21	SM5310B	Total	Total Organic Carbon	2.1	mg/L		0.26	0.50	J-	st	Temperature
550-164872-1	SWFTS-MW22-EM33	6/2/21	SW-6010B	Dissolved	Barium	0.022	mg/L	B	0.00057	0.0050	J+	bf	FB
550-164872-1	SWFTS-MW22-EM33	6/2/21	SW-6010B	Dissolved	Beryllium	0.0010	mg/L		0.00019	0.0010	J+	bf	FB
550-164872-1	SWFTS-MW22-EM33	6/2/21	SW-6010B	Dissolved	Cadmium	0.00099	mg/L	J	0.00072	0.0010	J	sp	Detect < PQL
550-164872-1	SWFTS-MW22-EM33	6/2/21	SW-6010B	Dissolved	Cobalt	0.0035	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164872-1	SWFTS-MW22-EM33	6/2/21	SW-6010B	Dissolved	Copper	0.0028	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164872-1	SWFTS-MW22-EM33	6/2/21	SW-6010B	Dissolved	Iron	0.029	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164872-1	SWFTS-MW22-EM33	6/2/21	SW-6010B	Dissolved	Titanium	0.0055	mg/L	B	0.00028	0.0050	J+	bf,bl	FB, Lab Blank
550-164872-1	SWFTS-MW22-EM33	6/2/21	SW-6010B	Dissolved	Zinc	0.0080	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW22-EM33	6/2/21	SW-6020B	Dissolved	Antimony	0.24	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW22-EM33	6/2/21	SW-6020B	Dissolved	Thallium	0.061	ug/L	J	0.013	0.10	J	sp	Detect < PQL
550-164872-1	SWFTS-MW23-EM33	6/2/21	EPA 300.0	Total	Nitrate [as N]	0.25	mg/L	H3	0.014	0.050	J-	h	Holding Time
550-164872-1	SWFTS-MW23-EM33	6/2/21	SW-6010B	Dissolved	Aluminum	0.16	mg/L	J	0.080	0.20	J	sp	Detect < PQL
550-164872-1	SWFTS-MW23-EM33	6/2/21	SW-6010B	Dissolved	Barium	0.014	mg/L	B	0.00057	0.0050	J+	be,bf	EB, FB
550-164872-1	SWFTS-MW23-EM33	6/2/21	SW-6010B	Dissolved	Cobalt	0.0030	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164872-1	SWFTS-MW23-EM33	6/2/21	SW-6010B	Dissolved	Copper	0.0024	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164872-1	SWFTS-MW23-EM33	6/2/21	SW-6010B	Dissolved	Iron	0.027	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164872-1	SWFTS-MW23-EM33	6/2/21	SW-6010B	Dissolved	Tungsten	0.0044	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164872-1	SWFTS-MW23-EM33	6/2/21	SW-6010B	Dissolved	Zinc	0.0069	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW23-EM33	6/2/21	SW-6020B	Dissolved	Antimony	0.18	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW23-EM33	6/2/21	SW-6020B	Dissolved	Selenium	1.1	ug/L		0.074	0.50	J+	bf	FB
550-164872-1	SWFTS-MW23-EM33	6/2/21	SW-6020B	Dissolved	Thallium	0.068	ug/L	J	0.013	0.10	J	sp	Detect < PQL
550-164872-1	SWFTS-MW24-EM33	6/2/21	SW-6010B	Dissolved	Barium	0.019	mg/L	B	0.00057	0.0050	J+	bf	FB

Table 6 Results Qualified During Validation

SDG	Sample ID	Sample Date	Method	Total or Dissolved	Parameter	Result	Units	Lab Qualifier	SQL	PQL	Validator Qualifier	Reason Code	Reason Code Definition
550-164872-1	SWFTS-MW24-EM33	6/2/21	SW-6010B	Dissolved	Iron	0.041	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164872-1	SWFTS-MW24-EM33	6/2/21	SW-6010B	Dissolved	Tungsten	0.0037	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164872-1	SWFTS-MW24-EM33	6/2/21	SW-6010B	Dissolved	Zinc	0.0061	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW24-EM33	6/2/21	SW-6020B	Dissolved	Antimony	0.11	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW24-EM33	6/2/21	SW-6020B	Dissolved	Thallium	0.064	ug/L	J	0.013	0.10	J	sp	Detect < PQL
550-164872-1	SWFTS-MW25-EM33	6/2/21	EPA 300.0	Total	Nitrate [as N]	7.1	mg/L	H3	0.014	0.050	J-	h	Holding Time
550-164872-1	SWFTS-MW25-EM33	6/2/21	SM5310B	Total	Total Organic Carbon	1.8	mg/L	J	1.0	2.0	J	sp	Detect < PQL
550-164872-1	SWFTS-MW25-EM33	6/2/21	SW-6010B	Dissolved	Cobalt	0.0012	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164872-1	SWFTS-MW25-EM33	6/2/21	SW-6010B	Dissolved	Iron	0.057	mg/L	J	0.019	0.40	J	sp	Detect < PQL
550-164872-1	SWFTS-MW25-EM33	6/2/21	SW-6010B	Dissolved	Tungsten	0.0068	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164872-1	SWFTS-MW25-EM33	6/2/21	SW-6010B	Dissolved	Zinc	0.0075	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164872-1	SWFTS-MW25-EM33	6/2/21	SW-6020B	Dissolved	Antimony	0.26	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-EB2	6/4/21	SM5310B	Total	Total Organic Carbon	0.31	mg/L	J	0.26	0.50	J	sp	Detect < PQL
550-164930-1	SWFTS-EM33-EB2	6/4/21	SW-6010B	Dissolved	Barium	0.00067	mg/L	JB	0.00057	0.0050	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-EB2	6/4/21	SW-6010B	Dissolved	Calcium	0.080	mg/L	JB	0.015	0.40	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-EB2	6/4/21	SW-6010B	Dissolved	Phosphorus, Total	0.016	mg/L	JB	0.011	0.40	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-EB2	6/4/21	SW-6010B	Dissolved	Silicon	0.064	mg/L	J	0.016	0.10	J	sp	Detect < PQL
550-164930-1	SWFTS-EM33-EB2	6/4/21	SW-6010B	Dissolved	Sodium	0.27	mg/L	J	0.039	0.40	J	sp	Detect < PQL
550-164930-1	SWFTS-EM33-EB2	6/4/21	SW-6010B	Dissolved	Strontium	0.0022	mg/L	JB	0.00032	0.010	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-EB2	6/4/21	SW-6010B	Dissolved	Zinc	0.0063	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-EB2	6/4/21	SW-6020B	Dissolved	Arsenic	0.28	ug/L	J	0.25	1.0	J	sp	Detect < PQL
550-164930-1	SWFTS-EM33-FB2	6/4/21	EPA 300.0	Total	Sulfate	1.2	mg/L	Jcn	0.43	2.0	J	sp	Detect < PQL
550-164930-1	SWFTS-EM33-FB2	6/4/21	SM5310B	Total	Total Organic Carbon	0.34	mg/L	J	0.26	0.50	J	sp	Detect < PQL
550-164930-1	SWFTS-EM33-FB2	6/4/21	SW-6010B	Dissolved	Calcium	0.21	mg/L	JB	0.015	0.40	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-FB2	6/4/21	SW-6010B	Dissolved	Magnesium	0.087	mg/L	J	0.054	0.40	J	sp	Detect < PQL
550-164930-1	SWFTS-EM33-FB2	6/4/21	SW-6010B	Dissolved	Molybdenum	0.0011	mg/L	JB	0.00052	0.010	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-FB2	6/4/21	SW-6010B	Dissolved	Phosphorus, Total	0.014	mg/L	JB	0.011	0.40	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-FB2	6/4/21	SW-6010B	Dissolved	Potassium	0.10	mg/L	J	0.081	1.0	J	sp	Detect < PQL
550-164930-1	SWFTS-EM33-FB2	6/4/21	SW-6010B	Dissolved	Strontium	0.0051	mg/L	JB	0.00032	0.010	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-FB2	6/4/21	SW-6010B	Dissolved	Zinc	0.011	mg/L	JB	0.0023	0.040	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-EM33-FB2	6/4/21	SW-6020B	Dissolved	Arsenic	0.29	ug/L	J	0.25	1.0	J	sp	Detect < PQL
550-164930-1	SWFTS-MW01-EM33	6/4/21	SM5310B	Total	Total Organic Carbon	1.4	mg/L		0.26	0.50	J+	be,bf	EB, FB
550-164930-1	SWFTS-MW01-EM33	6/4/21	SW-6010B	Dissolved	Cobalt	0.0018	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164930-1	SWFTS-MW01-EM33	6/4/21	SW-6010B	Dissolved	Tungsten	0.0032	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164930-1	SWFTS-MW01-EM33	6/4/21	SW-6010B	Dissolved	Zinc	0.0033	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164930-1	SWFTS-MW01-EM33	6/4/21	SW-6020B	Dissolved	Antimony	0.25	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-MW06A-EM33	6/4/21	EPA 300.1B	Total	Chlorate	86	ug/L	J	24	100	J	sp	Detect < PQL
550-164930-1	SWFTS-MW06A-EM33	6/4/21	SM5310B	Total	Total Organic Carbon	2.9	mg/L		0.26	0.50	J+	be,bf	EB, FB
550-164930-1	SWFTS-MW06A-EM33	6/4/21	SW-6010B	Dissolved	Barium	0.018	mg/L	B	0.00057	0.0050	J+	bl	Lab Blank
550-164930-1	SWFTS-MW06A-EM33	6/4/21	SW-6010B	Dissolved	Cobalt	0.0037	mg/L	J	0.00054	0.0050	J	sp	Detect < PQL
550-164930-1	SWFTS-MW06A-EM33	6/4/21	SW-6010B	Dissolved	Copper	0.0015	mg/L	J	0.0012	0.0050	J	sp	Detect < PQL
550-164930-1	SWFTS-MW06A-EM33	6/4/21	SW-6010B	Dissolved	Tungsten	0.0064	mg/L	J	0.0021	0.10	J	sp	Detect < PQL
550-164930-1	SWFTS-MW06A-EM33	6/4/21	SW-6010B	Dissolved	Zinc	0.010	mg/L	JB	0.0023	0.040	J	be,bf,bl,sp	EB, FB, Lab Blank, Detect < PQL
550-164930-1	SWFTS-MW06A-EM33	6/4/21	SW-6020B	Dissolved	Antimony	0.15	ug/L	J	0.043	1.0	J	bl,sp	Lab Blank, Detect < PQL
550-164930-1	SWFTS-MW06A-EM33-FD	6/4/21	EPA 300.1B	Total	Chlorate	85	ug/L	J	24	100	J	sp	Detect < PQL
550-164930-1	SWFTS-MW06A-EM33-FD	6/4/21	SM5310B	Total	Total Organic Carbon	2.9	mg/L		0.26	0.50	J+	be,bf	EB, FB

Table 7 MS/MSD Recovery Exceedances

SDG	Spiked Sample	Lab Sample ID	Method	Total or Dissolved	Parameter	MS Recovery (%)	MSD Recovery (%)	Acceptance Range (%)
550-157577-1	SWFTS-MW10A-EM31	550-157577-8	EPA 300.0	Total	Nitrate [as N]	0.7	0.7	80-120
550-157577-1	SWFTS-MW10A-EM31	550-157577-8	EPA 300.0	Total	Sulfate	-7	-5	80-120
550-157577-1	SWFTS-MW10A-EM31	550-157577-8	EPA 300.1B	Total	Chlorate	114	140	75-125
550-157817-1	SWFTS-MW22-EM31	550-157817-6	SM5310B	Total	Total Organic Carbon	93	89	90-110
550-160995-1	SWFTS-MW05A-EM32	550-160995-16	SM5310B	Total	Total Organic Carbon	90	89	90-110
550-161063-1	SWFTS-MW07A-EM32	550-161063-6	EPA 300.1B	Total	Chlorate	138	140	75-125
550-161063-1	SWFTS-MW13-EM32	550-161063-13	EPA 300.1B	Total	Chlorate	148	147	75-125
550-161146-1	SWFTS-MW10A-EM32	550-161146-5	EPA 300.0	Total	Nitrate [as N]	0.4	-0.02	80-120
550-161146-1	SWFTS-MW10A-EM32	550-161146-5	EPA 300.1B	Total	Chlorate	84	72	75-125
550-161146-1	SWFTS-MW10A-EM32	550-161146-5	EPA 314.0	Total	Perchlorate	66	79	80-120
550-161146-1	SWFTS-MW10A-EM32	550-161146-5	SM5310B	Total	Total Organic Carbon	89	78	90-110
550-164869-1	SWFTS-MW05A-EM33	550-164869-18	SW-6010B	Dissolved	Lead	74	74	75-125
550-164869-1	SWFTS-MW05A-EM33	550-164869-18	SW-6010B	Dissolved	Potassium	147	148	75-125
550-164872-1	PC-94-EM33	550-164872-21	SM5310B	Total	Total Organic Carbon	92	88	90-110
550-164930-1	SWFTS-MW10A-EM33	550-164930-13	SM5310B	Total	Total Organic Carbon	87	87	90-110
550-167449-1	SWFTS-MW05A-EM34	550-167449-7	EPA 300.0	Total	Nitrate [as N]	85	79	80-120
550-167449-1	SWFTS-MW10A-EM34	550-167449-12	EPA 300.1B	Total	Chlorate	126	84	75-125
550-167523-1	SWFTS-MW18-EM34	550-167523-2	EPA 300.1B	Total	Chlorate	139	163	75-125
550-170733-1	SWFTS-MW10A-EM35	550-170733-7	EPA 300.1B	Total	Chlorate	139	214	75-125
550-170815-1	PC-92-EM35	550-170815-19	EPA 300.1B	Total	Chlorate	115	132	75-125
550-170815-1	SWFTS-MW11-EM35	550-170815-11	EPA 300.1B	Total	Chlorate	113	166	75-125
550-170815-1	SWFTS-MW18-EM35	550-170815-13	EPA 300.1B	Total	Chlorate	120	149	75-125
550-174897-1	SWFTS-MW05A-EM36	550-174897-4	SW-6010B	Dissolved	Potassium	127	90	75-125

Table 8 Surrogate Recovery Exceedances

SDG	Spiked Sample	Lab Sample ID	Method	Surrogate	Surrogate Recovery (%)	Acceptance Range (%)
550-157577-1	SWFTS-MW09B-EM31	550-157577-7	EPA 300.1B	Dichloroacetic Acid	145	90-115
550-157577-1	SWFTS-MW10A-EM31	550-157577-8	EPA 300.1B	Dichloroacetic Acid	154	90-115
550-157577-1	SWFTS-MW11-EM31-FD	550-157577-10	EPA 300.1B	Dichloroacetic Acid	137	90-115
550-157679-1	SWFTS-MW02-EM31	550-157679-4	EPA 300.1B	Dichloroacetic Acid	206	90-115
550-157679-1	SWFTS-MW03-EM31	550-157679-5	EPA 300.1B	Dichloroacetic Acid	305	90-115
550-157679-1	SWFTS-MW13-EM31	550-157679-10	EPA 300.1B	Dichloroacetic Acid	141	90-115
550-157679-1	SWFTS-MW17-EM31	550-157679-16	EPA 300.1B	Dichloroacetic Acid	151	90-115
550-157817-1	SWFTS-MW18-EM31	550-157817-1	EPA 300.1B	Dichloroacetic Acid	138	90-115
550-157817-1	SWFTS-MW24-EM31	550-157817-8	EPA 300.1B	Dichloroacetic Acid	149	90-115
550-157817-1	SWFTS-MW06A-EM31	550-157817-9	EPA 300.1B	Dichloroacetic Acid	242	90-115
550-157817-1	SWFTS-MW06A-EM31-FD	550-157817-10	EPA 300.1B	Dichloroacetic Acid	153	90-115
550-157924-1	SWFTS-MW25-EM31	550-157924-1	EPA 300.1B	Dichloroacetic Acid	172	90-115
550-160937-1	PC-91-EM32	550-160937-1	EPA 300.1B	Dichloroacetic Acid	75	90-115
550-160937-1	PC-94-EM32	550-160937-3	EPA 300.1B	Dichloroacetic Acid	146	90-115
550-160995-1	SWFTS-MW24-EM32	550-160995-1	EPA 300.1B	Dichloroacetic Acid	131	90-115
550-160995-1	SWFTS-MW23-EM32	550-160995-3	EPA 300.1B	Dichloroacetic Acid	123	90-115
550-160995-1	SWFTS-MW22-EM32	550-160995-4	EPA 300.1B	Dichloroacetic Acid	125	90-115
550-160995-1	SWFTS-MW21-EM32	550-160995-5	EPA 300.1B	Dichloroacetic Acid	4	90-115
550-160995-1	SWFTS-MW20-EM32	550-160995-6	EPA 300.1B	Dichloroacetic Acid	5	90-115
550-160995-1	SWFTS-MW18-EM32	550-160995-9	EPA 300.1B	Dichloroacetic Acid	138	90-115

Table 9 Better Results Reported

SDG	Sample ID	Method	Parameter	Result	Units	Lab Qualifier	Validator Qualifier	Reason for Use of Alternate Result
550-157924-1	SWFTS-MW25-EM31	EPA 300.0	Sulfate	0.43	mg/L	U	R	Peak was mis-identified in original analysis. Re-analysis result was used.
550-167449-2	PC-91-EM34	EPA 300.0	Sulfate	78	mg/L	H	R	Analysis outside of holding time was used to confirm an anomalous result. The result was confirmed. The original result was used.
550-167449-2	PC-91-EM34	EPA 300.0	Sulfate	78	mg/L	H	R	Analysis outside of holding time was used to confirm an anomalous result and the re-analysis. The original and re-analysis results were confirmed. The original result was used.

Table 10 Sample Preservation Infractions

SDG	Sample ID	Method	Parameter	Item	Outlier	Criteria
550-160937-1	PC-91-EM32	SM5310B	Total Organic Carbon	Preservation	pH > 2	pH < 2
550-164872-1	PC-58-EM33	EPA 300.0	Nitrate [as N]	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-58-EM33	EPA 300.0	Sulfate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-58-EM33	EPA 300.1B	Chlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-58-EM33	EPA 314.0	Perchlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-58-EM33	SM5310B	Total Organic Carbon	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-91-EM33	EPA 300.0	Sulfate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-91-EM33	EPA 300.0	Nitrate [as N]	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-91-EM33	EPA 300.1B	Chlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-91-EM33	EPA 314.0	Perchlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-91-EM33	SM5310B	Total Organic Carbon	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-92-EM33	EPA 300.0	Nitrate [as N]	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-92-EM33	EPA 300.0	Sulfate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-92-EM33	EPA 300.1B	Chlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-92-EM33	EPA 314.0	Perchlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-92-EM33	SM5310B	Total Organic Carbon	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-94-EM33	EPA 300.0	Nitrate [as N]	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-94-EM33	EPA 300.0	Sulfate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-94-EM33	EPA 300.1B	Chlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-94-EM33	EPA 314.0	Perchlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	PC-94-EM33	SM5310B	Total Organic Carbon	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	SWFTS-MW21-EM33	EPA 300.0	Nitrate [as N]	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	SWFTS-MW21-EM33	EPA 300.0	Sulfate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	SWFTS-MW21-EM33	EPA 300.1B	Chlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	SWFTS-MW21-EM33	EPA 314.0	Perchlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	SWFTS-MW21-EM33	SM5310B	Total Organic Carbon	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	SWFTS-MW22-EM33	EPA 300.0	Nitrate [as N]	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	SWFTS-MW22-EM33	EPA 300.0	Sulfate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	SWFTS-MW22-EM33	EPA 300.1B	Chlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	SWFTS-MW22-EM33	EPA 314.0	Perchlorate	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃
550-164872-1	SWFTS-MW22-EM33	SM5310B	Total Organic Carbon	Temperature	Temperature = 7.8 ℃	Temperature ≤ 6 ℃

Table 11 Holding Time Exceedances

SDG	Sample ID	Method	Total or Dissolved	Parameter	Time Limit	Time Elapsed
550-157924-1	SWFTS-MW25-EM31	EPA 300.0	Total	Sulfate	28 days	60.1 days
550-160937-1	PC-91-EM32	SM5310B	Total	Total Organic Carbon	4 hours	81 hours
550-164872-1	PC-94-EM33	EPA 300.0	Total	Nitrate [as N]	48 hours	48.6 hours
550-164872-1	SWFTS-MW23-EM33	EPA 300.0	Total	Nitrate [as N]	48 hours	52 hours
550-164872-1	SWFTS-MW25-EM33	EPA 300.0	Total	Nitrate [as N]	48 hours	50.2 hours

Table 11 Laboratory Blank Detections

SDG	Blank ID	Method	Total or Dissolved	Parameter	Blank Result	Units	Associated Samples with Qualification
550-164699-1	MB 550-244151/1-A	SW-6010B	Dissolved	Zinc	0.00612	mg/L	SWFTS-MW09A-EM33
550-164699-1	MB 550-244579/1-A	SW-6020B	Dissolved	Antimony	0.096	ug/L	SWFTS-MW09A-EM33
550-164869-1	MB 550-244394/1-A	SW-6010B	Dissolved	Barium	0.00274	mg/L	SWFTS-MW03-EM33, SWFTS-MW17-EM33, SWFTS-MW19-EM33, SWFTS-MW19-EM33-FD, SWFTS-MW20-EM33
550-164869-1	MB 550-244394/1-A	SW-6010B	Dissolved	Beryllium	0.0002	mg/L	SWFTS-MW19-EM33
550-164869-1	MB 550-244394/1-A	SW-6010B	Dissolved	Titanium	0.00062	mg/L	SWFTS-MW17-EM33, SWFTS-MW19-EM33, SWFTS-MW20-EM33
550-164869-1	MB 550-244394/1-A	SW-6010B	Dissolved	Zinc	0.00509	mg/L	SWFTS-MW03-EM33, SWFTS-MW05B-EM33, SWFTS-MW15-EM33, SWFTS-MW16-EM33, SWFTS-MW17-EM33, SWFTS-MW18-EM33, SWFTS-MW19-EM33, SWFTS-MW19-EM33-FD, SWFTS-MW20-EM33
550-164869-1	MB 550-244395/1-A	SW-6010B	Dissolved	Barium	0.00123	mg/L	PC-88-EM33, PC-88-EM33-FD, SWFTS-MW05A-EM33
550-164869-1	MB 550-244395/1-A	SW-6010B	Dissolved	Zinc	0.00837	mg/L	PC-88-EM33, PC-88-EM33-FD, SWFTS-MW02-EM33, SWFTS-MW04-EM33, SWFTS-MW05A-EM33
550-164869-1	MB 550-244577/1-A	SW-6020B	Dissolved	Antimony	0.368	ug/L	PC-88-EM33, PC-88-EM33-FD, SWFTS-MW02-EM33, SWFTS-MW03-EM33, SWFTS-MW04-EM33, SWFTS-MW05A-EM33, SWFTS-MW05B-EM33, SWFTS-MW15-EM33, SWFTS-MW16-EM33, SWFTS-MW17-EM33, SWFTS-MW18-EM33, SWFTS-MW19-EM33, SWFTS-MW19-EM33-FD, SWFTS-MW20-EM33
550-164872-1	MB 550-244395/1-A	SW-6010B	Dissolved	Barium	0.00123	mg/L	SWFTS-EM33-EB1
550-164872-1	MB 550-244395/1-A	SW-6010B	Dissolved	Calcium	0.0583	mg/L	SWFTS-EM33-EB1
550-164872-1	MB 550-244395/1-A	SW-6010B	Dissolved	Silicon	0.0266	mg/L	SWFTS-EM33-EB1
550-164872-1	MB 550-244395/1-A	SW-6010B	Dissolved	Sodium	0.188	mg/L	SWFTS-EM33-EB1
550-164872-1	MB 550-244395/1-A	SW-6010B	Dissolved	Strontium	0.00173	mg/L	SWFTS-EM33-EB1
550-164872-1	MB 550-244395/1-A	SW-6010B	Dissolved	Zinc	0.00837	mg/L	SWFTS-EM33-EB1, SWFTS-MW09B-EM33, SWFTS-MW23-EM33, SWFTS-MW24-EM33, SWFTS-MW25-EM33
550-164872-1	MB 550-244585/1-A	SW-6010B	Dissolved	Barium	0.00139	mg/L	SWFTS-EM33-FB1
550-164872-1	MB 550-244585/1-A	SW-6010B	Dissolved	Titanium	0.00072	mg/L	SWFTS-EM33-FB1, SWFTS-MW22-EM33
550-164872-1	MB 550-244585/1-A	SW-6010B	Dissolved	Zinc	0.00492	mg/L	PC-58-EM33, PC-91-EM33, PC-92-EM33, PC-94-EM33, SWFTS-EM33-FB1, SWFTS-MW21-EM33, SWFTS-MW22-EM33
550-164872-1	MB 550-244578/1-A	SW-6020B	Dissolved	Antimony	0.068	ug/L	PC-58-EM33, PC-91-EM33, PC-92-EM33, PC-94-EM33, SWFTS-MW09B-EM33, SWFTS-MW21-EM33, SWFTS-MW22-EM33, SWFTS-MW23-EM33, SWFTS-MW24-EM33, SWFTS-MW25-EM33

Table 11 Laboratory Blank Detections

SDG	Blank ID	Method	Total or Dissolved	Parameter	Blank Result	Units	Associated Samples with Qualification
550-164930-1	MB 550-244586/1-A	SW-6010B	Dissolved	Barium	0.00328	mg/L	SWFTS-EM33-EB2, SWFTS-MW06A-EM33, SWFTS-MW06A-EM33-FD, SWFTS-MW06B-EM33, SWFTS-MW07A-EM33, SWFTS-MW07B-EM33, SWFTS-MW08A-EM33, SWFTS-MW10A-EM33, SWFTS-MW11-EM33, SWFTS-MW11-EM33-FD, SWFTS-MW13-EM33
550-164930-1	MB 550-244586/1-A	SW-6010B	Dissolved	Beryllium	0.00027	mg/L	SWFTS-MW10A-EM33, SWFTS-MW14-EM33
550-164930-1	MB 550-244586/1-A	SW-6010B	Dissolved	Calcium	0.0299	mg/L	SWFTS-EM33-EB2, SWFTS-EM33-FB2
550-164930-1	MB 550-244586/1-A	SW-6010B	Dissolved	Iron	0.026	mg/L	SWFTS-MW07B-EM33, SWFTS-MW08A-EM33, SWFTS-MW10A-EM33, SWFTS-MW11-EM33, SWFTS-MW12-EM33, SWFTS-MW13-EM33, SWFTS-MW14-EM33
550-164930-1	MB 550-244586/1-A	SW-6010B	Dissolved	Molybdenum	0.00071	mg/L	SWFTS-EM33-FB2
550-164930-1	MB 550-244586/1-A	SW-6010B	Dissolved	Phosphorus, Total	0.0186	mg/L	SWFTS-EM33-EB2, SWFTS-EM33-FB2
550-164930-1	MB 550-244586/1-A	SW-6010B	Dissolved	Strontium	0.00054	mg/L	SWFTS-EM33-EB2, SWFTS-EM33-FB2
550-164930-1	MB 550-244586/1-A	SW-6010B	Dissolved	Zinc	0.00547	mg/L	SWFTS-EM33-EB2, SWFTS-EM33-FB2, SWFTS-MW01-EM33, SWFTS-MW06A-EM33, SWFTS-MW06A-EM33-FD, SWFTS-MW06B-EM33, SWFTS-MW07A-EM33, SWFTS-MW07B-EM33, SWFTS-MW08A-EM33, SWFTS-MW10A-EM33, SWFTS-MW11-EM33, SWFTS-MW11-EM33-FD, SWFTS-MW12-EM33, SWFTS-MW13-EM33, SWFTS-MW14-EM33
550-164930-1	MB 550-244579/1-A	SW-6020B	Dissolved	Antimony	0.096	ug/L	SWFTS-MW01-EM33, SWFTS-MW06A-EM33, SWFTS-MW06A-EM33-FD, SWFTS-MW06B-EM33, SWFTS-MW07A-EM33, SWFTS-MW07B-EM33, SWFTS-MW08A-EM33, SWFTS-MW10A-EM33, SWFTS-MW11-EM33, SWFTS-MW11-EM33-FD, SWFTS-MW12-EM33, SWFTS-MW13-EM33, SWFTS-MW14-EM33
550-174897-1	MB 550-260000/1-A	SW-6010B	Dissolved	Zinc	0.00899	mg/L	SWFTS-MW05A-EM36, SWFTS-MW20-EM36
550-174897-1	MB 550-260001/1-A	SW-6020B	Dissolved	Antimony	0.053	ug/L	SWFTS-MW05A-EM36, SWFTS-MW20-EM36
550-174968-1	MB 550-260208/1-A	SW-6010B	Dissolved	Potassium	0.0834	mg/L	SWFTS-EM36-FB1
550-174968-1	MB 550-260208/1-A	SW-6010B	Dissolved	Sodium	0.181	mg/L	SWFTS-EM36-FB1
550-174968-1	MB 550-260210/1-A	SW-6020B	Dissolved	Antimony	0.05	ug/L	PC-91-EM36, PC-92-EM36, PC-94-EM36, SWFTS-MW01-EM36, SWFTS-MW02-EM36, SWFTS-MW05B-EM36, SWFTS-MW10A-EM36, SWFTS-MW15-EM36, SWFTS-MW16-EM36
550-175045-1	MB 550-260210/1-A	SW-6020B	Dissolved	Antimony	0.05	ug/L	SWFTS-MW03-EM36, SWFTS-MW06A-EM36, SWFTS-MW06A-EM36-FD, SWFTS-MW06B-EM36, SWFTS-MW19-EM36, SWFTS-MW19-EM36-FD, SWFTS-MW21-EM36, SWFTS-MW24-EM36, SWFTS-MW25-EM36

Table 11 Laboratory Blank Detections

SDG	Blank ID	Method	Total or Dissolved	Parameter	Blank Result	Units	Associated Samples with Qualification
550-175153-1	MB 550-260531/1-A	SW-6010B	Dissolved	Barium	0.00076	mg/L	SWFTS-EM36-EB1, SWFTS-EM36-EB2, SWFTS-EM36-FB2
550-175153-1	MB 550-260531/1-A	SW-6010B	Dissolved	Cobalt	0.00057	mg/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-EM36-FB2, SWFTS-MW04-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36
550-175153-1	MB 550-260531/1-A	SW-6010B	Dissolved	Zinc	0.00443	mg/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-EM36-EB1, SWFTS-EM36-EB2, SWFTS-EM36-FB2, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36
550-175222-1	MB 550-260531/1-A	SW-6010B	Dissolved	Zinc	0.00443	mg/L	PC-58-EM36, SWFTS-MW07A-EM36, SWFTS-MW07B-EM36, SWFTS-MW11-EM36, SWFTS-MW11-EM36-FD

Table 13 Equipment Blank and Field Blank Detections

SDG	Blank ID	Blank Type	Sample Date	Method	Total or Dissolved	Parameter	Blank Result	Units	Associated Samples with Qualification*
440-259893-1	SWFTS-20200128-FB	FB	1/28/2020	EPA 300.0	Total	Sulfate	1.8	mg/L	SWFTS-MW07A-EM24, SWFTS-MW07B-EM24, SWFTS-MW08A-EM24, SWFTS-MW09A-EM24, SWFTS-MW09B-EM24, SWFTS-MW10A-EM24, SWFTS-MW11-EM24, SWFTS-MW11-EM24-FD
440-273236-1	SWFTS-20201013-FB	FB	10/13/2020	RSK175	Total	Methane	0.35	ug/L	COH-2B1-EM29, SWFTS-MW06A-EM29, SWFTS-MW06A-EM29-FD, SWFTS-MW06B-EM29, SWFTS-MW09B-EM29, SWFTS-MW25-EM29
440-273433-1	SWFTS-20201016-FB	FB	10/16/2020	RSK175	Total	Methane	0.086	ug/L	PC-58-EM29, SWFTS-MW07A-EM29, SWFTS-MW07B-EM29, SWFTS-MW08A-EM29, SWFTS-MW11-EM29, SWFTS-MW11-EM29-FD
550-154358-1	SWFTS-20201208-FB	FB	12/8/2020	EPA 300.0	Total	Nitrate [as N]	0.095	mg/L	SWFTS-MW06A-EM30, SWFTS-MW06A-EM30-FD, SWFTS-MW06B-EM30, SWFTS-MW14-EM30
550-154431-1	SWFTS-20201209-FB	FB	12/9/2020	EPA 300.0	Total	Nitrate [as N]	0.072	mg/L	SWFTS-MW19-EM30, SWFTS-MW19-EM30-FD, SWFTS-MW20-EM30, SWFTS-MW23-EM30
550-157679-1	SWFTS-202102-EB	EB	2/2/2021	SM5310B	Total	Total Organic Carbon	0.31	mg/L	PC-88-EM31, PC-88-EM31-FD, SWFTS-MW01-EM31, SWFTS-MW02-EM31, SWFTS-MW03-EM31, SWFTS-MW04-EM31, SWFTS-MW05A-EM31, SWFTS-MW05B-EM31, SWFTS-MW12-EM31, SWFTS-MW13-EM31, SWFTS-MW14-EM31, SWFTS-MW15-EM31, SWFTS-MW16-EM31, SWFTS-MW17-EM31
550-164872-1	SWFTS-EM33-EB1	EB	6/2/2021	SW-6010B	Dissolved	Barium	0.0025	mg/L	SWFTS-MW23-EM33
550-164872-1	SWFTS-EM33-EB1	EB	6/2/2021	SW-6010B	Dissolved	Zinc	0.0092	mg/L	PC-58-EM33, PC-91-EM33, PC-92-EM33, PC-94-EM33, SWFTS-MW09B-EM33, SWFTS-MW21-EM33, SWFTS-MW22-EM33, SWFTS-MW23-EM33, SWFTS-MW24-EM33, SWFTS-MW25-EM33
550-164872-1	SWFTS-EM33-FB1	FB	6/2/2021	SW-6010B	Dissolved	Barium	0.0016	mg/L	PC-58-EM33, PC-92-EM33, SWFTS-MW22-EM33, SWFTS-MW23-EM33, SWFTS-MW24-EM33
550-164872-1	SWFTS-EM33-FB1	FB	6/2/2021	SW-6010B	Dissolved	Beryllium	0.00021	mg/L	SWFTS-MW22-EM33
550-164872-1	SWFTS-EM33-FB1	FB	6/2/2021	SW-6010B	Dissolved	Titanium	0.0012	mg/L	SWFTS-MW22-EM33
550-164872-1	SWFTS-EM33-FB1	FB	6/2/2021	SW-6010B	Dissolved	Zinc	0.0082	mg/L	PC-58-EM33, PC-91-EM33, PC-92-EM33, PC-94-EM33, SWFTS-MW09B-EM33, SWFTS-MW21-EM33, SWFTS-MW22-EM33, SWFTS-MW23-EM33, SWFTS-MW24-EM33, SWFTS-MW25-EM33
550-164872-1	SWFTS-EM33-FB1	FB	6/2/2021	SW-6020B	Dissolved	Selenium	0.5	ug/L	PC-91-EM33, SWFTS-MW23-EM33
550-164930-1	SWFTS-EM33-EB2	EB	6/4/2021	SM5310B	Total	Total Organic Carbon	0.31	mg/L	SWFTS-MW01-EM33, SWFTS-MW06A-EM33, SWFTS-MW06A-EM33-FD, SWFTS-MW06B-EM33, SWFTS-MW07A-EM33, SWFTS-MW07B-EM33, SWFTS-MW08A-EM33, SWFTS-MW10A-EM33, SWFTS-MW11-EM33, SWFTS-MW11-EM33-FD, SWFTS-MW12-EM33, SWFTS-MW13-EM33, SWFTS-MW14-EM33

Table 13 Equipment Blank and Field Blank Detections

SDG	Blank ID	Blank Type	Sample Date	Method	Total or Dissolved	Parameter	Blank Result	Units	Associated Samples with Qualification*
550-164930-1	SWFTS-EM33-EB2	EB	6/4/2021	SW-6010B	Dissolved	Zinc	0.0063	mg/L	SWFTS-MW01-EM33, SWFTS-MW06A-EM33, SWFTS-MW06A-EM33-FD, SWFTS-MW06B-EM33, SWFTS-MW07A-EM33, SWFTS-MW07B-EM33, SWFTS-MW08A-EM33, SWFTS-MW10A-EM33, SWFTS-MW11-EM33, SWFTS-MW11-EM33-FD, SWFTS-MW12-EM33, SWFTS-MW13-EM33, SWFTS-MW14-EM33
550-164930-1	SWFTS-EM33-FB2	FB	6/4/2021	SM5310B	Total	Total Organic Carbon	0.34	mg/L	SWFTS-MW01-EM33, SWFTS-MW06A-EM33, SWFTS-MW06A-EM33-FD, SWFTS-MW06B-EM33, SWFTS-MW07A-EM33, SWFTS-MW07B-EM33, SWFTS-MW08A-EM33, SWFTS-MW10A-EM33, SWFTS-MW11-EM33, SWFTS-MW11-EM33-FD, SWFTS-MW12-EM33, SWFTS-MW13-EM33, SWFTS-MW14-EM33
550-164930-1	SWFTS-EM33-FB2	FB	6/4/2021	SW-6010B	Dissolved	Zinc	0.011	mg/L	SWFTS-MW01-EM33, SWFTS-MW06A-EM33, SWFTS-MW06A-EM33-FD, SWFTS-MW06B-EM33, SWFTS-MW07A-EM33, SWFTS-MW07B-EM33, SWFTS-MW08A-EM33, SWFTS-MW10A-EM33, SWFTS-MW11-EM33, SWFTS-MW11-EM33-FD, SWFTS-MW12-EM33, SWFTS-MW13-EM33, SWFTS-MW14-EM33
550-167523-1	SWFTS-EM34-EB2	EB	7/21/2021	SM5310B	Total	Total Organic Carbon	0.32	mg/L	SWFTS-MW02-EM34, SWFTS-MW04-EM34, SWFTS-MW05B-EM34, SWFTS-MW15-EM34, SWFTS-MW16-EM34, SWFTS-MW17-EM34, SWFTS-MW18-EM34, SWFTS-MW23-EM34, SWFTS-MW25-EM34
550-167523-1	SWFTS-EM34-FB1	FB	7/21/2021	EPA 300.1B	Total	Chlorate	7.9	ug/L	SWFTS-MW05B-EM34, SWFTS-MW23-EM34
550-167523-1	SWFTS-EM34-FB2	FB	7/21/2021	EPA 300.1B	Total	Chlorate	8.7	ug/L	SWFTS-MW05B-EM34, SWFTS-MW23-EM34
550-167523-1	SWFTS-EM34-FB2	FB	7/21/2021	SM5310B	Total	Total Organic Carbon	0.36	mg/L	SWFTS-MW02-EM34, SWFTS-MW04-EM34, SWFTS-MW05B-EM34, SWFTS-MW15-EM34, SWFTS-MW16-EM34, SWFTS-MW17-EM34, SWFTS-MW18-EM34, SWFTS-MW23-EM34, SWFTS-MW25-EM34
550-174968-1	SWFTS-EM36-FB1	FB	11/30/2021	EPA 300.0	Total	Nitrate [as N]	0.028	mg/L	PC-91-EM36
550-174968-1	SWFTS-EM36-FB1	FB	11/30/2021	SM5310B	Total	Total Organic Carbon	0.39	mg/L	PC-92-EM36, PC-94-EM36, SWFTS-MW01-EM36, SWFTS-MW02-EM36, SWFTS-MW05B-EM36, SWFTS-MW10A-EM36, SWFTS-MW15-EM36, SWFTS-MW16-EM36
550-174968-1	SWFTS-EM36-FB1	FB	11/30/2021	SW-6010B	Dissolved	Zinc	0.004	mg/L	PC-91-EM36, PC-92-EM36, SWFTS-MW10A-EM36
550-174968-1	SWFTS-EM36-FB1	FB	11/30/2021	SW-6020B	Dissolved	Thallium	0.017	ug/L	SWFTS-MW05B-EM36, SWFTS-MW10A-EM36, SWFTS-MW15-EM36, SWFTS-MW16-EM36
550-175153-1	SWFTS-EM36-EB1	EB	12/2/2021	SM5310B	Total	Total Organic Carbon	0.38	mg/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW13-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36

Table 13 Equipment Blank and Field Blank Detections

SDG	Blank ID	Blank Type	Sample Date	Method	Total or Dissolved	Parameter	Blank Result	Units	Associated Samples with Qualification*
550-175153-1	SWFTS-EM36-EB1	EB	12/2/2021	SW-6010B	Dissolved	Zinc	0.0026	mg/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36
550-175153-1	SWFTS-EM36-EB2	EB	12/2/2021	SM5310B	Total	Total Organic Carbon	0.41	mg/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW13-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36
550-175153-1	SWFTS-EM36-EB2	EB	12/2/2021	SW-6010B	Dissolved	Zinc	0.0087	mg/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36
550-175153-1	SWFTS-EM36-EB2	EB	12/2/2021	SW-6020B	Dissolved	Antimony	0.27	ug/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW13-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36
550-175153-1	SWFTS-EM36-EB2	EB	12/2/2021	SW-6020B	Dissolved	Thallium	0.086	ug/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW13-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36
550-175153-1	SWFTS-EM36-FB2	FB	12/2/2021	SW-6010B	Dissolved	Barium	0.0036	mg/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09B-EM36, SWFTS-MW13-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36
550-175153-1	SWFTS-EM36-FB2	FB	12/2/2021	SW-6010B	Dissolved	Cobalt	0.00066	mg/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36
550-175153-1	SWFTS-EM36-FB2	FB	12/2/2021	SW-6010B	Dissolved	Phosphorus, Total	0.013	mg/L	PC-88-EM36, PC-88-EM36-FD
550-175153-1	SWFTS-EM36-FB2	FB	12/2/2021	SW-6010B	Dissolved	Titanium	0.0018	mg/L	SWFTS-MW22-EM36
550-175153-1	SWFTS-EM36-FB2	FB	12/2/2021	SW-6010B	Dissolved	Tungsten	0.005	mg/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW13-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36
550-175153-1	SWFTS-EM36-FB2	FB	12/2/2021	SW-6010B	Dissolved	Zinc	0.006	mg/L	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36

* Samples may be appear more than once. Samples were compared to all blanks within their SDG.

Table 14 Completeness Summary

Method	Total Number of Validated Results	Number of Rejected Results	Percent Completeness
EPA 300.0	502	0	100.00%
EPA 300.1B	251	2	99.20%
EPA 314.0	251	0	100.00%
RSK175	42	0	100.00%
SM5310B	251	0	100.00%
SW-6010B	2268	0	100.00%
SW-6020	336	0	100.00%
Overall	3901	2	99.95%

Appendix 1
Validation Checklists

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 12 with MS/MSD
SDG/Report No.: 550-157577-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds	X		Yes	SWFTS-MW09B-EM31, SWFTS-MW10A-EM31, and SWFTS-MW11-EM31-FD: Qualify chlorate "J+".
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW10A-EM31: Qualify chlorate "J+". SWFTS-MW10A-EM31: Qualify nitrate and sulfate "J-".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL “J”.
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	---	---

Multiple results: N/A

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J-, J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
PC-91-EM31	550-157577-1	2/1/2021	5.8 ºC
PC-92-EM31	550-157577-2	2/1/2021	5.8 ºC
PC-94-EM31	550-157577-3	2/1/2021	5.8 ºC
SWFTS-20210201-FB	550-157577-4	2/1/2021	5.8 ºC
SWFTS-20210201-EB	550-157577-5	2/1/2021	5.8 ºC
PC-58-EM31	550-157577-6	2/1/2021	5.8 ºC
SWFTS-MW09B-EM31	550-157577-7	2/1/2021	5.8 ºC
SWFTS-MW10A-EM31	550-157577-8	2/1/2021	5.8 ºC
SWFTS-MW10A-EM31-MS	550-157577-8 MS	2/1/2021	5.8 ºC
SWFTS-MW10A-EM31-MSD	550-157577-8 MSD	2/1/2021	5.8 ºC
SWFTS-MW11-EM31	550-157577-9	2/1/2021	5.8 ºC
SWFTS-MW11-EM31-FD	550-157577-10	2/1/2021	5.8 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
Case narrative states one cooler temperature at receipt was 22.5 ºC. 22.5 ºC was the temperature at the local service center, shortly after sampling. Temperature at receipt at the lab was 5.8 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.0: Sulfate was detected in SWFTS-20210201-EB. Concentrations in the samples were >10x the amount in the EB.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/No
300.1B: Dichloroacetic acid recoveries were high in SWFTS-MW09B-EM31, SWFTS-MW10A-EM31, and SWFTS-MW11-EM31-FD. Chlorate may be biased high.	

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Nitrate and sulfate recoveries were very low in the MS/MSD of SWFTS-MW10A-EM31.	
300.1B: Chlorate recovery was high in the MSD of SWFTS-MW10A-EM31.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
One FD pair was analyzed. SWFTS-MW11-EM31 and SWFTS-MW11-EM31-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
Several chlorate samples were analyzed at dilutions because of matrix effects. They were reported with dilutions but were non-detect.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/05/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 18 with MS/MSD
SDG/Report No.: 550-157679-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	PC-88-EM31, PC-88-EM31-FD, SWFTS-MW01-EM31, SWFTS-MW02-EM31, SWFTS-MW03-EM31, SWFTS-MW04-EM31, SWFTS-MW05A-EM31, SWFTS-MW05B-EM31, SWFTS-MW12-EM31, SWFTS-MW13-EM31, SWFTS-MW14-EM11, SWFTS-MW15-EM31, SWFTS-MW16-EM31, and SWFTS-MW17-EM31: Qualify TOC "J+".
5. Surrogates/Monitoring Compounds	X		Yes	SWFTS-MW02-EM31, SWFTS-MW13-EM31, SWFTS-MW17-EM31: Qualify chlorate "J+". SWFTS-MW03-EM3: Qualify chlorate "J".
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	---	---
Multiple results: N/A				
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
PC-88-EM31	550-157679-1	2/2/2021	3.8 ºC/3.8 ºC
PC-88-EM31-FD	550-157679-2	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW01-EM31	550-157679-3	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW02-EM31	550-157679-4	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW03-EM31	550-157679-5	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW04-EM31	550-157679-6	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW05A-EM31	550-157679-7	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW05A-EM31-MS	550-157679-7 MS	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW05A-EM31-MSD	550-157679-7 MSD	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW05B-EM31	550-157679-8	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW12-EM31	550-157679-9	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW13-EM31	550-157679-10	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-202102-EB	550-157679-11	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-202102-FB	550-157679-12	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW14-EM31	550-157679-13	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW15-EM31	550-157679-14	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW16-EM31	550-157679-15	2/2/2021	3.8 ºC/3.8 ºC
SWFTS-MW17-EM31	550-157679-16	2/2/2021	3.8 ºC/3.8 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
Case narrative states one cooler temperature at receipt was 21.6 ºC. 21.6 ºC was the temperature at the local service center, shortly after sampling. Temperatures at receipt at the lab were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.0: Sulfate was detected in SWFTS-20210201-EB. Concentrations in the samples were >10x the amount in the EB.	
SM5310B: TOC was detected in SWFTS-20210202-EB. Concentrations in the samples were <10x the amount in the EB.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/No
300.1B: Dichloroacetic acid recoveries were high in SWFTS-MW01-EM31, SWFTS-MW02-EM31, SWFTS-MW03-EM31, SWFTS-MW05A-EM31, SWFTS-MW05B-EM31, SWFTS-MW12-EM31, SWFTS-MW13-EM31, SWFTS-MW16-EM31, and SWFTS-MW17-EM31. Where detected, chlorate may be biased high. Detections will be qualified.	

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recoveries were very low in the MS/MSD of SWFTS-MW05A-EM31. The concentration in the parent sample was >4x the amount spiked so recovery criteria do not apply. No qualification.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
One FD pair was analyzed. PC-88-EM31 and PC-88-EM31-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
Several chlorate samples were analyzed at dilutions because of matrix effects or the presence of non-target analytes. They were reported with dilutions but were non-detect.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/05/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 15
SDG/Report No.: 550-157817-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	X		Yes	SWFTS-MW06A-EM31, SWFTS-MW06A-EM31-FD, SWFTS-MW18-EM31, SWFTS-MW21-EM31, and SWFTS-MW24-EM31: Qualify chlorate "J+".
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW22-EM31: Qualify TOC "J-".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	---	---
Multiple results: N/A				
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified. **Usability:** Sample results qualified as estimated (J-, J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW18-EM31	550-157817-1	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW19-EM31	550-157817-2	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW19-EM31-FD	550-157817-3	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW20-EM31	550-157817-4	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW21-EM31	550-157817-5	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW22-EM31	550-157817-6	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW23-EM31	550-157817-7	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW24-EM31	550-157817-8	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW06A-EM31	550-157817-9	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW06A-EM31-FD	550-157817-10	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW06B-EM31	550-157817-11	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW07A-EM31	550-157817-12	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW07B-EM31	550-157817-13	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW08A-EM31	550-157817-14	2/3/2021	3.6 ºC/4.4 ºC
SWFTS-MW09A-EM31	550-157817-15	2/3/2021	3.6 ºC/4.4 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/No
300.1B: Dichloroacetic acid recoveries were high in SWFTS-MW06A-EM31, SWFTS-MW06A-EM31-FD, SWFTS-MW18-EM31, SWFTS-MW21-EM31, and SWFTS-MW24-EM31. In detections, chlorate may be biased high and will be qualified.	

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
SM5310B: TOC recovery was low in the MSD of SWFTS-MW22-EM31.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
Two FD pairs were analyzed. SWFTS-MW19-EM31 and SWFTS-MW19-EM31 -FD; SWFTS-MW06A-EM31 and SWFTS-MW06A-EM31-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
Two chlorate samples were analyzed at dilutions because of matrix effects or the presence of non-target analytes. They were reported with dilutions but were non-detect.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 03/05/2021

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 1

SDG/Report No.: 550-157924-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times	X		Yes	SWFTS-MW25-EM31: Qualify sulfate "J-".
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	X		Yes	SWFTS-MW25-EM31: Qualify chlorate "J+".
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates	---	---	---	---
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	SWFTS-MW25-EM31: Qualify unused sulfate result "R".
Sulfate in SWFTS-MW25-EM31 was re-analyzed outside the 28-day holding time to confirm the initial result. The result was not confirmed. The lab determined that the sulfate peak was mis-identified in the original analysis. The original result was rejected. The re-analysis result will be reported.				
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Except where rejected, acceptable as qualified. **Usability:** Results qualified "R" should not be used. Sample results qualified as estimated (J-, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW25-EM31	550-157924-1	2/4/2021	0.2 °C

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
Case narrative states one cooler temperature at receipt was 21.3 ºC. 21.3 ºC was the temperature at the local service center, shortly after sampling. Temperature at receipt at the lab was ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
300.0: Sulfate in SWFTS-MW25-EM31 was analyzed after the holding time expired. The peak was misidentified during the initial analysis. The client requested reanalysis because the result was not consistent with previous results. The reanalysis was outside the holding time.	

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/No
300.1B: Dichloroacetic acid recovery was high in SWFTS-MW25-EM31. Chlorate may be biased high.	

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/N/A

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	No/N/A/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 04/07/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 3
SDG/Report No.: 550-160937-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	PC-91-EM32: Qualify TOC "J-".
2. Chain-of-Custody		X	No	None
3. Holding Times	X		Yes	PC-91-EM32: Qualify TOC "J-".
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	X		Yes	PC-91-EM32: Qualify chlorate "UJ". PC-94-EM32: Qualify chlorate "J+".
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified. **Usability:** Sample results qualified as estimated (UJ, J-, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
PC-91-EM32	550-160937-1	3/29/21	2.4 ºC
PC-92-EM32	550-160937-2	3/29/21	2.4 ºC
PC-94-EM32	550-160937-3	3/29/21	2.4 ºC

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	No/Yes/Yes
SM5310B: The TOC aliquot of PC-91-EM32 was not preserved to pH <2. The lab preserved the sample prior to analysis.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
SM5310B: The TOC aliquot of PC-91-EM32 was not preserved to pH <2. When discovered, the 4-hour holding time for unpreserved samples had been grossly exceeded.	

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/No
300.1B: Dichloroacetic acid recoveries were outside limits in PC-91-EM32 (low) and PC-94-EM32 (high).	

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/N/A

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	No/N/A/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
One chlorate sample was analyzed at dilution because of matrix effects or the presence of non-target analytes. It was non-detect.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/19/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 19 with MS/MSD
SDG/Report No.: 550-160995-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	X		Yes	SWFTS-MW24-EM32, SWFTS-MW23-EM32, SWFTS-MW22-EM32, SWFTS-MW18-EM32: Qualify chlorate "J+". SWFTS-MW20-EM32 and SWFTS-MW21-EM32: Qualify chlorate "R".
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW05A-EM32: Qualify TOC “J-”.
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL “J”.
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	---	---
Multiple results: N/A				
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Except where rejected, acceptable as qualified.
Usability: Results qualified “R” should not be used. Sample results qualified as estimated (J-, J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW24-EM32	550-160995-1	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW25-EM32	550-160995-2	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW23-EM32	550-160995-3	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW22-EM32	550-160995-4	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW21-EM32	550-160995-5	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW20-EM32	550-160995-6	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW19-EM32	550-160995-7	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW19-EM32-FD	550-160995-8	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW18-EM32	550-160995-9	3/30/2021	0.1 ºC/2.5 ºC
PC-88-EM32	550-160995-10	3/30/2021	0.1 ºC/2.5 ºC
PC-88-EM32-FD	550-160995-11	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW01-EM32	550-160995-12	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW02-EM32	550-160995-13	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW03-EM32	550-160995-14	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW04-EM32	550-160995-15	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW05A-EM32	550-160995-16	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW05A-EM32-MS	550-160995-16 MS	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW05A-EM32-MSD	550-160995-16 MSD	3/30/2021	0.1 ºC/2.5 ºC
SWFTS-MW05B-EM32	550-160995-17	3/30/2021	0.1 ºC/2.5 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/No
300.1B: Dichloroacetic acid recoveries were high in SWFTS-MW24-EM32, SWFTS-MW23-EM32, SWFTS-MW22-EM32, SWFTS-MW18-EM32. Recoveries were very low (<10%) in SWFTS-MW20-EM32 and SWFTS-MW21-EM32.	

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
SM5310B: TOC recovery was low in the MSD of SWFTS-MW05A-EM32.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
Two FD pairs were analyzed. SWFTS-MW19-EM32 and SWFTS-MW19-EM32 -FD; PC-88-EM32 and PC-88-EM32-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
Two chlorate samples were analyzed at dilutions because of matrix effects or the presence of non-target analytes. They were reported with dilutions but were non-detect.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/19/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 13
SDG/Report No.: 550-161063-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW07A-EM32 and SWFTS-MW13-EM32: Qualify chlorate "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW06A-EM32	550-161063-1	3/31/21	1.8 ºC/2.3 ºC
SWFTS-MW06A-EM32-FD	550-161063-2	3/31/21	1.8 ºC/2.3 ºC
SWFTS-EM32-EB1	550-161063-3	3/31/21	1.8 ºC/2.3 ºC
SWFTS-EM32-FB1	550-161063-4	3/31/21	1.8 ºC/2.3 ºC
SWFTS-MW06B-EM32	550-161063-5	3/31/21	1.8 ºC/2.3 ºC
SWFTS-MW07A-EM32	550-161063-6	3/31/21	1.8 ºC/2.3 ºC
SWFTS-MW07B-EM32	550-161063-7	3/31/21	1.8 ºC/2.3 ºC
SWFTS-MW08A-EM32	550-161063-8	3/31/21	1.8 ºC/2.3 ºC
SWFTS-MW17-EM32	550-161063-9	3/31/21	1.8 ºC/2.3 ºC
SWFTS-MW16-EM32	550-161063-10	3/31/21	1.8 ºC/2.3 ºC
SWFTS-MW15-EM32	550-161063-11	3/31/21	1.8 ºC/2.3 ºC
SWFTS-MW14-EM32	550-161063-12	3/31/21	1.8 ºC/2.3 ºC
SWFTS-MW13-EM32	550-161063-13	3/31/21	1.8 ºC/2.3 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
Case narrative states one cooler temperature at receipt was 23.7 ºC. 23.7 ºC was the temperature at the local service center, shortly after sampling. Temperature coolers at receipt at the lab were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were high in the MS/MSDs of SWFTS-MW07A-EM32 and SWFTS-MW13-EM32.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
One FD pair was analyzed. SWFTS-MW06A-EM32 and SWFTS-MW06A-EM32-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
Two chlorate samples were analyzed at dilutions because of matrix effects or the presence of non-target analytes. They were reported with dilutions but were non-detect.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/19/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 11 with MS/MSD
SDG/Report No.: 550-161146-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW10A-EM32: Qualify chlorate, perchlorate, and TOC "J-". SWFTS-MW10A-EM32: Qualify nitrate "J".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Other (calibration)	X		Yes	SWFTS-EM32-EB2, SWFTS-MW10A-EM32, SWFTS-MW11-EM32, SWFTS-MW11-EM32-FD, SWFTS-MW12-EM32, and PC-58-EM32: Qualify nitrate "J" or "UJ".
Other: Per the case narrative, the lab did not follow the SOP when analyzing nitrate. Calibration verifications are required every 10 samples. They were analyzed every 20 samples.				
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (UJ, J-, J) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW09A-EM32	550-161146-1	4/1/21	0.3 ºC
SWFTS-MW09B-EM32	550-161146-2	4/1/21	0.3 ºC
SWFTS-EM32-FB2	550-161146-3	4/1/21	0.3 ºC
SWFTS-EM32-EB2	550-161146-4	4/1/21	0.3 ºC
SWFTS-MW10A-EM32	550-161146-5	4/1/21	0.3 ºC
SWFTS-MW10A-EM32-MS	550-161146-5 MS	4/1/21	0.3 ºC
SWFTS-MW10A-EM32-MSD	550-161146-5 MSD	4/1/21	0.3 ºC
SWFTS-MW11-EM32	550-161146-6	4/1/21	0.3 ºC
SWFTS-MW11-EM32-FD	550-161146-7	4/1/21	0.3 ºC
SWFTS-MW12-EM32	550-161146-8	4/1/21	0.3 ºC
PC-58-EM32	550-161146-9	4/1/21	0.3 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
Case narrative states one cooler temperature at receipt was 19.4 ºC. 19.4 ºC was the temperature at the local service center, shortly after sampling. Temperature cooler at receipt at the lab was ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.0: Nitrate was detected in SWFTS-EM32-EB2. Sulfate was detected in SWFTS-EM32-FB2. Detections in the associated samples were >10x the amounts in the EB and FB.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Nitrate recoveries were very low in the MS/MSD of SWFTS-MW10A-EM32.	
300.1B: Chlorate recovery was low in the MSD of SWFTS-MW10A-EM32.	
300.0: Perchlorate recoveries were low in the MS/MSD of SWFTS-MW10A-EM32.	
SM5310B: TOC recoveries were low in the MS/MSD of SWFTS-MW10A-EM32.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
One FD pair was analyzed: SWFTS-MW11-EM32 and SWFTS-MW11-EM32-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
One chlorate sample was analyzed at dilutions because of matrix effects or the presence of non-target analytes. It was reported with dilution but was non-detect.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 05/19/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 2
SDG/Report No.: 550-164699-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-MW09A-EM33: Qualify antimony and zinc "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	---	---
Multiple results: N/A				
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as qualified. **Usability:** Sample results qualified as estimated (J) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW09A-EM33	550-164699-1	6/1/2021	2.1 ºC
SWFTS-MW09A-EM33	550-164699-2	6/1/2021	2.1 ºC

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: The following metals were detected in MB 550-244151/1-A: barium, calcium, phosphorus, sodium, strontium, titanium, and zinc. For most, the sample results were ND or > 10x the amount in the blank.	
6020B: The following metal was detected in MB 550-244579/1-A: antimony.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/N/A

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	No/N/A/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 06/23/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 32 with MS/MSDs
SDG/Report No.: 550-164869-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	All: Qualify antimony "J". SWFTS-MW17-EM33, SWFTS-MW19-EM33, and SWFTS-MW20-EM33: Qualify titanium "J". PC-88-EM33, PC-88-EM33-FD, SWFTS-MW03-EM33, SWFTS-MW05A-EM33, SWFTS-MW17-EM33, SWFTS-MW19-EM33, SWFTS-MW19-EM33-FD, and SWFTS-MW20-EM33: Qualify barium "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW05A-EM33: Qualify lead "UJ" and potassium "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	---	---

Multiple results: N/A

Verification and Validation Label	Stage_2A_Validation_Manual
Verification and Validation Label Code	S2AVM

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (UJ, J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW20-EM33	550-164869-1	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW20-EM33	550-164869-2	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW19-EM33	550-164869-3	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW19-EM33	550-164869-4	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW19-EM33-FD	550-164869-5	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW19-EM33-FD	550-164869-6	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW18-EM33	550-164869-7	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW18-EM33	550-164869-8	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW17-EM33	550-164869-9	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW17-EM33	550-164869-10	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW16-EM33	550-164869-11	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW16-EM33	550-164869-12	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW15-EM33	550-164869-13	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW15-EM33	550-164869-14	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW03-EM33	550-164869-15	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW03-EM33	550-164869-16	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW05A-EM33	550-164869-17	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW05A-EM33-MS	550-164869-17	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW05A-EM33-MSD	550-164869-17	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW05A-EM33	550-164869-18	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW05A-EM33-MS	550-164869-18	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW05A-EM33-MSD	550-164869-18	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW05B-EM33	550-164869-19	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW05B-EM33	550-164869-20	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW02-EM33	550-164869-21	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW02-EM33	550-164869-22	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW04-EM33	550-164869-23	6/3/21	0.6 ºC/2.6 ºC
SWFTS-MW04-EM33	550-164869-24	6/3/21	0.6 ºC/2.6 ºC
PC-88-EM33	550-164869-25	6/3/21	0.6 ºC/2.6 ºC
PC-88-EM33	550-164869-26	6/3/21	0.6 ºC/2.6 ºC
PC-88-EM33-FD	550-164869-27	6/3/21	0.6 ºC/2.6 ºC
PC-88-EM33-FD	550-164869-28	6/3/21	0.6 ºC/2.6 ºC

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 25.7 ºC. 25.7 ºC was the temperature at the local service center, shortly after sampling. Temperatures at receipt at the lab were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: The following metals were detected in MB 550-244394/1-A: barium, beryllium, boron, silicon, titanium, and zinc. The following metals were detected in MB 550-244395/1-A: barium, calcium, silicon, sodium, strontium, and zinc. Metals detected in the samples at concentrations <10x the blank concentrations were qualified.	
6020B: Antimony was detected in MB 550-244577/1-A and in all samples at similar concentrations.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were high in the MS/MSD of SWFTS-MW05A-EM33. The sample was non-detect, so there can be no high bias. No qualification.	
6010B: Recoveries were outside limits in the MS and/or /MSD of SWFTS-MW05A-EM33 for the following metals: calcium, lead, magnesium, potassium, silicon, sodium, and strontium. The sample concentrations were >4x the amount spiked for several metals, so recovery criteria do not apply for them.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
Two FD pairs were analyzed. SWFTS-MW19-EM33 and SWFTS-MW19-EM33-FD; PC-88-EM33 and PC-88-EM33-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
Three chlorate samples were analyzed at dilutions because of matrix effects or the presence of non-target analytes. They were reported with dilutions but were non-detect.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 08/20/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 24
SDG/Report No.: 550-164872-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	PC-58-EM33, PC-91-EM33, PC-92-EM33, PC-94-EM33, SWFTS-MW21-EM33, and SWFTS-MW22-EM33: Qualify chlorate, nitrate, perchlorate, sulfate, and TOC "J-" for detects and "UJ" for non-detects.
2. Chain-of-Custody		X	No	None
3. Holding Times	X		Yes	PC-94-EM33, SWFTS-MW23-EM33, and SWFTS-MW25-EM33: Qualify nitrate "J-".
4. Blanks	X		Yes	PC-58-EM33, PC-91-EM33, PC-92-EM33, and SWFTS-MW24-EM33: Qualify antimony, barium, and zinc "J" or "J+". PC-94-EM33, SWFTS-MW09B-EM33, SWFTS-MW21-EM33, and SWFTS-MW25-EM33: Qualify antimony, and zinc "J". SWFTS-MW22-EM33: Qualify antimony, barium, beryllium, titanium, and zinc "J" or "J+". SWFTS-MW23-EM33: Qualify antimony, barium, selenium, and zinc "J" or "J+". SWFTS-EM33-EB1: Qualify barium, calcium, silicon, sodium, strontium, and zinc "J" or "J+". SWFTS-EM33-FB1: Qualify barium, titanium, and zinc "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	PC-94-EM33: Qualify TOC "J-".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (UJ, J-, J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW09B-EM33	550-164872-1	6/2/2021	1.8 ºC
SWFTS-MW09B-EM33	550-164872-2	6/2/2021	1.8 ºC
SWFTS-MW23-EM33	550-164872-3	6/2/2021	1.8 ºC
SWFTS-MW23-EM33	550-164872-4	6/2/2021	1.8 ºC
SWFTS-MW25-EM33	550-164872-5	6/2/2021	1.8 ºC
SWFTS-MW25-EM33	550-164872-6	6/2/2021	1.8 ºC
SWFTS-MW24-EM33	550-164872-7	6/2/2021	1.8 ºC
SWFTS-MW24-EM33	550-164872-8	6/2/2021	1.8 ºC
SWFTS-EM33-EB1	550-164872-9	6/2/2021	1.8 ºC
SWFTS-EM33-EB1	550-164872-10	6/2/2021	1.8 ºC
SWFTS-MW22-EM33	550-164872-11	6/2/2021	7.8 ºC
SWFTS-MW22-EM33	550-164872-12	6/2/2021	7.8 ºC
SWFTS-EM33-FB1	550-164872-13	6/2/2021	1.8 ºC
SWFTS-EM33-FB1	550-164872-14	6/2/2021	1.8 ºC
SWFTS-MW21-EM33	550-164872-15	6/2/2021	7.8 ºC
SWFTS-MW21-EM33	550-164872-16	6/2/2021	7.8 ºC
PC-91-EM33	550-164872-17	6/2/2021	7.8 ºC
PC-91-EM33	550-164872-18	6/2/2021	7.8 ºC
PC-92-EM33	550-164872-19	6/2/2021	7.8 ºC
PC-92-EM33	550-164872-20	6/2/2021	7.8 ºC
PC-94-EM33	550-164872-21	6/2/2021	7.8 ºC
PC-94-EM33	550-164872-22	6/2/2021	7.8 ºC
PC-58-EM33	550-164872-23	6/2/2021	7.8 ºC
PC-58-EM33	550-164872-24	6/2/2021	7.8 ºC

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 °C? Were samples received in proper condition?	Yes/No/Yes
One of the coolers was received at the lab with temperature of 7.8 °C. The case narrative specified the affected samples. All results will be qualified except the 6010B/6020B results. 6010B/6020B metals do not require refrigeration. The case narrative also states that one cooler at receipt was at 25.7 °C. 25.7 °C was the temperature at the local service center, shortly after sampling.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
300.0: Nitrate was analyzed outside of holding time for the following samples: PC-94-EM33, SWFTS-MW23-EM33, and SWFTS-MW25-EM33.	

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.0: Sulfate was detected in SWFTS-EM33-EB1.	
6010B: The following metals were detected in MB 550-244395/1-A: barium, calcium, silicon, sodium, strontium, and zinc. The following metals were detected in MB 550-244585/1-A: barium, silicon, sodium, titanium, and zinc. Silicon was detected in MB 550-245242/1-A. The following metals were detected in SWFTS-EM33-EB1: barium, calcium, magnesium, silicon, sodium, strontium, and zinc. The following metals were detected in SWFTS-EM33-FB1: barium, beryllium, calcium, magnesium, molybdenum, sodium, strontium, titanium, and zinc. Metals detected in the samples at concentrations <10x the blank concentrations were qualified.	
6020B: Antimony was detected in MB 550-244578/1-A and in all samples at similar concentrations. Arsenic was detected in SWFTS-EM33-EB1. Selenium was detected in SWFTS-EM33-FB1.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
6010B: Recoveries were outside limits in the MS and/or /MSD of SWFTS-MW22-EM33 for the following metals: calcium, magnesium, and sodium. The sample concentrations were >4x the amount spiked, so recovery criteria do not apply.	
SM5310B: TOC recovery was low in the MSD of PC-94-EM33.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	No/N/A/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
One chlorate sample was analyzed at dilution because of matrix effects or the presence of non-target analytes. It was reported with dilution but was non-detect.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 08/23/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
SDG/Report No.: 550-164930-1
Task No.: M11
Lab ID: Eurofins TestAmerica
No. of Samples: 34 with MS/MSDs
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	Yes	SWFTS-MW01-EM33: Qualify antimony and zinc "J". SWFTS-MW06A-EM33, SWFTS-MW06A-EM33-FD, SWFTS-MW06B-EM33, SWFTS-MW07A-EM33, SWFTS-MW11-EM33-FD: Qualify antimony, barium, and zinc "J" or "J+". SWFTS-MW07B-EM33, SWFTS-MW08A-EM33, SWFTS-MW11-EM33, and SWFTS-MW13-EM33: Qualify antimony, barium, iron, and zinc "J" or "J+". SWFTS-MW10A-EM33:Qualify antimony, barium, beryllium, iron, and zinc "J" or "J+". SWFTS-MW12-EM33: Qualify antimony, iron, and zinc "J". SWFTS-MW14-EM33:Qualify antimony, beryllium, iron, and zinc "J" or "J+". SWFTS-EM33-EB2: Qualify barium, calcium, phosphorus, strontium, and zinc "J". SWFTS-EM33-FB2: Qualify calcium, molybdenum, phosphorus, strontium, and zinc "J". All GW: Qualify TOC "J" or "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW10A-EM33: Qualify TOC “J”.
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL “J”.
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW14-EM33	550-164930-1	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW14-EM33	550-164930-2	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW13-EM33	550-164930-3	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW13-EM33	550-164930-4	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW12-EM33	550-164930-5	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW12-EM33	550-164930-6	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW11-EM33	550-164930-7	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW11-EM33	550-164930-8	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW11-EM33-FD	550-164930-9	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW11-EM33-FD	550-164930-10	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-EM33-FB2	550-164930-11	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-EM33-FB2	550-164930-12	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW10A-EM33	550-164930-13	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW10A-EM33-MS	550-164930-13 MS	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW10A-EM33-MSD	550-164930-13 MSD	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW10A-EM33	550-164930-14	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW10A-EM33-MS	550-164930-14 MS	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW10A-EM33-MSD	550-164930-14 MSD	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-EM33-EB2	550-164930-15	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-EM33-EB2	550-164930-16	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW01-EM33	550-164930-17	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW01-EM33	550-164930-18	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW06A-EM33	550-164930-19	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW06A-EM33	550-164930-20	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW06A-EM33-FD	550-164930-21	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW06A-EM33-FD	550-164930-22	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW06B-EM33	550-164930-23	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW06B-EM33	550-164930-24	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW07A-EM33	550-164930-25	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW07A-EM33	550-164930-26	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW07B-EM33	550-164930-27	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW07B-EM33	550-164930-28	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW08A-EM33	550-164930-29	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC
SWFTS-MW08A-EM33	550-164930-30	6/4/21	0.8 ºC/2.0 ºC/2.8 ºC

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 26.8 ºC. 26.8 ºC was the temperature at the local service center, shortly after sampling. Temperatures at receipt at the lab were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.0: Sulfate was detected in SWFTS-EM33-FB2. Sample concentrations >10x the amount in the FB.	
6010B: The following metals were detected in MB 550-244586/1-A: barium, beryllium, calcium, iron, molybdenum, phosphorus, strontium, and zinc. The following metals were detected in SWFTS-EM33-EB2: barium, calcium, phosphorus, silicon, sodium, strontium, and zinc. The following metals were detected in SWFTS-EM33-FB2: calcium, magnesium, molybdenum, phosphorus, potassium, silicon, sodium, strontium, and zinc. Metals detected in the samples at concentrations <10x the blank concentrations were qualified.	
6020B: Antimony was detected in MB 550-244579/1-A and in all samples at similar concentrations. Arsenic was detected in SWFTS-EM33-EB2 and SWFTS-EM33-FB2. Sample concentrations >10x the amount in the EB and FB.	
SM5310B: TOC was detected in SWFTS-EM33-EB2 and SWFTS-EM33-FB2.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
6010B: Recoveries were outside limits in the MS and/or /MSD of SWFTS-MW10A-EM33 for the following metals: calcium, magnesium, silicon, sodium, strontium. The sample concentrations were >4x the amount spiked, so recovery criteria do not apply.	
SM5310B: TOC recoveries were low in the MS/MSD of SWFTS-MW10A-EM33.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
Two FD pairs were analyzed. SWFTS-MW06A-EM33 and SWFTS-MW06A-EM33-FD; SWFTS-MW11-EM33 and SWFTS-MW11-EM33-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
Two chlorate samples were analyzed at dilutions because of matrix effects or the presence of non-target analytes. They were reported with dilutions but were non-detect.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 08/23/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 5
SDG/Report No.: 550-167353-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds	X		No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported. **Usability:** All results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW24-EM34	550-167353-1	7/19/21	0.8 ºC
SWFTS-MW03-EM34	550-167353-2	7/19/21	0.8 ºC
SWFTS-MW06A-EM34	550-167353-3	7/19/21	0.8 ºC
SWFTS-MW06A-EM34-FD	550-167353-4	7/19/21	0.8 ºC
SWFTS-MW06B-EM34	550-167353-5	7/19/21	0.8 ºC

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 26.5 ºC. 26.5 ºC was the temperature at the local service center, shortly after sampling. Temperature at receipt at the lab was ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/No
300.1B: Dichloroacetic acid recovery was high in the MSD of one of the batches. Project data are not affected.	

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
One FD pair was analyzed. SWFTS-MW06A-EM34 and SWFTS-MW06A-EM34-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 08/27/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 17 with MS/MSD
SDG/Report No.: 550-167449-1 and -2
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times	X		No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds	X		No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW05A-EM34: Qualify nitrate "J-". SWFTS-MW10A-EM34: Qualify chlorate "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Multiple Results (see below)	---	---	Yes	PC-91-EM34: Qualify unused sulfate results "R".
Sulfate in PC-91-EM34 was re-analyzed outside the 28-day holding time to confirm the initial result. The two sulfate re-analyses confirmed the original result. The original, unqualified result was used. The re-analyses were rejected.				
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Except where rejected, acceptable as qualified. **Usability:** Results qualified "R" should not be used. Sample results qualified as estimated (J-, J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.				

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
PC-94-EM34	550-167449-1	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW09B-EM34	550-167449-2	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW09A-EM34	550-167449-3	7/20/21	1.2 ºC/4.8 ºC
SWFTS-EM34-EB1	550-167449-4	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW01-EM34	550-167449-5	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW21-EM34	550-167449-6	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW05A-EM34	550-167449-7	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW05A-EM34-MS	550-167449-7 MS	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW05A-EM34-MSD	550-167449-7 MSD	7/20/21	1.2 ºC/4.8 ºC
PC-91-EM34	550-167449-8	7/20/21	1.2 ºC/4.8 ºC
PC-92-EM34	550-167449-9	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW19-EM34	550-167449-10	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW19-EM34-FD	550-167449-11	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW10A-EM34	550-167449-12	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW10A-EM34-MS	550-167449-12 MS	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW10A-EM34-MSD	550-167449-12 MSD	7/20/21	1.2 ºC/4.8 ºC
SWFTS-MW20-EM34	550-167449-13	7/20/21	1.2 ºC/4.8 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 25.8 ºC. 25.8 ºC was the temperature at the local service center shortly after sampling. Temperatures at receipt at the lab were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
The COC requested Total Manganese (Mn) for samples 8-13 but did not provide nitric-preserved bottles. The client confirmed that Mn was requested in error	

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
300.0: Sulfate was re-analyzed outside of holding time in PC-91-EM34 (SDG 550-167449-2). The re-analysis results were rejected.	

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.0: Sulfate was detected in SWFTS-EM34-EB1. Sample results were >10x the amount in the EB. No qualification.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/No
300.1B: Dichloroacetic acid recovery was high in the MSD of one of the batches. Project data are not affected.	

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Nitrate recovery was low in the MSD of SWFTS-MW05A-EM34.	
300.1B: Chlorate recovery was high in the MS of SWFTS-MW10A-EM34.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
One FD pair was analyzed. SWFTS-MW19-EM34 and SWFTS-MW19-EM34-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
One chlorate sample and one perchlorate sample were analyzed at dilution because of the presence of non-target analytes. They were non-detect with elevated PQLs.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/11/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 13
SDG/Report No.: 550-167523-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-MW02-EM34, SWFTS-MW04-EM34, SWFTS-MW05B-EM34, SWFTS-MW15-EM34, SWFTS-MW16-EM34, SWFTS-MW17-EM34, SWFTS-MW18-EM34, SWFTS-MW23-EM34, and SWFTS-MW25-EM34: Qualify TOC "J+". SWFTS-MW23-EM34: Qualify chlorate "J+". SWFTS-MW05B-EM34: Qualify chlorate "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW18-EM34: Qualify chlorate "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW05B-EM34	550-167523-1	7/21/21	0.8 ºC/1.8 ºC
SWFTS-MW18-EM34	550-167523-2	7/21/21	0.8 ºC/1.8 ºC
SWFTS-MW16-EM34	550-167523-3	7/21/21	0.8 ºC/1.8 ºC
SWFTS-MW15-EM34	550-167523-4	7/21/21	0.8 ºC/1.8 ºC
SWFTS-MW17-EM34	550-167523-5	7/21/21	0.8 ºC/1.8 ºC
SWFTS-EM34-FB2	550-167523-6	7/21/21	0.8 ºC/1.8 ºC
SWFTS-MW25-EM34	550-167523-7	7/21/21	0.8 ºC/1.8 ºC
SWFTS-MW23-EM34	550-167523-8	7/21/21	0.8 ºC/1.8 ºC
SWFTS-MW04-EM34	550-167523-9	7/21/21	0.8 ºC/1.8 ºC
SWFTS-EM34-FB1	550-167523-10	7/21/21	0.8 ºC/1.8 ºC
SWFTS-MW02-EM34	550-167523-11	7/21/21	0.8 ºC/1.8 ºC
SWFTS-MW14-EM34	550-167523-12	7/21/21	0.8 ºC/1.8 ºC
SWFTS-EM34-EB2	550-167523-13	7/21/21	0.8 ºC/1.8 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 26.6 ºC. 26.6 ºC was the temperature at the local service center, shortly after sampling. Temperatures at receipt at the lab were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
Per the case narrative, sample time on the label did not match sample time on the COC for SWFTS-MW14-EM34. The lab was instructed to use the time on the COC.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.1B: Chlorate was detected in SWFTS-EM34-FB1 (7.9 ug/L) and SWFTS-EM34-FB2 (8.7 ug/L). Adjusted sample results <10x the amount in an FB were qualified.	
SM5310B: TOC was detected in SWFTS-EM34-EB2 (0.32 ug/L) and SWFTS-EM34-FB2 (0.36 ug/L). Sample results <10x the amount in the EB and/or FB were qualified.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were high in the MS/MSD of SWFTS-MW18-EM34.	
314.0: Perchlorate recoveries were high in the MS/MSD of SWFTS-MW04-EM34. Concentration in the parent sample was >4x the amount spiked so recovery criteria do not apply. No qualification.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	No/N/A/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
One chlorate sample was analyzed at dilution because of the presence of non-target analytes. It was non-detect with an elevated PQL.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 08/27/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 10
SDG/Report No.: 550-167639-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates	X		Yes	SWFTS-MW11-EM34 and SWFTS-MW11-EM34-FD: Qualify sulfate "J".
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
PC-88-EM34	550-167639-1	7/22/21	5.8 ºC
PC-88-EM34-FD	550-167639-2	7/22/21	5.8 ºC
SWFTS-MW08A-EM34	550-167639-3	7/22/21	5.8 ºC
SWFTS-MW13-EM34	550-167639-4	7/22/21	5.8 ºC
SWFTS-MW12-EM34	550-167639-5	7/22/21	5.8 ºC
PC-58-EM34	550-167639-6	7/22/21	5.8 ºC
SWFTS-MW11-EM34	550-167639-7	7/22/21	5.8 ºC
SWFTS-MW11-EM34-FD	550-167639-8	7/22/21	5.8 ºC
SWFTS-MW07A-EM34	550-167639-9	7/22/21	5.8 ºC
SWFTS-MW07B-EM34	550-167639-10	7/22/21	5.8 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 25.5 ºC. 25.5 ºC was the temperature at the local service center, shortly after sampling. Temperature at receipt at the lab was ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/No/Yes
Two FD pairs were analyzed: PC-88-EM34 and PC-88-EM34-FD; SWFTS-MW11-EM34 and SWFTS-MW11-EM34-FD. Most results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 08/27/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 12 with MS/MSD
SDG/Report No.: 550-170733-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW10A-EM35: Qualify chlorate "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW03-EM35	550-170733-1	9/15/2021	3.7 ºC/4.8 ºC
SWFTS-EM35-EB1	550-170733-2	9/15/2021	3.7 ºC/4.8 ºC
SWFTS-MW13-EM35	550-170733-3	9/15/2021	3.7 ºC/4.8 ºC
SWFTS-MW12-EM35	550-170733-4	9/15/2021	3.7 ºC/4.8 ºC
SWFTS-MW09B-EM35	550-170733-5	9/15/2021	3.7 ºC/4.8 ºC
SWFTS-MW09A-EM35	550-170733-6	9/15/2021	3.7 ºC/4.8 ºC
SWFTS-MW10A-EM35	550-170733-7	9/15/2021	3.7 ºC/4.8 ºC
SWFTS-MW10A-EM35-MS	550-170733-7 MS	9/15/2021	3.7 ºC/4.8 ºC
SWFTS-MW10A-EM35-MSD	550-170733-7 MSD	9/15/2021	3.7 ºC/4.8 ºC
PC-94-EM35	550-170733-8	9/15/2021	3.7 ºC/4.8 ºC
SWFTS-EM35-FB1	550-170733-9	9/15/2021	3.7 ºC/4.8 ºC
SWFTS-MW01-EM35	550-170733-10	9/15/2021	3.7 ºC/4.8 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 27.0 ºC. 27.0 ºC was the temperature at the local service center, shortly after sampling. Temperatures at receipt at the lab were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.0: Sulfate was detected in SWFTS-EM35-EB1 and SWFTS-EM35-FB1. Sample results were >10x the amount in the EB. No qualification.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.0: Sulfate recoveries were low in the MS/MSD of SWFTS-MW10A-EM35. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	
300.1B: Chlorate recoveries were high in the MS/MSD of SWFTS-MW10A-EM35.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	No/N/A/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/01/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 31
SDG/Report No.: 550-170815-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody	X		No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	PC-92-EM35, SWFTS-MW11-EM35, and SWFTS-MW18-EM35: Qualify chlorate "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Other (calibration)	X		Yes	PC-58-EM35, PC-88-EM35, PC-88-EM35-FD, PC-92-EM35, SWFTS-MW19-EM35, SWFTS-MW19-EM35-FD, SWFTS-MW20-EM35, SWFTS-MW21-EM35, SWFTS-MW22-EM35, SWFTS-MW23-EM35, SWFTS-MW24-EM35, and SWFTS-MW25-EM35: Qualify nitrate "J". PC-91-EM35: Qualify nitrate "UJ".
Other: Per the case narrative, a calibration verification was not analyzed after 10 samples as required by the method, due to instrument error. It was analyzed after 16 samples. The samples were not re-analyzed because of the holding time.				
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (UJ, J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW06A-EM35	550-170815-1	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW06A-EM35-FD	550-170815-2	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW06B-EM35	550-170815-3	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW04-EM35	550-170815-4	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW02-EM35	550-170815-5	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-EM35-EB2	550-170815-6	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW05B-EM35	550-170815-7	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW07A-EM35	550-170815-8	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW07B-EM35	550-170815-9	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW08A-EM35	550-170815-10	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW11-EM35	550-170815-11	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW11-EM35-FD	550-170815-12	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW18-EM35	550-170815-13	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW15-EM35	550-170815-14	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW16-EM35	550-170815-15	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW14-EM35	550-170815-16	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW17-EM35	550-170815-17	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-EM35-FB2	550-170815-18	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
PC-92-EM35	550-170815-19	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
PC-91-EM35	550-170815-20	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
PC-88-EM35	550-170815-21	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
PC-88-EM35-FD	550-170815-22	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
PC-58-EM35	550-170815-23	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW20-EM35	550-170815-24	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW25-EM35	550-170815-25	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW24-EM35	550-170815-26	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW23-EM35	550-170815-27	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW22-EM35	550-170815-28	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW21-EM35	550-170815-29	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW19-EM35	550-170815-30	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC
SWFTS-MW19-EM35-FD	550-170815-31	9/16/2021	3.0 ºC/4.8 ºC/5.7 ºC

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 26.5 ºC. 26.5 ºC was the temperature at the local service center, shortly after sampling. Temperatures at receipt at the lab were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes
Metals were requested on one page of the COC but bottles were not provided. The client confirmed that metals were not needed for the samples.	

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
300.1B: Chlorate recoveries were high in the MSD of PC-92-EM35, the MSD of SWFTS-MW11-EM35, and the MSD of SWFTS-MW18-EM35	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
Four FD pairs were analyzed: PC-88-EM35 and PC-88-EM35-FD; SWFTS-MW06A-EM35 and SWFTS-MW06A-EM35-FD; SWFTS-MW11-EM35 and SWFTS-MW11-EM35-FD; and SWFTS-MW19-EM35 and SWFTS-MW19-EM35-FD.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
One chlorate sample was analyzed at dilution because of the presence of non-target analytes. It was non-detect with an elevated PQL.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/11/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 3 with MS/MSD
SDG/Report No.: 550-170881-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		X	No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks		X	No	None
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates	---	---	---	---
9. Compound Quantitation and Reporting Limits		X	No	None
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment: Acceptable as reported. **Usability:** Results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW05A-EM35	550-170881-1	9/17/2021	0.2 ºC
SWFTS-MW05A-EM35-MS	550-170881-1 MS	9/17/2021	0.2 ºC
SWFTS-MW05A-EM35-MSD	550-170881-1 MSD	9/17/2021	0.2 ºC

Data Verification and Validation Summary

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/Yes/Yes

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/No

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/Yes

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	No/N/A/N/A

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes
Chlorate was analyzed at dilution because of non-target analytes. It was non-detect with an elevated PQL.	

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 10/13/2021

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 8 with MS/MSDs
SDG/Report No.: 550-174897-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-MW20-EM36, SWFTS-MW05A-EM36: Qualify antimony and zinc "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	SWFTS-MW05A-EM36: Qualify potassium "J+".
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW20-EM36	550-174897-1	11/29/2021	1.1 ºC
SWFTS-MW20-EM36	550-174897-2	11/29/2021	1.1 ºC
SWFTS-MW05A-EM36	550-174897-3	11/29/2021	1.1 ºC
SWFTS-MW05A-EM36-MS	550-174897-3 MS	11/29/2021	1.1 ºC
SWFTS-MW05A-EM36-MSD	550-174897-3 MSD	11/29/2021	1.1 ºC
SWFTS-MW05A-EM36	550-174897-4	11/29/2021	1.1 ºC
SWFTS-MW05A-EM36-MS	550-174897-4 MS	11/29/2021	1.1 ºC
SWFTS-MW05A-EM36-MSD	550-174897-4 MSD	11/29/2021	1.1 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 26.5 ºC. 26.5 ºC was the temperature at the local service center, shortly after sampling. Temperature at receipt at the lab was ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Barium, boron, sodium, and zinc were detected in MB 550-260000/1-A. Zinc was detected in the samples at similar concentrations. Sample results >10x the amount in the blank were not qualified.	
6020B: Antimony was detected in MB 550-260001/1-A. It was detected in the samples at similar concentrations.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
6010B: Calcium, potassium, magnesium, sodium, and strontium recoveries were outside limits in the MS and/or MSD of SWFTS-MW05A-EM36. Except for potassium, the concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/N/A
Lab duplicates	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 01/11/2022

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 24 with MS/MSDs
SDG/Report No.: 550-174968-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	PC-91-EM36: Qualify nitrate "J". PC-91-EM36, PC-92-EM36, PC-94-EM36, SWFTS-MW01-EM36, SWFTS-MW02-EM36, SWFTS-MW05B-EM36, SWFTS-MW10A-EM36, SWFTS-MW15-EM36, SWFTS-MW16-EM36: Qualify antimony "J". PC-91-EM36, PC-92-EM36, SWFTS-MW10A-EM36: Qualify zinc "J". SWFTS-MW15-EM36: Qualify thallium "J+". SWFTS-MW05B-EM36, SWFTS-MW10A-EM36, SWFTS-MW16-EM36: Qualify thallium "J". PC-92-EM36, PC-94-EM36, SWFTS-MW01-EM36, SWFTS-MW02-EM36, SWFTS-MW05B-EM36, SWFTS-MW10A-EM36, SWFTS-MW15-EM36, SWFTS-MW16-EM36: Qualify TOC "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
PC-91-EM36	550-174968-1	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
PC-91-EM36	550-174968-2	11/30/2021	1.6 ºC/3.4 ºC
PC-92-EM36	550-174968-3	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
PC-92-EM36	550-174968-4	11/30/2021	1.6 ºC/3.4 ºC
PC-94-EM36	550-174968-5	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
PC-94-EM36	550-174968-6	11/30/2021	1.6 ºC/3.4 ºC
SWFTS-MW02-EM36	550-174968-7	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
SWFTS-MW02-EM36	550-174968-8	11/30/2021	1.6 ºC/3.4 ºC
SWFTS-MW15-EM36	550-174968-9	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
SWFTS-MW15-EM36	550-174968-10	11/30/2021	1.6 ºC/3.4 ºC
SWFTS-MW16-EM36	550-174968-11	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
SWFTS-MW16-EM36	550-174968-12	11/30/2021	1.6 ºC/3.4 ºC
SWFTS-EM36-FB1	550-174968-13	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
SWFTS-EM36-FB1	550-174968-14	11/30/2021	1.6 ºC/3.4 ºC
SWFTS-MW05B-EM36	550-174968-15	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
SWFTS-MW05B-EM36	550-174968-16	11/30/2021	1.6 ºC/3.4 ºC
SWFTS-MW10A-EM36	550-174968-17	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
SWFTS-MW10A-EM36-MS	550-174968-17 MS	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
SWFTS-MW10A-EM36-MSD	550-174968-17 MSD	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
SWFTS-MW10A-EM36	550-174968-18	11/30/2021	1.6 ºC/3.4 ºC
SWFTS-MW10A-EM36-MS	550-174968-18 MS	11/30/2021	1.6 ºC/3.4 ºC
SWFTS-MW10A-EM36-MSD	550-174968-18 MSD	11/30/2021	1.6 ºC/3.4 ºC
SWFTS-MW01-EM36	550-174968-19	11/30/2021	1.6 ºC/3.4 ºC/3.7 ºC
SWFTS-MW01-EM36	550-174968-20	11/30/2021	1.6 ºC/3.4 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 26.5 ºC. 26.5 ºC was the temperature at the local service center. Temperatures at receipt at the lab were ≤ 6 ºC.	
RSK-175: Two samples collected in pre-preserved vials were outside the acceptable pH range when checked at time of analysis. The samples were analyzed within 7 days, as required for unpreserved samples.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
300.0: Nitrate was detected in SWFTS-EM36-FB1. Except for one sample, concentrations in the GW samples were >10x the amount in the FB.	
6010B: Potassium and sodium were detected in MB 550-260208/1-A and SWFTS-EM36-FB1. Concentrations in the GW samples were >10x the amounts in the blanks and were not qualified. Detects in the FB were qualified. Strontium and zinc were detected in SWFTS-EM36-FB1. Strontium concentrations in the samples were >10x the amount on the FB. Zinc was detected in three samples at similar concentrations.	
6020B: Antimony was detected in MB 550-260210/1-A. It was detected in the samples at similar concentrations. Thallium was detected in SWFTS-EM36-FB1 and four samples at similar concentrations.	
SM5310B: TOC was detected in SWFTS-EM36-FB1. Except for one sample, concentrations in the GW samples were <10x the amount in the FB. Affected samples were qualified.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	Yes/Yes/No
6010B: Magnesium, silicon, and strontium recoveries were low in the MS/MSD of SWFTS-MW10A-EM36. The concentrations in the parent sample were >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/N/A
Lab duplicates	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 01/11/2022

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 24 with MS/MSDs
SDG/Report No.: 550-175045-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	SWFTS-MW03-EM36, SWFTS-MW06A-EM36, SWFTS-MW06A-EM36-FD, SWFTS-MW06B-EM36, SWFTS-MW19-EM36, SWFTS-MW19-EM36-FD, SWFTS-MW21-EM36, SWFTS-MW24-EM36, SWFTS-MW25-EM36: Qualify antimony "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW03-EM36	550-175045-1	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW03-EM36	550-175045-2	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW21-EM36	550-175045-3	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW21-EM36	550-175045-4	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW18-EM36	550-175045-5	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW18-EM36	550-175045-6	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW06A-EM36	550-175045-7	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW06A-EM36	550-175045-8	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW06A-EM36-FD	550-175045-9	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW06A-EM36-FD	550-175045-10	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW06B-EM36	550-175045-11	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW06B-EM36	550-175045-12	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW19-EM36	550-175045-13	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW19-EM36	550-175045-14	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW19-EM36-FD	550-175045-15	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW19-EM36-FD	550-175045-16	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW24-EM36	550-175045-17	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW24-EM36-MS	550-175045-17 MS	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW24-EM36-MSD	550-175045-17 MSD	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW24-EM36	550-175045-18	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW24-EM36-MS	550-175045-18 MS	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW24-EM36-MSD	550-175045-18 MSD	12/01/2021	2.8 ºC/3.6 ºC
SWFTS-MW25-EM36	550-175045-19	12/01/2021	2.8 ºC/3.6 ºC/0.1 ºC
SWFTS-MW25-EM36	550-175045-20	12/01/2021	2.8 ºC/3.6 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 26.2 ºC. 26.2 ºC was the temperature at the local service center shortly after sampling. Temperatures at receipt at the lab were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Potassium and sodium were detected in MB 550-260208/1-A. Concentrations in the GW samples were >10x the amounts in the blank and were not qualified.	
6020B: Antimony was detected in MB 550-260210/1-A. It was detected in the samples at similar concentrations.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	No/Yes/Yes

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
Lab duplicates. Two FD pairs: SWFTS-MW06A-EM36 and SWFTS-MW06A-EM36-FD; SWFTS-MW19-EM36 and SWFTS-MW19-EM36-FD. Results agreed.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 01/12/2022

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 28
SDG/Report No.: 550-175153-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	PC-88-EM36, PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09B-EM36, SWFTS-MW13-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36: Qualify barium “J+”. SWFTS-EM36-EB1, SWFTS-EM36-EB2, SWFTS-EM36-FB2: Qualify barium “J”. PC-88-EM36: Qualify cobalt “J+”. PC-88-EM36-FD, SWFTS-EM36-FB2, SWFTS-MW04-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36: Qualify cobalt “J”. PC-88-EM36, PC-88-EM36-FD: Qualify phosphorus “J”. SWFTS-MW22-EM36: Qualify titanium “J”. PC-88-EM36-FD, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW13-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36: Qualify tungsten “J”. PC-88-EM36, PC-88-EM36-FD, SWFTS-EM36-EB1, SWFTS-EM36-EB2, SWFTS-EM36-FB2, SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36: Qualify zinc “J”. PC-88-EM36, PC-88-EM36-FD

Area Reviewed	Anomalies		Qualification Required	Action Required
				SWFTS-MW04-EM36, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW12-EM36, SWFTS-MW13-EM36, SWFTS-MW17-EM36, SWFTS-MW22-EM36, SWFTS-MW23-EM36: Qualify antimony "J". PC-88-EM36, PC-88-EM36-FD, SWFTS-MW08A-EM36, SWFTS-MW09A-EM36, SWFTS-MW09B-EM36, SWFTS-MW13-EM36, SWFTS-MW17-EM36: Qualify thallium "J+". SWFTS-MW22-EM36, SWFTS-MW22-EM36: Qualify thallium "J". All GW: Qualify TOC "J+".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates	X		Yes	PC-88-EM36 and PC-88-EM36-FD: Qualify selenium "J".
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J, J+) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
SWFTS-MW22-EM36	550-175153-1	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-MW22-EM36	550-175153-2	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-MW04-EM36	550-175153-3	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-MW04-EM36	550-175153-4	12/02/2021	4.1 ºC/5.8 ºC
PC-88-EM36	550-175153-5	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
PC-88-EM36	550-175153-6	12/02/2021	4.1 ºC/5.8 ºC
PC-88-EM36-FD	550-175153-7	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
PC-88-EM36-FD	550-175153-8	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-MW09A-EM36	550-175153-9	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-MW09A-EM36	550-175153-10	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-MW09B-EM36	550-175153-11	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-MW09B-EM36	550-175153-12	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-EM36-EB1	550-175153-13	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-EM36-EB1	550-175153-14	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-MW23-EM36	550-175153-15	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-MW23-EM36	550-175153-16	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-MW13-EM36	550-175153-17	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-MW13-EM36	550-175153-18	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-MW12-EM36	550-175153-19	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-MW12-EM36	550-175153-20	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-MW17-EM36	550-175153-21	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-MW17-EM36	550-175153-22	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-MW08A-EM36	550-175153-23	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-MW08A-EM36	550-175153-24	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-EM36-EB2	550-175153-25	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-EM36-EB2	550-175153-26	12/02/2021	4.1 ºC/5.8 ºC
SWFTS-EM36-FB2	550-175153-27	12/02/2021	4.1 ºC/5.8 ºC/0.4 ºC
SWFTS-EM36-FB2	550-175153-28	12/02/2021	4.1 ºC/5.8 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 25.8 ºC. 25.8 ºC was the temperature at the local service center shortly after sampling. Temperatures at receipt at the lab were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Barium, cobalt, and zinc were detected in MB 550-260531/1-A. Barium, sodium, strontium, and zinc were detected in SWFTS-EM36-EB1 and SWFTS-EM36-EB2. Barium, calcium, cobalt, phosphorus, titanium, tungsten, and zinc were detected in SWFTS-EM36-FB2. Associated samples with concentrations <10x the concentrations in the blanks were qualified.	
6020B: Antimony and thallium were detected in SWFTS-EM36-EB2. Selenium was detected in SWFTS-EM36-EB1. Associated samples with concentrations <10x the concentrations in the blanks were qualified.	
SM5310B: TOC was detected in SWFTS-EM36-EB1 and SWFTS-EM36-EB2. Associated samples with concentrations <10x the concentrations in the blanks were qualified.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	No/Yes/No
300.0: Sulfate recoveries were low in the MS/MSD of SWFTS-MW22-EM36. The concentration in the parent sample was >4x the amount spiked, so recovery criteria do not apply.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/No
Lab duplicates. One FD pair: PC-88-EM36 and PC-88-EM36-FD.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 01/12/2022

Data Verification and Validation Summary

Project Name: SWF Area Treatability Study
Task No.: M11
No. of Samples: 12
SDG/Report No.: 550-175222-1
Lab ID: Eurofins TestAmerica
Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		No	None
2. Chain-of-Custody		X	No	None
3. Holding Times		X	No	None
4. Blanks	X		Yes	PC-58-EM36, SWFTS-MW07A-EM36, SWFTS-MW07B-EM36, SWFTS-MW11-EM36, SWFTS-MW11-EM36-FD: Qualify zinc "J".
5. Surrogates/Monitoring Compounds		X	No	None
6. Matrix Spike/Matrix Spike Duplicate		X	No	None
7. Laboratory Control Samples		X	No	None
8. Duplicates		X	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results detected between the MDL/SQL and RL/PQL "J".
10. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			

Overall Assessment: Acceptable as qualified.
Usability: Sample results qualified as estimated (J) are considered valid and useable for limited purposes. All other results are considered valid and useable for all purposes.

Data Verification and Validation Summary

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature
SWFTS-MW14-EM36	550-175222-1	12/03/2021	0.1 ºC/1.2 ºC/0.3 ºC
SWFTS-MW14-EM36	550-175222-2	12/03/2021	0.1 ºC/1.2 ºC
SWFTS-MW07A-EM36	550-175222-3	12/03/2021	0.1 ºC/1.2 ºC/0.3 ºC
SWFTS-MW07A-EM36	550-175222-4	12/03/2021	0.1 ºC/1.2 ºC
SWFTS-MW07B-EM36	550-175222-5	12/03/2021	0.1 ºC/1.2 ºC/0.3 ºC
SWFTS-MW07B-EM36	550-175222-6	12/03/2021	0.1 ºC/1.2 ºC
SWFTS-MW11-EM36	550-175222-7	12/03/2021	0.1 ºC/1.2 ºC/0.3 ºC
SWFTS-MW11-EM36	550-175222-8	12/03/2021	0.1 ºC/1.2 ºC
SWFTS-MW11-EM36-FD	550-175222-9	12/03/2021	0.1 ºC/1.2 ºC/0.3 ºC
SWFTS-MW11-EM36-FD	550-175222-10	12/03/2021	0.1 ºC/1.2 ºC
PC-58-EM36	550-175222-11	12/03/2021	0.1 ºC/1.2 ºC/0.3 ºC
PC-58-EM36	550-175222-12	12/03/2021	0.1 ºC/1.2 ºC

The following section is intended to specify areas evaluated and issues encountered. Only applicable methods are listed.

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at ≤ 6 ºC? Were samples received in proper condition?	Yes/No/Yes
The case narrative states that one cooler at receipt was at 20.0 ºC. 20.0 ºC was the temperature at the local service center shortly after sampling. Temperatures at receipt at the labs were ≤ 6 ºC.	

2. Chain-of-Custody (COC)	
Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

3. Holding Times	
Were samples analyzed within acceptable holding times?	Yes

4. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were analytes detected in any blanks?	Yes/Yes/Yes
6010B: Barium, cobalt, and zinc were detected in MB 550-260531/1-A. Associated samples with zinc concentrations <10x the concentrations in the blank were qualified.	

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported correctly on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on data forms? Were recoveries/RPDs of project samples within laboratory established limits?	No/Yes/Yes

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data forms? Were LCS recoveries within laboratory established limits?	Yes/Yes/Yes

8. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL/PQL, were RPDs between parent sample and duplicates ≤ lab limits or ≤ 30% (water)/50% (soil) for field duplicates? For REG/FD results < 5x the RL/PQL, were differences between the two values < RL/PQL.	Yes/Yes/Yes
Lab duplicates. One FD pair: PC-88-EM36 and PC-88-EM36-FD.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs/PQL) adjusted to reflect dilutions, cleanup, and other factors? If applicable, were reporting limit check recoveries within acceptable limits?	Yes/Yes

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

Validated by: Maureen McMyler 01/12/3022

Appendix 2
Laboratory Data Packages

Due to the quantity and size of the file, the laboratory data packages are being sent in a separate file for electronic download.

Appendix 3
DVSR Electronic Data Deliverable

Per the requirements provided by NDEP for Unified Chemical Electronic Data Deliverable Format (July 18, 2018), a database is provided in Microsoft Access format and includes sample, location and analytical data supporting the DVSR and for upload of the Companies' electronic data into the regional database maintained by NDEP. Associated data in the NDEP Water Level Electronic Data Deliverable Format (February 28, 2010) have also been provided in a second Microsoft Access file. These databases are being sent in a separate file for electronic download.

Appendix D
Long-Term Water Level Monitoring Technical Memorandum

TETRA TECH

TECHNICAL MEMORANDUM

To:	**Dana Grady and Ronnie Britto, Tetra Tech**
From:	Sonya Cadle, Jennifer Jacobs, and Jenny Dabbs, Tetra Tech
Date:	August 17, 2022
Subject:	Long-Term Water Level Monitoring – Seep Well Field Area Bioremediation Treatability Study

1.0 INTRODUCTION

This technical memorandum describes the implementation of long-term water level monitoring as part of the hydrogeological evaluation for the Seep Well Field Area Bioremediation Treatability Study (SWFTS) conducted by Tetra Tech, Inc. on behalf of the Nevada Environmental Response Trust. Initial data and results from the long-term water level monitoring were reported in the *Seep Well Field Area Bioremediation Treatability Study Results Report* (Tetra Tech, 2019), the *Seep Well Field Area Bioremediation Treatability Study 2019 Annual Progress Report* (Tetra Tech, 2020), and the *Seep Well Field Area Bioremediation Treatability Study 2020 Annual Progress Report* (Tetra Tech, 2021). The current reporting period is January through December 2021.

The locations of the wells instrumented in the treatability study area and the Pond 13 area are shown in ***Figure D.1*** and ***Figure D.2***, respectively. The objectives of long-term water level monitoring are to characterize seasonal and long-term trends in water levels, to monitor the hydraulic effects of injection into the injection well transects, and to characterize potential changes in vertical gradients over time.

2.0 LONG-TERM WATER LEVEL MONITORING

A total of 10 water-level monitoring transducers (In-Situ Rugged TROLL 100) were placed in monitoring wells during implementation of the treatability study. The instrumented locations were chosen to provide coverage across the treatability study area. In some locations, multiple wells in a cluster were instrumented to provide data for characterization of vertical gradients. Transducers were installed in treatability study area monitoring wells in August 2017, in accordance with the *Seep Well Field Area Bioremediation Treatability Study Work Plan* (Tetra Tech, 2016). The transducers continue to be downloaded regularly as part of the study extension detailed in *Treatability/Pilot Study Modification No. 6 - Seep Well Field Area Bioremediation Treatability Study* (Tetra Tech, 2018). Transducers installed at three monitoring wells (SWFTS-MW05B, SWFTS-MW09B, and SWFTS-MW14) were relocated to three alternate monitoring wells (SWFTS-MW03, SWFTS-MW06B, and SWFTS-MW23) in December 2017. One barometric pressure transducer (In-Situ Rugged BaroTROLL) was also deployed for the duration of the treatability study to facilitate the compensation of water-level monitoring data for changes in barometric pressure. Instruments were installed prior to the first injection event in August 2017 so that hydraulic

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responses to injection activities could be measured. The instruments have continued to monitor water levels during the seven subsequent injection events in 2018 through 2021.

Transducers were also installed in August 2017 in two wells (MW-K5 and PC-98R) in the vicinity of the City of Henderson (COH) Pond 13, which is located upgradient (south) of the treatability study area (see ***Figure D.2***). A second barometric pressure transducer was installed in the Pond 13 area to facilitate the compensation of water-level monitoring data for changes in barometric pressure because Pond 13 is significantly south of the treatability study area. These transducers are used to monitor the periodic releases of water to COH Pond 13, located upgradient of the study area.

Table 1 summarizes the locations and initial deployment dates of transducers. Long-term water level monitoring data have been downloaded periodically. Downloaded transducer data are imported into a database, corrected for barometric pressure, and converted into groundwater elevations for further analysis.

Table 1. Locations and Deployment Details of Long-Term Water Level Monitoring Transducers

Well	Screened Unit	Transducer Type	Date Installed	Study Area
SWFTS-MW02	Alluvium	In-Situ Rugged TROLL	8/22/2017	SWFTS
SWFTS-MW03	Alluvium	In-Situ Rugged TROLL	12/22/2017	SWFTS
SWFTS-MW06B	Alluvium	In-Situ Rugged TROLL	12/22/2017	SWFTS
SWFTS-MW07B	Alluvium	In-Situ Rugged TROLL	8/14/2017	SWFTS
SWFTS-MW09A	Alluvium	In-Situ Rugged TROLL	8/14/2017	SWFTS
SWFTS-MW10A	Alluvium	In-Situ Rugged TROLL	8/14/2017	SWFTS
SWFTS-MW10C	UMCf	In-Situ Rugged TROLL	8/14/2017	SWFTS
SWFTS-MW15	Alluvium	In-Situ Rugged TROLL and BaroTROLL	8/14/2017	SWFTS
SWFTS-MW23	Alluvium	In-Situ Rugged TROLL	12/22/2017	SWFTS
SWFTS-MW25	Alluvium	In-Situ Rugged TROLL	8/14/2017	SWFTS
PC-98R[1]	Alluvium	In-Situ Rugged TROLL and BaroTroll	8/14/2017	Pond 13
MW-K5[2]	Alluvium	In-Situ Rugged TROLL	8/14/2017	Pond 13

Notes
UMCf–– Upper Muddy Creek formation
SWFTS – Seep Well Field Treatability Study Area
1. The transducer installed in PC-98R was replaced in September 2021 and the data from the third quarter of 2021 was not able to be downloaded.
2. Transducer data were unavailable from MW-K5 between November and December 2021.

3.0 TREATABILITY STUDY AREA RESULTS

Data from the treatability study area monitoring wells were downloaded in March, June, September, December 2021 and in March 2022 to cover the current reporting period. The data were corrected for barometric pressure and compared to the precipitation data from the nearby C-1 Channel gaging station (United States Geological Survey [USGS] 09419745 C-1 Channel Abv Mouth Nr Henderson, NV), located east of the study area. ***Figure D.3*** provides hydrographs for the treatability study area monitoring wells.

The hydrographs show that all wells were visibly influenced by precipitation. The wells instrumented in the treatability study area are located over 1,000 feet from the Las Vegas Wash, and they appear to be too far away to respond to daily changes in the surface water elevation and flow in the Las Vegas Wash. The data also indicate that the vertical gradients between the alluvium and Upper Muddy Creek formation (UMCf) in the treatability study area remained relatively stable during the reporting period. Precipitation appears to have the largest influence on water levels at monitoring well SWFTS-MW06B, but a water level rise correlated to

precipitation events is observed at all the wells, including monitoring well SWFTS-MW10C, which is screened in the UMCf. During this reporting period, these impacts were most noticeable after the precipitation events lasting about a week or two beginning on March 7, 2021, and July 19, 2021.

In addition, most of the instrumented treatability study monitoring wells were visibly influenced by the seventh and eighth injection events at the site in February/March 2021 and November 2021, with the maximum measured response to injection of 11 inches. The injection events are visually identified on ***Figure D.3***. As expected, the largest responses to injection activities were observed in instrumented monitoring wells located between and immediately downgradient of the two injection well transects (SWFTS-MW02 and SWFTS-MW10A). Pressure responses decreased with distance away from the injection well transects with the maximum response observed about 200 feet upgradient (SWFTS-MW07B) at approximately two inches. Injection-related responses are visible as intervals of rapidly changing monitoring well water levels that coincide with the timing of injection events, as shown on ***Figure D.3***.

One interesting point to note is that several transducers in the study area experienced a large rise in water levels beginning in early December 2021. The largest rise was evident in wells SWFTS-MW02, SWFTS-MW07B, SWFTS-MW10A, and SWFTS-MW10C. The other wells monitored observed a discernable but lesser response. The water level rise in December 2021 appears to correspond to a pressure increase transmitted from the Pond 13 area releases of COH treated effluent. (See below.) Pressure responses travel significantly faster than the actual water, so the increased pressure from the hydraulic head increases at Pond 13 would be expected to transmit fairly rapidly to the study area.

Transducers installed at SWFTS-MW03, SWFTS-MW07B, SWFTS-MW10A, SWFTS-MW10C, SWFTS-MW15, and SWFTS-MW25 were replaced in the reporting period. Data from these wells immediately prior to transducer replacement were not able to be downloaded.

4.0 POND 13 AREA RESULTS

Data from the transducers installed in monitoring wells in the vicinity of Pond 13 were downloaded in March, June, September, November, December 2021 and February 2022. The Pond 13 area data were corrected for barometric pressure and compared to the precipitation data from the nearby C-1 Channel gaging station (USGS 09419745), located east of the treatability study area. ***Figure D.4*** provides hydrographs for the Pond 13 area monitoring wells.

The hydrographs indicate that the Pond 13 area monitoring wells were significantly influenced due to a sizeable release of treated effluent by COH Pond 13 in December 2021. The water level response to treated effluent during 2021 was larger in scale than those observed in 2020, indicating that the amount of treated effluent released in 2021 was likely somewhat larger as well. Monitoring of such releases is important because the treated effluent significantly dilutes perchlorate concentrations that reach the Seep Well Field and treatability study area via groundwater in the paleochannel and via adjacent groundwater outside the paleochannel. In addition, large releases of COH treated effluent can also generate temporary rises in water level in the SWFTS area. Precipitation also appears to have a visible influence on water levels in the Pond 13 area monitoring wells, though not as significant an influence as the treated effluent releases to the nearby Pond 13 area. Precipitation responses are visible as increases in monitoring well water levels shortly following the precipitation events.

5.0 REFERENCES

Tetra Tech. (2016). *Seep Well Field Area Bioremediation Treatability Study Work Plan, Nevada Environmental Response Trust Site, Henderson, Nevada.* May 31.

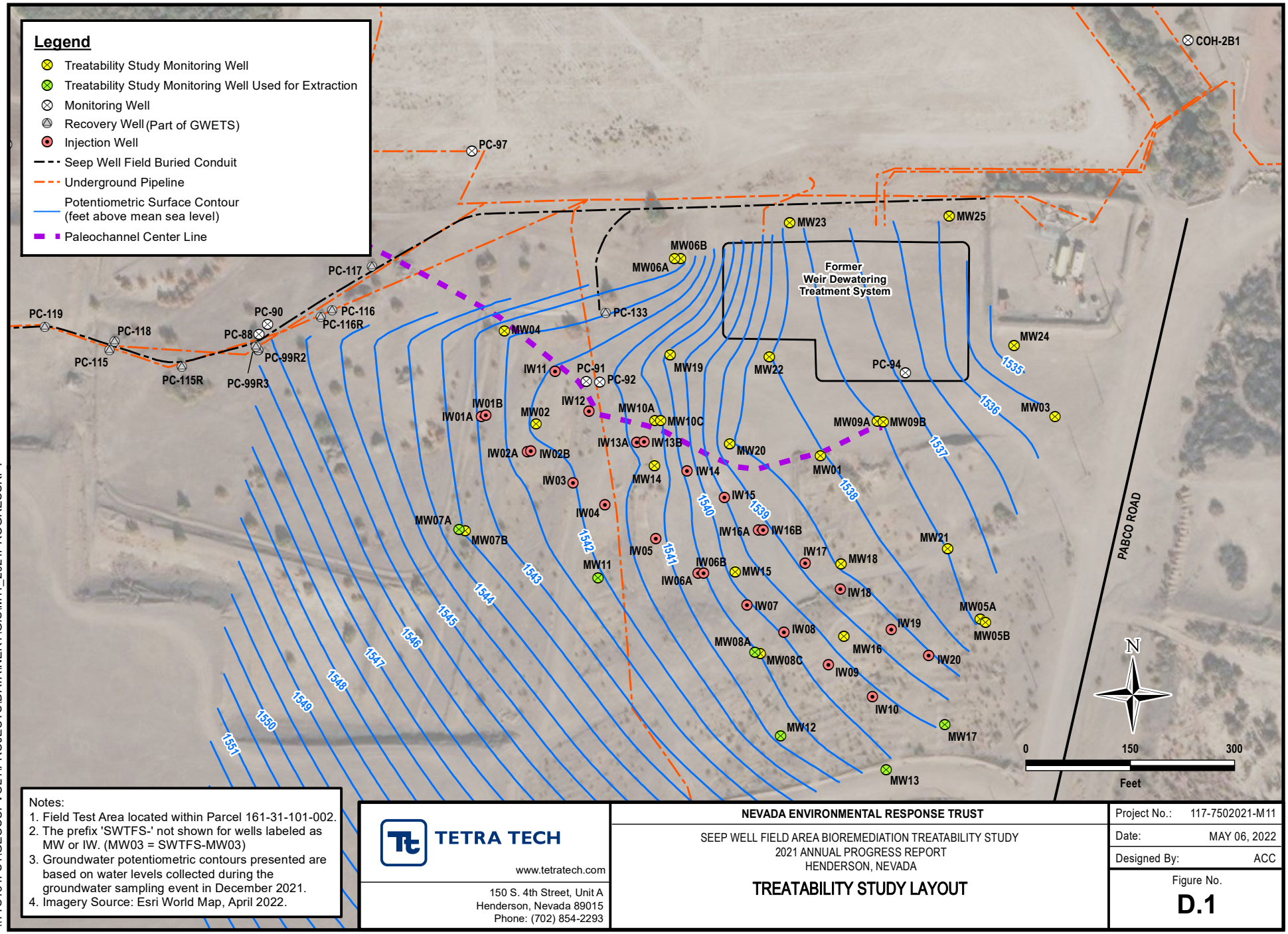
Tetra Tech. (2018). *Treatability/Pilot Study Modification No. 6 - Seep Well Field Area Bioremediation Treatability Study, Nevada Environmental Response Trust, Henderson, Nevada*. December 11.

Tetra Tech. (2019). *Seep Well Field Area Bioremediation Treatability Study Results Report, Nevada Environmental Response Trust Site, Henderson, Nevada.* August 13.

Tetra Tech. (2020). *Seep Well Field Area Bioremediation Treatability Study 2019 Annual Progress Report, Nevada Environmental Response Trust, Henderson, Nevada.* September 4.

Tetra Tech. (2021). *Seep Well Field Area Bioremediation Treatability Study 2020 Annual Progress Report, Nevada Environmental Response Trust, Henderson, Nevada.* September 29.

Figures



Notes:
1. Field Test Area located within Parcel 161-31-101-002.
2. The prefix 'SWTFS-' not shown for wells labeled as MW or IW. (MW03 = SWTFS-MW03)
3. Groundwater potentiometric contours presented are based on water levels collected during the groundwater sampling event in December 2021.
4. Imagery Source: Esri World Map, April 2022.

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NEVADA ENVIRONMENTAL RESPONSE TRUST

SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

TREATABILITY STUDY LAYOUT

Project No.:	117-7502021-M11
Date:	MAY 06, 2022
Designed By:	ACC

Figure No.
D.1

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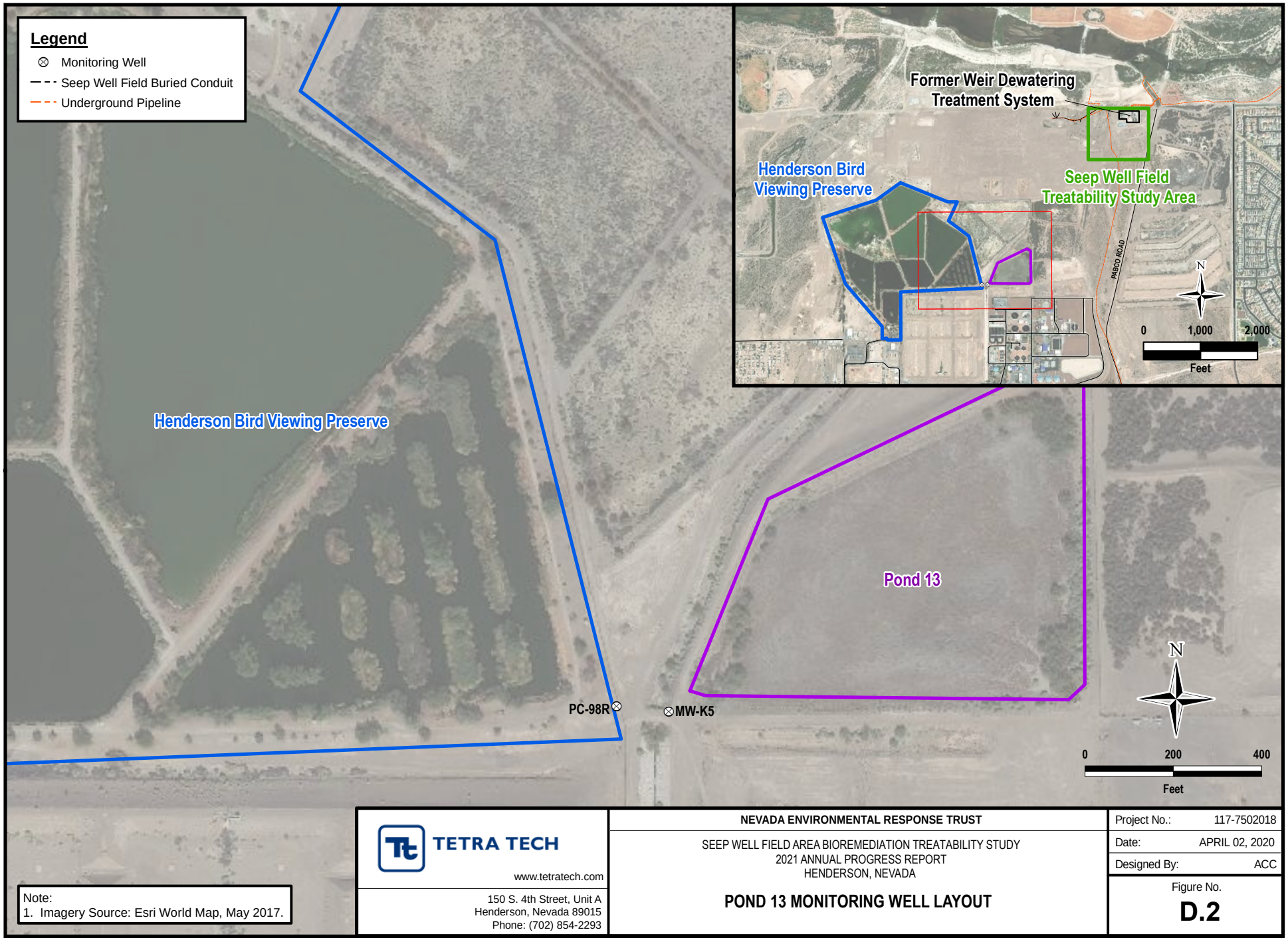

Note:
1. Imagery Source: Esri World Map, May 2017.

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NEVADA ENVIRONMENTAL RESPONSE TRUST

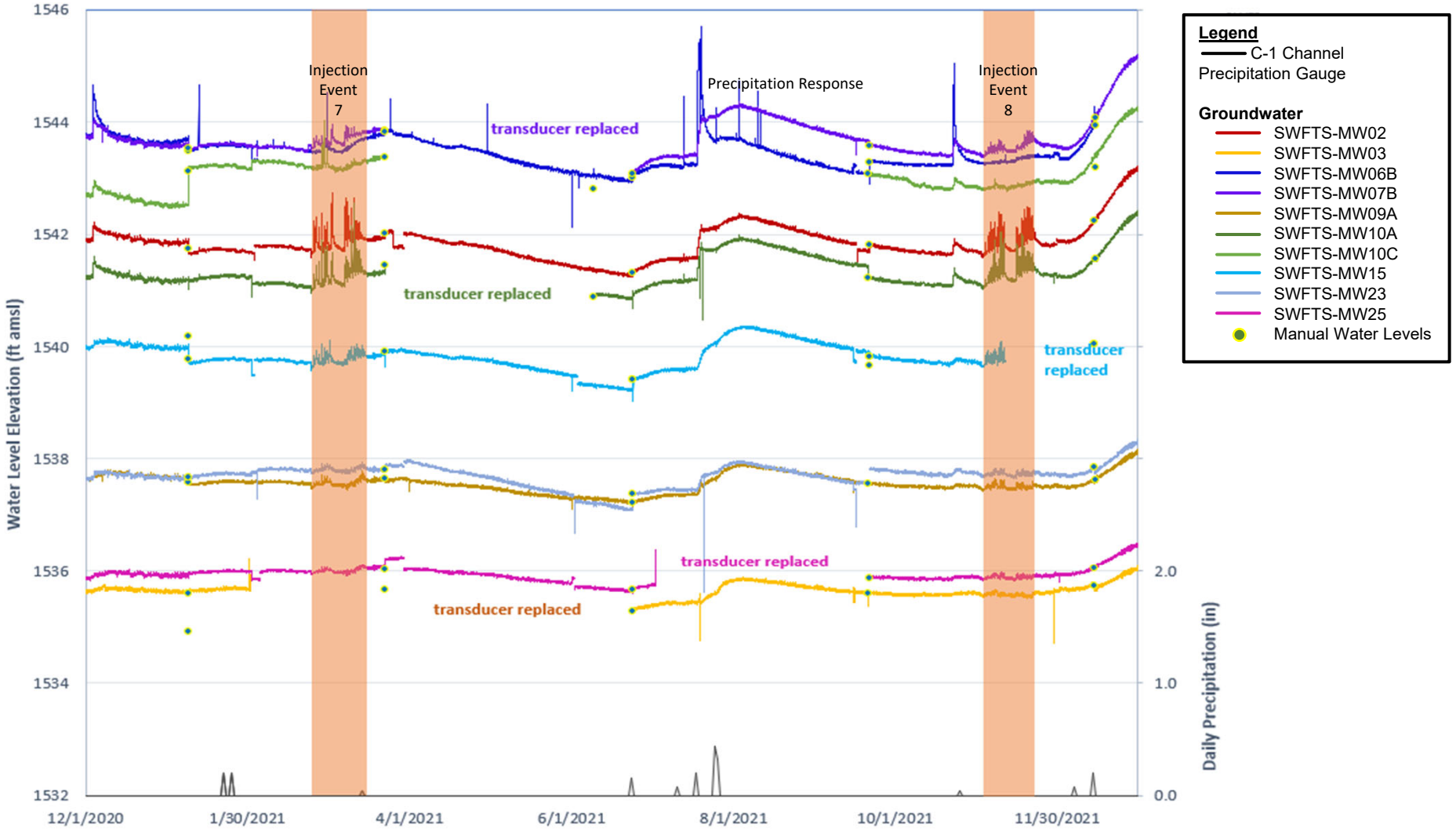
SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

POND 13 MONITORING WELL LAYOUT

Project No.:	117-7502018
Date:	APRIL 02, 2020
Designed By:	ACC

Figure No.
D.2

T:\NERT\M11\NERT_G\S\RESULTS FIGURES\POND13_LOCATION_V2.MXD



Notes:
amsl – above mean sea level

1. Precipitation data was obtained on 01/05/2022 from waterdata.usgs.gov, United States Geological Survey gauging station 09419745 C-1 CHANNEL ABV MOUTH NR Henderson, NV.
2. Data gaps are expected during this reporting period because the transducers were originally installed in 2017, and they typically have a battery life of 4 years. Transducers were replaced as necessary when failure was observed during quarterly downloads.

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2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

HYDROGRAPH FOR SWFTS MONITORING WELLS

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	JDJ

Figure No.
D.3

\\tts134fs1\GEOSUPVOL1\PROJECTS\NERTM\M11\reporting\2021\LTWLM\LTWLM_hydrographs.pptx

Notes:
amsl – above mean sea level

1. Precipitation data was obtained on 01/05/2022 from waterdata.usgs.gov, United States Geological Survey gauging station 09419745 C-1 CHANNEL ABV MOUTH NR Henderson, NV.
2. Data gaps are expected during this reporting period because the transducers were originally installed in 2017, and they typically have a battery life of 4 years. Transducers were replaced as necessary when failure was observed during quarterly downloads.

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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

HYDROGRAPH FOR POND 13 MONITORING WELLS

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	JDJ

Figure No.
D.4

\\tts134fs1\GEOSUPVOL1\PROJECTS\NERT\M11\reporting\2021\LTWLMLTWLM_hydrographs.pptx

Appendix E
Comprehensive Data Tables

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
COH-2B1	BL02	8/9/2017	N	440-189933-1	Alluvium/UMCf	36.0 - 66.0	1,700	1,800	0.71	970	2.3
	EM01	9/22/2017	N	440-192818-16	Alluvium/UMCf	36.0 - 66.0	1,700	1,600	0.53 J	990	2.7
	EM03	10/5/2017	N	440-193712-10	Alluvium/UMCf	36.0 - 66.0	1,800	1,400	0.60	940	2.6
	EM04	10/12/2017	N	440-194204-2	Alluvium/UMCf	36.0 - 66.0	1,800	1,600	0.58	1,000	2.3
	EM05	10/26/2017	N	440-195136-4	Alluvium/UMCf	36.0 - 66.0	1,900	1,400	0.42 J	1,000	2.6
	EM07	12/14/2017	N	440-198571-5	Alluvium/UMCf	36.0 - 66.0	1,700	5,000	0.40	950	2.6
	EM08	2/22/2018	N	440-204033-6	Alluvium/UMCf	36.0 - 66.0	1,500	1,400	0.57 J	1,100	2.9
	EM09	3/29/2018	N	440-207586-2	Alluvium/UMCf	36.0 - 66.0	1,800	1,200	<0.55	940	2.3
	EM10	5/2/2018	N	440-210430-11	Alluvium/UMCf	36.0 - 66.0	1,700	1,200	0.45	910	11
	EM11	7/10/2018	N	440-215437-6	Alluvium/UMCf	36.0 - 66.0	3,000	2,400	1.4	1,100	1.9
	EM13	8/16/2018	N	440-218296-11	Alluvium/UMCf	36.0 - 66.0	1,500	980	0.53 J	940	2.6
	EM14	9/11/2018	N	440-219886-10	Alluvium/UMCf	36.0 - 66.0	2,800	3,800	1.5	1,300	1.9
	EM15	10/11/2018	N	440-222092-1	Alluvium/UMCf	36.0 - 66.0	1,700	1,000	0.54 J	960	2.7
	EM16	1/3/2019	N	440-229111-4	Alluvium/UMCf	36.0 - 66.0	3,200	3,800	2.5	1,300	2.0
	EM17	2/25/2019	N	440-234705-2	Alluvium/UMCf	36.0 - 66.0	3,300	4,100	2.1	1,300	2.2
	EM18	4/9/2019	N	440-238618-6	Alluvium/UMCf	36.0 - 66.0	1,800	570	0.65 J-	930	2.5
	EM19	5/22/2019	N	440-242201-5	Alluvium/UMCf	36.0 - 66.0	1,700	520	0.57	960	2.4
	EM20	7/1/2019	N	440-245068-4	Alluvium/UMCf	36.0 - 66.0	1,800	680	0.59	920	2.7
	EM21	8/15/2019	N	440-248187-7	Alluvium/UMCf	36.0 - 66.0	1,900	660	0.68	980	2.7
	EM22	11/4/2019	N	440-253773-1	Alluvium/UMCf	36.0 - 66.0	2,600	3,200	1.6	1,300	1.9
	EM23	12/18/2019	N	440-257733-1	Alluvium/UMCf	36.0 - 66.0	1,800	610 J-	0.45	900	2.2
	EM24	1/28/2020	N	440-259890-1	Alluvium/UMCf	36.0 - 66.0	3,200	9,200	4.4	2,100 J+	2.2
	EM25	3/9/2020	N	440-262455-1	Alluvium/UMCf	36.0 - 66.0	5,500	11,000	2.4	1,400	2.1 J+
	EM26	4/27/2020	N	440-265243-1	Alluvium/UMCf	36.0 - 66.0	2,000	810	0.68	870	2.1
	EM27	7/7/2020	N	440-268480-1	Alluvium/UMCf	36.0 - 66.0	2,100	900	0.79	900	3.0
	EM29	10/13/2020	N	440-273236-9	Alluvium/UMCf	36.0 - 66.0	3,900	7,100	2.2	1,600	1.9
LVWPS-MW101A	EM11	7/12/2018	N	440-215795-1	Alluvium	23.3 - 33.0	6,300	25,000	15	--	0.82 J
LVWPS-MW104	EM11	7/12/2018	N	440-215795-2	Alluvium	23.8 - 33.5	4,900	35,000	10	--	1.1
	EM13	8/15/2018	N	440-218208-8	Alluvium	23.8 - 33.5	4,600	36,000	10	2,200	1.5
	EM14	9/13/2018	N	440-220125-8	Alluvium	23.8 - 33.5	4,200	36,000	11	2,300	1.4
	EM15	10/10/2018	N	440-221975-5	Alluvium	23.8 - 33.5	4,800	37,000	11	--	1.8
LVWPS-MW107A	EM11	7/12/2018	N	440-215795-7	Alluvium	24.8 - 34.5	4,700	9,000	6.1	--	0.90 J
LVWPS-MW108A	EM11	7/12/2018	FD	440-215795-6	Alluvium	20.8 - 40.7	7,300	17,000	7.2	--	1.3
	EM11	7/12/2018	N	440-215795-5	Alluvium	20.8 - 40.7	7,200	17,000	7.2	--	1.3
	EM13	8/15/2018	N	440-218208-6	Alluvium	20.8 - 40.7	5,700	11,000	6.2	1,500	1.9
	EM14	9/13/2018	N	440-220125-4	Alluvium	20.8 - 40.7	4,800	9,200	6.1 J+	1,500	1.6
	EM15	10/10/2018	N	440-221975-1	Alluvium	20.8 - 40.7	5,300	9,800	5.5	--	1.9
LVWPS-MW109	EM11	7/12/2018	N	440-215795-3	Alluvium	36.8 - 51.5	6,100	25,000	8.9	--	1.2
	EM13	8/15/2018	N	440-218208-7	Alluvium	36.8 - 51.5	4,800	16,000	7.9	1,900	1.9
	EM14	9/13/2018	N	440-220125-1	Alluvium	36.8 - 51.5	4,500	9,200	6.7 J+	1,900	1.3
	EM15	10/10/2018	N	440-221975-6	Alluvium	36.8 - 51.5	4,400	7,300	6.9	--	1.9
LVWPS-MW111A	EM11	7/12/2018	N	440-215795-8	Alluvium	20.8 - 40.5	9,100	28,000	7.2	--	1.8
	EM13	8/15/2018	N	440-218208-9	Alluvium	20.8 - 40.5	7,800	30,000	7.9	1,800	2.0
	EM14	9/13/2018	N	440-220125-2	Alluvium	20.8 - 40.5	6,500	30,000	8.1 J+	1,900	1.4
	EM15	10/10/2018	N	440-221975-2	Alluvium	20.8 - 40.5	7,100	28,000	8.4	--	1.8
LVWPS-MW112A	EM11	7/12/2018	N	440-215795-4	Alluvium	28.8 - 48.0	5,200	28,000	10	--	1.5
	EM15	10/10/2018	N	440-221975-4	Alluvium	28.8 - 48.0	4,700	24,000	10	--	1.7
PC-58	BL01	3/28/2017	N	440-180820-1	Alluvium	7.8 - 32.8	2,600	19,000	9.9	1,200	3.4
	BL02	7/13/2017	N	440-188324-3	Alluvium	7.8 - 32.8	2,600	17,000	9.5	1,500	2.8
	EM04	10/11/2017	N	440-194094-6	Alluvium	7.8 - 32.8	1,800	11,000	9.0	1,100	3.2

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
PC-58	EM06	11/16/2017	N	440-196786-11	Alluvium	7.8 - 32.8	2,100	16,000	10	1,100	2.9
	EM07	12/14/2017	N	440-198571-9	Alluvium	7.8 - 32.8	3,100	24,000	12	1,200	2.9
	EM08	2/21/2018	N	440-203937-13	Alluvium	7.8 - 32.8	3,700	35,000	12	1,300	5.4
	EM09	3/28/2018	N	440-207497-6	Alluvium	7.8 - 32.8	1,400	12,000	9.8	1,300	2.7
	EM10	5/2/2018	N	440-210430-10	Alluvium	7.8 - 32.8	1,200	10,000	9.9	1,400	2.7
	EM11	7/11/2018	N	440-215717-7	Alluvium	7.8 - 32.8	1,100	9,800	10	1,500	2.6
	EM13	8/15/2018	N	440-218208-5	Alluvium	7.8 - 32.8	1,300	13,000	10	1,500	3.1
	EM14	9/13/2018	N	440-220125-5	Alluvium	7.8 - 32.8	1,500	22,000	14	1,100	2.5
	EM15	10/11/2018	N	440-222092-19	Alluvium	7.8 - 32.8	1,300	13,000	12	930	3.5
	EM16	1/3/2019	N	440-229111-7	Alluvium	7.8 - 32.8	980	8,000	10	1,100	3.5
	EM17	3/1/2019	N	440-235133-2	Alluvium	7.8 - 32.8	1,700 J+	13,000	12	1,400	2.8
	EM18	4/9/2019	N	440-238618-10	Alluvium	7.8 - 32.8	1,400	11,000	9.1 J-	1,500	2.6
	EM19	5/22/2019	N	440-242200-7	Alluvium	7.8 - 32.8	1,600	12,000	11	1,400	2.9
	EM20	7/5/2019	N	440-245261-5	Alluvium	7.8 - 32.8	1,600	13,000	11	1,200	3.9
	EM21	8/15/2019	N	440-248187-8	Alluvium	7.8 - 32.8	1,500	10,000	12	1,100	3.7
	EM22	11/7/2019	N	440-254148-1	Alluvium	7.8 - 32.8	1,000	8,700	10	940	3.1
	EM23	12/20/2019	N	440-257938-9	Alluvium	7.8 - 32.8	4,000	30,000	13	980	2.4
	EM24	1/30/2020	N	440-260036-1	Alluvium	7.8 - 32.8	3,200	36,000	14	980	2.7
	EM25	3/11/2020	N	440-262720-1	Alluvium	7.8 - 32.8	2,800	33,000	12	1,000	2.7
	EM26	5/1/2020	N	440-265414-3	Alluvium	7.8 - 32.8	840	8,500	7.7	1,300	2.3
	EM27	7/9/2020	N	440-268680-6	Alluvium	7.8 - 32.8	850	6,400	9.1	1,800	2.5
	EM28	8/19/2020	N	440-270632-9	Alluvium	7.8 - 32.8	830	10,000	8.8	900	3.7
	EM29	10/16/2020	N	440-273433-5	Alluvium	7.8 - 32.8	700	7,400	7.7	670	3.5
	EM30	12/10/2020	N	550-154531-1	Alluvium	7.8 - 32.8	560	5,700	7.6	660	2.6
	EM31	2/1/2021	N	550-157577-6	Alluvium	7.8 - 32.8	730	61,000	7.5	690	2.5
	EM32	4/1/2021	N	550-161146-9	Alluvium	7.8 - 32.8	730	5,700	9.4 J	650	2.5
	EM33	6/2/2021	N	550-164872-23	Alluvium	7.8 - 32.8	680 J-	6,900 J-	8.9 J-	810 J-	2.6 J-
	EM34	7/22/2021	N	550-167639-6	Alluvium	7.8 - 32.8	810	7,700	8.7	790	2.6
	EM35	9/16/2021	N	550-170815-23	Alluvium	7.8 - 32.8	790	5,600	9.9 J	1,200	2.8
	EM36	12/3/2021	N	550-175222-11	Alluvium	7.8 - 32.8	820	6,300	9.1	940	2.7
PC-88	EM01	9/22/2017	N	440-192818-10	Alluvium	40.0 - 50.0	15,000	6,900	4.8	1,000	2.7
	EM02	9/28/2017	N	440-193167-7	Alluvium	40.0 - 50.0	14,000 J+	6,300	5.8	1,100	2.8
	EM03	10/4/2017	N	440-193622-6	Alluvium	40.0 - 50.0	15,000	6,100	5.1	1,000	2.6
	EM04	10/11/2017	FD	440-194090-3	Alluvium	40.0 - 50.0	15,000	6,000	4.6	1,000	2.6
	EM04	10/11/2017	N	440-194090-2	Alluvium	40.0 - 50.0	15,000	6,200	4.6	1,000	2.5
	EM05	10/25/2017	N	440-195026-9	Alluvium	40.0 - 50.0	15,000	5,400	5.0	1,000	2.8
	EM06	11/15/2017	FD	440-196690-10	Alluvium	40.0 - 50.0	16,000	5,700	4.6	1,000	2.9
	EM06	11/15/2017	N	440-196690-9	Alluvium	40.0 - 50.0	15,000	5,700	4.5	990	2.8
	EM07	12/14/2017	N	440-198571-11	Alluvium	40.0 - 50.0	19,000	20,000	9.9	1,200	2.7
	EM08	2/22/2018	N	440-204033-10	Alluvium	40.0 - 50.0	6,700	14,000	12	720	3.0
	EM09	3/29/2018	N	440-207586-3	Alluvium	40.0 - 50.0	9,100	20,000	13	870	2.2
	EM10	5/2/2018	FD	440-210430-9	Alluvium	40.0 - 50.0	6,600	11,000	12	700	2.5
	EM10	5/2/2018	N	440-210430-8	Alluvium	40.0 - 50.0	7,100	11,000	11	710	2.3
	EM11	7/12/2018	FD	440-215717-12	Alluvium	40.0 - 50.0	16,000	12,000	7.6	910	2.3
	EM11	7/12/2018	N	440-215717-11	Alluvium	40.0 - 50.0	16,000	12,000	7.8	910	2.4
	EM13	8/16/2018	FD	440-218296-10	Alluvium	40.0 - 50.0	11,000	6,800	6.0	940	2.9
	EM13	8/16/2018	N	440-218296-9	Alluvium	40.0 - 50.0	10,000	6,700	6.0	930	2.9
	EM14	9/12/2018	FD	440-220031-16	Alluvium	40.0 - 50.0	19,000	13,000	6.7	1,000	2.4
	EM14	9/12/2018	N	440-220031-15	Alluvium	40.0 - 50.0	19,000	13,000	6.7	1,000	2.6
	EM15	10/11/2018	FD	440-222092-16	Alluvium	40.0 - 50.0	15,000	15,000	7.5	1,000	2.7

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Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
PC-88	EM15	10/11/2018	N	440-222092-15	Alluvium	40.0 - 50.0	15,000	15,000	6.3 J-	1,000	2.7
	EM16	1/3/2019	FD	440-229111-6	Alluvium	40.0 - 50.0	12,000	9,900	7.5	860	2.8
	EM16	1/3/2019	N	440-229111-5	Alluvium	40.0 - 50.0	12,000	9,900	7.5	850	2.7
	EM17	2/28/2019	FD	440-235000-9	Alluvium	40.0 - 50.0	9,100	5,700	4.4	770	3.1
	EM17	2/28/2019	N	440-235000-8	Alluvium	40.0 - 50.0	9,300	5,700	4.4	770	2.9
	EM18	4/9/2019	FD	440-238618-8	Alluvium	40.0 - 50.0	13,000	10,000	5.0 J-	900	2.7
	EM18	4/9/2019	N	440-238618-7	Alluvium	40.0 - 50.0	12,000	11,000	5.1 J-	910	2.6
	EM19	5/22/2019	FD	440-242201-3	Alluvium	40.0 - 50.0	10,000	6,400	5.0	850	2.5
	EM19	5/22/2019	N	440-242201-2	Alluvium	40.0 - 50.0	10,000	6,200	4.9	850	2.6
	EM20	7/5/2019	FD	440-245261-4	Alluvium	40.0 - 50.0	10,000	5,000	3.4	720	3.2
	EM20	7/5/2019	N	440-245261-3	Alluvium	40.0 - 50.0	8,800	5,100	3.4	710	3.2
	EM21	8/15/2019	FD	440-248187-10	Alluvium	40.0 - 50.0	9,900	3,300	3.1	730	3.0
	EM21	8/15/2019	N	440-248187-9	Alluvium	40.0 - 50.0	9,700	3,300	2.8	740	3.0
	EM22	11/7/2019	FD	440-254148-3	Alluvium	40.0 - 50.0	11,000	15,000	5.5	830	2.4
	EM22	11/7/2019	N	440-254148-2	Alluvium	40.0 - 50.0	11,000	14,000	5.6	850	2.5
	EM23	12/20/2019	FD	440-257938-8	Alluvium	40.0 - 50.0	12,000	9,100	5.1	850	2.2
	EM23	12/20/2019	N	440-257938-7	Alluvium	40.0 - 50.0	11,000	9,200	5.4	860	2.2
	EM24	1/30/2020	FD	440-260036-3	Alluvium	40.0 - 50.0	9,900	13,000	7.9	820	2.7
	EM24	1/30/2020	N	440-260036-2	Alluvium	40.0 - 50.0	9,900	13,000	7.9	840	2.7
	EM25	3/12/2020	FD	440-262905-3	Alluvium	40.0 - 50.0	7,700	6,900	5.5	660	2.4
	EM25	3/12/2020	N	440-262905-2	Alluvium	40.0 - 50.0	7,900	7,000	5.3	660	2.5
	EM26	5/1/2020	FD	440-265412-3	Alluvium	40.0 - 50.0	15,000	16,000	8.7	840	2.1
	EM26	5/1/2020	N	440-265412-2	Alluvium	40.0 - 50.0	15,000	16,000	8.2	820	2.1
	EM27	7/9/2020	FD	440-268680-3	Alluvium	40.0 - 50.0	13,000	8,600	7.3	900	3.0
	EM27	7/9/2020	N	440-268680-2	Alluvium	40.0 - 50.0	14,000	8,400	7.6	890	2.7 J-
	EM28	8/19/2020	FD	440-270632-8	Alluvium	40.0 - 50.0	12,000	5,800	4.7	770	2.7
	EM28	8/19/2020	N	440-270632-7	Alluvium	40.0 - 50.0	11,000	6,000	4.8	790	2.9
	EM29	10/15/2020	FD	550-151259-11	Alluvium	40.0 - 50.0	15,000	12,000	6.7	920	2.2
	EM29	10/15/2020	N	550-151259-10	Alluvium	40.0 - 50.0	15,000	12,000	6.6	920	2.3
	EM30	12/10/2020	FD	550-154531-3	Alluvium	40.0 - 50.0	7,400	3,800	2.7	680	3.3
	EM30	12/10/2020	N	550-154531-2	Alluvium	40.0 - 50.0	7,200	3,800	2.7	680	2.6
	EM31	2/2/2021	FD	550-157679-2	Alluvium	40.0 - 50.0	3,500	1,500	1.1	510	2.7 J+
	EM31	2/2/2021	N	550-157679-1	Alluvium	40.0 - 50.0	3,700	1,500	1.0	500	2.6 J+
	EM32	3/30/2021	FD	550-160995-11	Alluvium	40.0 - 50.0	2,400	830	0.59	480	2.8
	EM32	3/30/2021	N	550-160995-10	Alluvium	40.0 - 50.0	2,500	900 J	0.60	480	2.8
	EM33	6/3/2021	FD	550-164869-27	Alluvium	40.0 - 50.0	2,400	1,100	0.87	460	2.7
	EM33	6/3/2021	N	550-164869-25	Alluvium	40.0 - 50.0	2,300	1,100	0.87	460	2.5
	EM34	7/22/2021	FD	550-167639-2	Alluvium	40.0 - 50.0	5,200	1,500	1.5	500	2.9
	EM34	7/22/2021	N	550-167639-1	Alluvium	40.0 - 50.0	5,300	1,400	1.5	500	2.7
	EM35	9/16/2021	FD	550-170815-22	Alluvium	40.0 - 50.0	9,800	4,700	3.8 J	710	2.6
	EM35	9/16/2021	N	550-170815-21	Alluvium	40.0 - 50.0	10,000	4,600	3.8 J	720	2.5
	EM36	12/2/2021	FD	550-175153-7	Alluvium	40.0 - 50.0	4,300	1,500	1.4	560	2.9 J+
	EM36	12/2/2021	N	550-175153-5	Alluvium	40.0 - 50.0	4,200	1,400	1.4	590	2.9 J+
PC-91	BL01	3/29/2017	N	440-180937-1	Alluvium	11.5 - 21.5	2,400	1,700	1.4	1,100	2.7
	BL02	7/12/2017	FD	440-188244-4	Alluvium	11.5 - 21.5	2,400	1,500	1.1	790	2.3
	BL02	7/12/2017	N	440-188247-5	Alluvium	11.5 - 21.5	2,500	1,600	1.2	840	2.4
	EM01	9/21/2017	N	440-192728-6	Alluvium	11.5 - 21.5	1,600	820	0.50 J	730	2.3
	EM02	9/27/2017	N	440-193062-16	Alluvium	11.5 - 21.5	1,700	810	0.57	770	2.8
	EM03	10/4/2017	N	440-193625-2	Alluvium	11.5 - 21.5	1,300	590	0.58	700	2.9
	EM04	10/12/2017	N	440-194204-3	Alluvium	11.5 - 21.5	960	440	0.35	770	2.5

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
PC-91	EM05	10/25/2017	N	440-195026-4	Alluvium	11.5 - 21.5	750	370	0.62	740	2.7
	EM06	11/16/2017	N	440-196786-8	Alluvium	11.5 - 21.5	700	610	0.65 J-	670	2.8
	EM07	12/13/2017	N	440-198508-9	Alluvium	11.5 - 21.5	770	520	0.38	650	2.5
	EM08	2/20/2018	N	440-203841-1	Alluvium	11.5 - 21.5	900	1,100	0.88 J	770	2.8
	EM09	3/26/2018	N	440-207137-1	Alluvium	11.5 - 21.5	930	1,200	0.78	700	2.5
	EM10	5/1/2018	N	440-210284-3	Alluvium	11.5 - 21.5	860	260	0.56	650	2.4
	EM11	7/11/2018	N	440-215585-6	Alluvium	11.5 - 21.5	190	<5.0	<0.28	480	2.7
	EM12	7/27/2018	N	440-216872-16	Alluvium	11.5 - 21.5	160	<2.0	--	--	--
	EM13	8/14/2018	N	440-218109-1	Alluvium	11.5 - 21.5	310	12 J	<0.28	--	3.0
	EM14	9/12/2018	N	440-220031-12	Alluvium	11.5 - 21.5	440	21	<0.28	560	2.6
	EM15	10/10/2018	N	440-221975-16	Alluvium	11.5 - 21.5	460	80	<0.55	570	3.1
	EM16	12/20/2018	N	440-228491-4	Alluvium	11.5 - 21.5	220	47 J	<0.11	540	3.2
	EM17	2/26/2019	N	440-234812-3	Alluvium	11.5 - 21.5	67	<10	<0.55	520	3.8
	EM18	4/10/2019	N	440-238544-6	Alluvium	11.5 - 21.5	190	38 J	<0.55	480	4.5
	EM19	5/21/2019	N	440-242084-9	Alluvium	11.5 - 21.5	120	56	0.81	500	3.6
	EM20	7/1/2019	N	440-245046-1	Alluvium	11.5 - 21.5	120	52	<0.28	460	3.8
	EM21	8/12/2019	N	440-247878-1	Alluvium	11.5 - 21.5	39 J+	14 J	<0.28	450	3.6
	EM22	11/6/2019	N	440-254027-3	Alluvium	11.5 - 21.5	1.5 J	<10	<0.55	460	5.9
	EM23	12/17/2019	N	440-257635-9	Alluvium	11.5 - 21.5	6.9	<10	<0.55	440	4.3
	EM24	1/28/2020	N	440-259890-2	Alluvium	11.5 - 21.5	230	100	<0.28	490 J+	4.2
	EM25	3/12/2020	N	440-262905-6	Alluvium	11.5 - 21.5	310	170	<0.28	560	3.6
	EM26	4/30/2020	N	440-265382-2	Alluvium	11.5 - 21.5	460	500	<0.28	610	3.9
	EM27	7/7/2020	N	440-268480-7	Alluvium	11.5 - 21.5	<0.95	<10	<0.28	280	12
	EM28	8/17/2020	N	440-270515-3	Alluvium	11.5 - 21.5	<0.95	750	<0.55	500	8.2
	EM29	10/14/2020	N	440-273303-11	Alluvium	11.5 - 21.5	<1.9	36 J	<0.28	510	5.6
	EM30	12/9/2020	N	550-154431-5	Alluvium	11.5 - 21.5	<0.31	<10	<0.014	580	4.4
	EM31	2/1/2021	N	550-157577-1	Alluvium	11.5 - 21.5	50	14 J	<0.014	650	5.1
	EM32	3/29/2021	N	550-160937-1	Alluvium	11.5 - 21.5	<0.31	<24 UJ	<0.014	2.3	530 J-
	EM33	6/2/2021	N	550-164872-17	Alluvium	11.5 - 21.5	<0.31 UJ	200 J-	<0.014 UJ	65 J-	110 J-
	EM34	7/20/2021	N	550-167449-8	Alluvium	11.5 - 21.5	<0.31	170	0.044 J	78	25
	EM35	9/16/2021	N	550-170815-20	Alluvium	11.5 - 21.5	2.3	73 J	<0.014 UJ	98	13
	EM36	11/30/2021	N	550-174968-1	Alluvium	11.5 - 21.5	0.64 J	170	0.028 J	1.8 J	210
PC-92	BL01	3/29/2017	N	440-180937-2	Alluvium	26.5 - 36.5	9,600	17,000	4.2	1,200	2.8
	BL02	7/12/2017	N	440-188247-6	Alluvium	26.5 - 36.5	4,400	10,000	2.6	1,100	2.8
	EM01	9/21/2017	N	440-192728-7	Alluvium	26.5 - 36.5	3,100	7,700	1.7	960	2.6
	EM02	9/27/2017	N	440-193062-8	Alluvium	26.5 - 36.5	3,500	6,800	1.7	950	2.8
	EM03	10/4/2017	N	440-193625-3	Alluvium	26.5 - 36.5	3,700	7,100	2.6	950	2.8
	EM04	10/12/2017	FD	440-194204-5	Alluvium	26.5 - 36.5	3,700	6,700	2.0	1,100	2.6
	EM04	10/12/2017	N	440-194204-4	Alluvium	26.5 - 36.5	3,700	7,300	2.1	1,100	2.8
	EM05	10/25/2017	N	440-195026-3	Alluvium	26.5 - 36.5	4,000	6,900	2.3	1,100	2.9
	EM06	11/16/2017	FD	440-196786-10	Alluvium	26.5 - 36.5	2,100	1,300	1.1	930	3.3
	EM06	11/16/2017	N	440-196786-9	Alluvium	26.5 - 36.5	2,100	1,300	1.6	790	3.2
	EM07	12/14/2017	FD	440-198571-8	Alluvium	26.5 - 36.5	3,300	4,800	1.8	1,100	3.0
	EM07	12/14/2017	N	440-198571-7	Alluvium	26.5 - 36.5	3,300	4,600	2.1	980	3.0
	EM08	2/20/2018	FD	440-203841-3	Alluvium	26.5 - 36.5	5,000	7,400	2.7	960	3.2
	EM08	2/20/2018	N	440-203841-2	Alluvium	26.5 - 36.5	4,900	7,700	2.7	950	3.2
	EM09	3/26/2018	FD	440-207137-3	Alluvium	26.5 - 36.5	8,000	18,000	4.5	1,200	2.5
	EM09	3/26/2018	N	440-207137-2	Alluvium	26.5 - 36.5	7,900	19,000	4.5	1,100	2.5
	EM10	5/1/2018	N	440-210284-4	Alluvium	26.5 - 36.5	9,200	22,000	5.6	1,200	2.4
	EM11	7/11/2018	N	440-215585-5	Alluvium	26.5 - 36.5	7,300	17,000	4.2	1,000	2.3

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
PC-92	EM12	7/27/2018	N	440-216872-15	Alluvium	26.5 - 36.5	5,200	15,000	--	--	--
	EM13	8/15/2018	N	440-218208-1	Alluvium	26.5 - 36.5	4,700	13,000	3.1	910	3.0
	EM14	9/12/2018	N	440-220031-13	Alluvium	26.5 - 36.5	4,100	12,000	2.6	950	2.6
	EM15	10/11/2018	N	440-222092-17	Alluvium	26.5 - 36.5	4,200	12,000	3.4	980	2.9
	EM16	12/20/2018	N	440-228491-5	Alluvium	26.5 - 36.5	3,500	13,000	2.6	820	3.1
	EM17	2/26/2019	N	440-234812-2	Alluvium	26.5 - 36.5	2,700	13,000	1.5	880	2.7
	EM18	4/10/2019	N	440-238544-7	Alluvium	26.5 - 36.5	3,100	8,200	2.2	870	2.7
	EM19	5/21/2019	N	440-242084-10	Alluvium	26.5 - 36.5	2,500	6,000	1.5	750	2.3
	EM20	7/1/2019	N	440-245046-2	Alluvium	26.5 - 36.5	3,100	7,000	1.8	840	3.4
	EM21	8/12/2019	N	440-247878-2	Alluvium	26.5 - 36.5	2,800	3,500	1.1	630	3.3
	EM22	11/6/2019	N	440-254027-2	Alluvium	26.5 - 36.5	4,000	11,000	2.0	970	2.8
	EM23	12/17/2019	N	440-257635-10	Alluvium	26.5 - 36.5	3,100	7,700	2.0	810	2.8
	EM24	1/28/2020	N	440-259890-3	Alluvium	26.5 - 36.5	6,700	20,000	4.7	840 J+	3.0
	EM25	3/12/2020	N	440-262905-5	Alluvium	26.5 - 36.5	8,800	26,000	6.4	1,100	2.5
	EM26	4/30/2020	N	440-265382-1	Alluvium	26.5 - 36.5	3,400	5,300	1.8	830	4.0
	EM27	7/7/2020	N	440-268480-8	Alluvium	26.5 - 36.5	8,600	23,000	5.9	970	3.5
	EM28	8/17/2020	N	440-270515-4	Alluvium	26.5 - 36.5	6,500	20,000	5.0	920	2.9
	EM29	10/14/2020	N	440-273303-10	Alluvium	26.5 - 36.5	6,300	19,000	4.1	1,000	2.5
	EM30	12/9/2020	N	550-154431-4	Alluvium	26.5 - 36.5	5,100	14,000	3.9	1,000	2.5
	EM31	2/1/2021	N	550-157577-2	Alluvium	26.5 - 36.5	7,900	33,000 J	4.2	1,100	2.7
	EM32	3/29/2021	N	550-160937-2	Alluvium	26.5 - 36.5	5,500	11,000	2.7	930	2.5
	EM33	6/2/2021	N	550-164872-19	Alluvium	26.5 - 36.5	6,400 J-	21,000 J-	4.8 J-	1,100 J-	2.5 J-
	EM34	7/20/2021	N	550-167449-9	Alluvium	26.5 - 36.5	4,000	7,800	2.5	780	3.2
	EM35	9/16/2021	N	550-170815-19	Alluvium	26.5 - 36.5	10,000	22,000 J+	6.4 J	1,200	2.2
	EM36	11/30/2021	N	550-174968-3	Alluvium	26.5 - 36.5	4,200	7,400	1.8	1,200	3.2 J+
PC-94	BL01	3/28/2017	N	440-180820-2	Alluvium	9.5 - 19.5	13,000	51,000	12	1,800	1.7
	BL02	7/13/2017	N	440-188325-1	Alluvium	9.5 - 19.5	14,000	47,000	12	1,800	1.3
	EM01	9/20/2017	N	440-192728-5	Alluvium	9.5 - 19.5	2,300	3,800	0.58 J	1,800	34
	EM02	9/26/2017	N	440-193062-14	Alluvium	9.5 - 19.5	2,000	3,700	<1.1	1,800	37
	EM03	10/5/2017	N	440-193712-18	Alluvium	9.5 - 19.5	1,700	3,600	1.3 J	1,600	5.2
	EM04	10/11/2017	N	440-194090-6	Alluvium	9.5 - 19.5	970	2,900	0.78 J	1,700	3.9
	EM05	10/26/2017	N	440-195136-1	Alluvium	9.5 - 19.5	540	1,300	1.4	1,700	3.1
	EM06	11/16/2017	N	440-196786-17	Alluvium	9.5 - 19.5	1,500	1,300	0.57 J	1,300	2.2
	EM07	12/12/2017	N	440-198371-14	Alluvium	9.5 - 19.5	4,300	9,300	0.68	1,400	2.1
	EM08	2/21/2018	N	440-203937-12	Alluvium	9.5 - 19.5	7,200	19,000	4.9	1,500	2.1
	EM09	3/27/2018	N	440-207268-8	Alluvium	9.5 - 19.5	6,400	16,000	4.8	1,500	1.9
	EM10	5/1/2018	N	440-210284-14	Alluvium	9.5 - 19.5	6,700	18,000	6.3	1,400	1.5
	EM11	7/10/2018	N	440-215437-1	Alluvium	9.5 - 19.5	4,200	7,200	5.6	1,600	2.0
	EM12	7/27/2018	N	440-216872-12	Alluvium	9.5 - 19.5	1,500	1,600	--	--	--
	EM13	8/15/2018	N	440-218208-2	Alluvium	9.5 - 19.5	2,600	1,800	3.2	1,500	2.2
	EM14	9/11/2018	N	440-219886-9	Alluvium	9.5 - 19.5	3,500	6,200	5.2	1,500	1.7
	EM15	10/11/2018	N	440-222092-18	Alluvium	9.5 - 19.5	3,900	10,000	8.2	1,500	1.9
	EM16	12/28/2018	N	440-228887-2	Alluvium	9.5 - 19.5	3,200	9,000	8.3	1,400	1.7
	EM17	2/27/2019	N	440-234938-1	Alluvium	9.5 - 19.5	3,100	6,700	6.4	1,400	1.8
	EM18	4/11/2019	N	440-238688-6	Alluvium	9.5 - 19.5	3,000	5,600	5.2	1,500	1.8
	EM19	5/22/2019	N	440-242201-4	Alluvium	9.5 - 19.5	3,600	11,000	7.6	1,500	1.7
	EM20	7/5/2019	N	440-245259-1	Alluvium	9.5 - 19.5	4,100	16,000	8.2	1,400	2.9
	EM21	8/12/2019	N	440-247878-4	Alluvium	9.5 - 19.5	4,600	16,000	7.8	1,200	2.0
	EM22	11/6/2019	N	440-254027-1	Alluvium	9.5 - 19.5	4,200	16,000	7.8	1,300	1.6
	EM23	12/19/2019	N	440-257866-4	Alluvium	9.5 - 19.5	4,000	16,000	6.3	1,200	1.7

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Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
PC-94	EM24	1/30/2020	N	440-260036-5	Alluvium	9.5 - 19.5	5,600	44,000	7.8	1,200	1.8
	EM25	3/10/2020	N	440-262640-4	Alluvium	9.5 - 19.5	7,100	27,000	8.5 J-	1,300	1.8
	EM26	4/28/2020	N	440-265289-2	Alluvium	9.5 - 19.5	7,400	28,000	8.2	1,300	1.5
	EM27	7/6/2020	N	440-268415-1	Alluvium	9.5 - 19.5	5,100	14,000	6.7	1,400	2.5
	EM28	8/18/2020	N	440-270571-6	Alluvium	9.5 - 19.5	5,400	18,000	5.1	1,400	2.4
	EM29	10/15/2020	N	550-151259-7	Alluvium	9.5 - 19.5	5,900	19,000	7.5	1,300	1.6
	EM30	12/8/2020	N	550-154358-11	Alluvium	9.5 - 19.5	4,400	19,000	8.0	1,400	1.6
	EM31	2/1/2021	N	550-157577-3	Alluvium	9.5 - 19.5	6,500	20,000	8.1	1,400	1.4
	EM32	3/29/2021	N	550-160937-3	Alluvium	9.5 - 19.5	5,300	9,400 J+	6.0	1,200	1.6
	EM33	6/2/2021	N	550-164872-21	Alluvium	9.5 - 19.5	5,300 J-	13,000 J-	6.4 J-	1,300 J-	1.4 J-
	EM34	7/20/2021	N	550-167449-1	Alluvium	9.5 - 19.5	7,400	25,000	7.9	1,300	1.6
	EM35	9/15/2021	N	550-170733-8	Alluvium	9.5 - 19.5	9,100	22,000	8.2	2,000	1.6
	EM36	11/30/2021	N	550-174968-5	Alluvium	9.5 - 19.5	11,000	31,000	9.1	1,700	2.1 J+
PC-97	BL02	7/13/2017	N	440-188325-8	Alluvium	23.0 - 33.0	1,900	180	0.84	800	3.0
	EM01	9/22/2017	FD	440-192818-12	Alluvium	23.0 - 33.0	2,900	340	2.2	1,000	3.0
	EM01	9/22/2017	N	440-192818-13	Alluvium	23.0 - 33.0	2,900	360	2.1	1,000	3.0
	EM02	9/28/2017	FD	440-193167-10	Alluvium	23.0 - 33.0	2,700	380	2.0	1,100	3.6
	EM02	9/28/2017	N	440-193167-9	Alluvium	23.0 - 33.0	2,600	370	2.1	1,100	3.6
	EM03	10/4/2017	FD	440-193625-1	Alluvium	23.0 - 33.0	2,900	410	2.3	970	2.8
	EM03	10/4/2017	N	440-193622-8	Alluvium	23.0 - 33.0	2,900	460	2.6	900	2.7
	EM04	10/11/2017	FD	440-194242-6	Alluvium	23.0 - 33.0	2,700	390	2.3	1,000	2.8
	EM04	10/11/2017	N	440-194242-5	Alluvium	23.0 - 33.0	2,500	400	2.5	1,000	2.7
	EM05	10/25/2017	FD	440-195026-7	Alluvium	23.0 - 33.0	3,300	410	2.9	1,100	2.9
	EM05	10/25/2017	N	440-195026-6	Alluvium	23.0 - 33.0	3,400	390	2.9	1,100	2.8
	EM06	11/16/2017	N	440-196786-13	Alluvium	23.0 - 33.0	1,600	190	1.8	1,200	3.2
	EM07	12/13/2017	FD	440-198508-12	Alluvium	23.0 - 33.0	3,000	320	1.9	930	3.0
	EM07	12/13/2017	N	440-198508-11	Alluvium	23.0 - 33.0	2,600	320	1.6	930	3.0
	EM08	2/21/2018	N	440-203937-4	Alluvium	23.0 - 33.0	1,500	77	0.56	750	3.3
	EM09	3/27/2018	N	440-207268-4	Alluvium	23.0 - 33.0	900	<10	0.19	710	3.3
	EM10	5/1/2018	N	440-210284-7	Alluvium	23.0 - 33.0	820	<5.0	0.088 J	610	3.2
	EM11	7/10/2018	N	440-215437-3	Alluvium	23.0 - 33.0	1,700	91	0.32	690	3.0
	EM13	8/16/2018	N	440-218296-8	Alluvium	23.0 - 33.0	1,100	85	0.38 J+	760	3.4
	EM14	9/12/2018	N	440-220031-17	Alluvium	23.0 - 33.0	2,400	210	0.82	760	3.0
	EM15	10/11/2018	N	440-222092-13	Alluvium	23.0 - 33.0	1,700	160	0.71	820	3.4
	EM16	1/3/2019	N	440-229111-3	Alluvium	23.0 - 33.0	1,500	64	0.33	680	3.2
	EM17	2/28/2019	N	440-235000-7	Alluvium	23.0 - 33.0	1,300	80	0.71	720	3.5
	EM18	4/9/2019	N	440-238618-9	Alluvium	23.0 - 33.0	1,600	150	0.71 J-	790	3.0
	EM19	5/22/2019	N	440-242201-1	Alluvium	23.0 - 33.0	2,300	280	1.8	920	3.1
	EM20	7/5/2019	N	440-245261-2	Alluvium	23.0 - 33.0	2,800	360	1.9	950	3.7
	EM21	8/14/2019	N	440-248104-11	Alluvium	23.0 - 33.0	3,100	330	1.7	860	3.3
	EM22	11/6/2019	N	440-254027-7	Alluvium	23.0 - 33.0	1,800	30	1.3	790	2.8
	EM23	12/20/2019	N	440-257938-6	Alluvium	23.0 - 33.0	1,100	48 J	0.29	670	3.1
	EM24	1/30/2020	N	440-260036-4	Alluvium	23.0 - 33.0	640	<4.0	0.12 J	610	3.4
	EM25	3/12/2020	N	440-262905-1	Alluvium	23.0 - 33.0	400	<2.0	<0.11	540	3.2
	EM26	4/30/2020	N	440-265383-7	Alluvium	23.0 - 33.0	390	<10	<0.11	550	3.2
	EM27	7/9/2020	N	440-268680-1	Alluvium	23.0 - 33.0	1,600	45 J	0.36	710	3.6
	EM29	10/15/2020	N	550-151259-9	Alluvium	23.0 - 33.0	2,100	110	1.1	730	3.2
SWFTS-IW01A	BL02	7/11/2017	N	440-188133-3	Alluvium	15.8 - 25.6	20,000	51,000	12	--	--
	EM06	11/14/2017	N	440-196558-6	Alluvium	15.8 - 25.6	42	--	<0.55	--	610 J-
	EM06	11/14/2017	N	440-196558-7	Alluvium	15.8 - 25.6	--	--	--	--	610 J-

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-IW01B	BL02	7/11/2017	N	440-188133-13	Alluvium	26.9 - 36.7	20,000	48,000	11	--	--
	EM06	11/14/2017	N	440-196558-8	Alluvium	26.9 - 36.7	--	--	--	--	160 J-
	EM06	11/15/2017	N	440-196690-5	Alluvium	26.9 - 36.7	170	--	<0.55	--	220
SWFTS-IW02A	BL02	7/11/2017	N	440-188133-14	Alluvium	16.8 - 26.6	22,000	52,000	12	2,100	2.0
	EM06	11/14/2017	N	440-196558-9	Alluvium	16.8 - 26.6	--	--	--	--	3,900 J-
SWFTS-IW02B	BL02	7/11/2017	N	440-188133-2	Alluvium	26.3 - 36.1	22,000	55,000	12	2,100	2.8
	EM06	11/14/2017	N	440-196558-10	Alluvium	26.3 - 36.1	--	--	--	--	3,100 J-
SWFTS-IW03	BL02	7/11/2017	FD	440-188133-5	Alluvium	16.8 - 36.6	21,000	53,000	12	--	--
	BL02	7/11/2017	N	440-188133-4	Alluvium	16.8 - 36.6	21,000	58,000	13	--	--
	EM07	12/11/2017	N	440-198276-1	Alluvium	16.8 - 36.6	--	--	--	--	340 J-
SWFTS-IW04	BL02	7/11/2017	FD	440-188133-12	Alluvium	19.8 - 34.6	16,000	42,000	12	--	--
	BL02	7/11/2017	N	440-188133-11	Alluvium	19.8 - 34.6	17,000	42,000	11	--	--
	EM07	12/11/2017	N	440-198276-2	Alluvium	19.8 - 34.6	--	--	--	--	4,600 J-
SWFTS-IW05	BL02	7/11/2017	N	440-188133-16	Alluvium	14.6 - 34.4	15,000	45,000	12	1,800	1.7
	EM07	12/11/2017	N	440-198276-3	Alluvium	14.6 - 34.4	--	--	--	--	3,700 J-
SWFTS-IW06A	BL02	7/11/2017	N	440-188133-10	Alluvium	16.8 - 26.6	15,000	46,000	12	--	--
	EM06	11/14/2017	N	440-196558-11	Alluvium	16.8 - 26.6	--	--	--	--	440 J-
	EM06	11/15/2017	N	440-196690-6	Alluvium	16.8 - 26.6	230	--	<0.55	--	630
SWFTS-IW06B	BL02	7/11/2017	N	440-188133-6	Alluvium	28.8 - 33.6	15,000	41,000	12	--	--
	EM06	11/14/2017	N	440-196558-12	Alluvium	28.8 - 33.6	--	--	--	--	600 J-
	EM06	11/15/2017	N	440-196690-7	Alluvium	28.8 - 33.6	20	--	<0.55	--	660
SWFTS-IW07	BL02	7/11/2017	N	440-188133-7	Alluvium	17.3 - 37.1	15,000	45,000	11	--	--
	EM07	12/11/2017	N	440-198276-4	Alluvium	17.3 - 37.1	--	--	--	--	5,600 J-
SWFTS-IW08	BL02	7/12/2017	N	440-188247-7	Alluvium	17.5 - 37.3	14,000	40,000	12	--	--
	EM07	12/11/2017	N	440-198276-5	Alluvium	17.5 - 37.3	--	--	--	--	6,700 J-
SWFTS-IW09	BL02	7/12/2017	FD	440-188244-3	Alluvium	26.6 - 46.4	11,000	47,000	12	1,800	1.4
	BL02	7/12/2017	N	440-188247-8	Alluvium	26.6 - 46.4	11,000	48,000	12	1,800	1.7
	EM07	12/11/2017	N	440-198276-6	Alluvium	26.6 - 46.4	--	--	--	--	290 J-
SWFTS-IW10	BL02	7/12/2017	N	440-188247-9	Alluvium	26.8 - 46.6	7,800	37,000	14	--	--
	EM07	12/11/2017	N	440-198276-8	Alluvium	26.8 - 46.6	--	--	--	--	290 J-
SWFTS-IW11	BL02	7/12/2017	N	440-188247-3	Alluvium	17.3 - 37.1	5,600	6,600	2.0	1,000	2.6
	EM07	12/11/2017	N	440-198276-7	Alluvium	17.3 - 37.1	--	--	--	--	1,000 J-
SWFTS-IW12	BL02	7/12/2017	N	440-188247-4	Alluvium	14.3 - 39.1	6,200	7,800	2.5	--	--
	EM07	12/11/2017	N	440-198276-9	Alluvium	14.3 - 39.1	--	--	--	--	2,700 J-
SWFTS-IW13A	BL02	7/11/2017	N	440-188133-1	Alluvium	15.8 - 25.6	19,000	52,000	14	--	--
	EM06	11/14/2017	N	440-196558-13	Alluvium	15.8 - 25.6	--	--	--	--	3,700 J-
SWFTS-IW13B	BL02	7/11/2017	N	440-188133-15	Alluvium	27.8 - 37.6	21,000	53,000	12	--	--
	EM06	11/14/2017	N	440-196558-14	Alluvium	27.8 - 37.6	--	--	--	--	1,100 J-
SWFTS-IW14	BL02	7/12/2017	N	440-188247-1	Alluvium	16.2 - 36.1	21,000	51,000	11	1,800	1.9
	EM06	11/14/2017	FD	440-196558-16	Alluvium	16.2 - 36.1	--	--	--	--	4,500 J-
	EM06	11/14/2017	N	440-196558-15	Alluvium	16.2 - 36.1	--	--	--	--	4,600
SWFTS-IW15	BL02	7/12/2017	N	440-188247-2	Alluvium	16.4 - 36.2	15,000	44,000	13	--	--
	EM07	12/11/2017	FD	440-198276-11	Alluvium	16.4 - 36.2	--	--	--	--	1,300 J-
	EM07	12/11/2017	N	440-198276-10	Alluvium	16.4 - 36.2	--	--	--	--	1,300 J-
SWFTS-IW16A	BL02	7/11/2017	N	440-188133-9	Alluvium	17.3 - 27.1	17,000	45,000	11	--	--
	EM07	12/11/2017	N	440-198276-12	Alluvium	17.3 - 27.1	--	--	--	--	2,800 J-
SWFTS-IW16B	BL02	7/11/2017	N	440-188133-8	Alluvium	26.5 - 36.3	15,000	44,000	12	--	--
	EM07	12/11/2017	N	440-198276-13	Alluvium	26.5 - 36.3	--	--	--	--	940 J-
SWFTS-IW17	BL02	7/13/2017	N	440-188325-6	Alluvium	17.3 - 37.1	13,000	47,000	12	1,600	1.4
	EM06	11/14/2017	N	440-196558-17	Alluvium	17.3 - 37.1	--	--	--	--	6,500 J-

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-IW17	EM06	11/15/2017	N	440-196690-8	Alluvium	17.3 - 37.1	<19	--	<1.1	--	7,500
SWFTS-IW18	BL02	7/13/2017	N	440-188325-4	Alluvium	18.1 - 38.1	14,000	47,000	12	--	--
	EM06	11/14/2017	N	440-196558-18	Alluvium	18.1 - 38.1	--	--	--	--	1.8
SWFTS-IW19	BL02	7/13/2017	N	440-188325-5	Alluvium	24.3 - 44.1	6,400	57,000	16	--	--
	EM07	12/11/2017	N	440-198276-14	Alluvium	24.3 - 44.1	--	--	--	--	4,100 J-
SWFTS-IW20	BL02	7/12/2017	N	440-188247-10	Alluvium	30.8 - 50.6	4,400	31,000	17	2,300	1.0
	EM06	11/14/2017	N	440-196558-19	Alluvium	30.8 - 50.6	--	--	--	--	6,500 J-
SWFTS-MW01	BL01	3/29/2017	N	440-180937-6	Alluvium	24.2 - 38.9	15,000	49,000	12	4,700	1.6
	EM01	9/19/2017	N	440-192627-1	Alluvium	24.2 - 38.9	2,100	39,000	<0.55	1,800	11
	EM02	9/26/2017	N	440-193062-2	Alluvium	24.2 - 38.9	4,300	10,000	1.4 J	1,800	4.3
	EM03	10/4/2017	N	440-193625-6	Alluvium	24.2 - 38.9	5,000	13,000	3.3	1,600	2.5
	EM04	10/10/2017	N	440-194094-2	Alluvium	24.2 - 38.9	5,600	15,000	3.3	1,600	2.2
	EM05	10/25/2017	N	440-195026-8	Alluvium	24.2 - 38.9	15,000	18,000	5.1	1,500	2.1
	EM06	11/15/2017	N	440-196665-4	Alluvium	24.2 - 38.9	7,900	22,000	4.9	1,500	1.9
	EM07	12/14/2017	N	440-198571-10	Alluvium	24.2 - 38.9	8,000	24,000	5.3	1,500	1.9
	EM08	2/20/2018	N	440-203841-12	Alluvium	24.2 - 38.9	3,900	12,000	3.4	1,400	2.7
	EM09	3/27/2018	N	440-207268-10	Alluvium	24.2 - 38.9	6,900	26,000	5.3	1,400	1.9
	EM10	4/30/2018	N	440-210173-1	Alluvium	24.2 - 38.9	9,400	36,000	8.9	1,600	1.4
	EM11	7/10/2018	N	440-215437-2	Alluvium	24.2 - 38.9	3,100	6,900	1.4	1,300	2.4
	EM12	7/27/2018	FD	440-216872-14	Alluvium	24.2 - 38.9	5,500	28,000	--	--	--
	EM12	7/27/2018	N	440-216872-13	Alluvium	24.2 - 38.9	5,500	28,000	--	--	--
	EM13	8/16/2018	N	440-218296-6	Alluvium	24.2 - 38.9	6,100	34,000	6.4	1,300	2.0
	EM14	9/10/2018	N	440-219797-1	Alluvium	24.2 - 38.9	6,300	34,000	8.4	1,400	1.9
	EM15	10/9/2018	N	440-221855-12	Alluvium	24.2 - 38.9	4,700 J	24,000	7.1	1,300	2.1
	EM16	12/27/2018	N	440-228818-1	Alluvium	24.2 - 38.9	4,300	7,400	9.9	1,300	1.8
	EM17	2/26/2019	N	440-234812-11	Alluvium	24.2 - 38.9	1,300	<10	1.7	1,100	2.6
	EM18	4/10/2019	N	440-238531-1	Alluvium	24.2 - 38.9	3,800	<10	5.2	1,200	1.9
	EM19	5/21/2019	N	440-242084-14	Alluvium	24.2 - 38.9	4,100	<10	6.4	1,200	1.6
	EM20	7/1/2019	N	440-245068-5	Alluvium	24.2 - 38.9	4,100	<10	5.4	1,300	2.1
	EM21	8/12/2019	N	440-247878-6	Alluvium	24.2 - 38.9	3,800	<10	3.9	1,100	1.9
	EM22	11/5/2019	N	440-253918-3	Alluvium	24.2 - 38.9	54	<10	<0.55	870	2.7
	EM23	12/18/2019	N	440-257733-3	Alluvium	24.2 - 38.9	3,600	<10	3.7	1,100	1.7
	EM24	1/29/2020	N	440-259985-4	Alluvium	24.2 - 38.9	4,500	<10	5.0	1,200 J+	2.4
	EM25	3/11/2020	N	440-262726-6	Alluvium	24.2 - 38.9	6,400	<20	4.9	1,200	2.2
	EM26	4/28/2020	N	440-265289-5	Alluvium	24.2 - 38.9	7,500	110	6.2	1,300	1.8
	EM27	7/8/2020	N	440-268610-1	Alluvium	24.2 - 38.9	5,300	1,800	2.9	1,400	1.9
	EM28	8/18/2020	N	440-270571-3	Alluvium	24.2 - 38.9	5,500	16 J	3.9	1,300	2.4
	EM29	10/13/2020	N	440-273236-11	Alluvium	24.2 - 38.9	5,200	<10	4.4	1,300	2.1
	EM30	12/9/2020	N	550-154431-2	Alluvium	24.2 - 38.9	4,900	<10	5.2	1,400	1.5
	EM31	2/2/2021	N	550-157679-3	Alluvium	24.2 - 38.9	5,700	<9.8	5.3	1,300	1.6 J+
	EM32	3/30/2021	N	550-160995-12	Alluvium	24.2 - 38.9	5,000	<4.9	3.4	1,100	2.3
	EM33	6/4/2021	N	550-164930-17	Alluvium	24.2 - 38.9	7,000	780	4.0	1,200	1.4 J+
	EM34	7/20/2021	N	550-167449-5	Alluvium	24.2 - 38.9	8,100	1,800	4.8	1,400	1.6
	EM35	9/15/2021	N	550-170733-10	Alluvium	24.2 - 38.9	8,600	3,400	4.1	1,300	1.6
	EM36	11/30/2021	N	550-174968-19	Alluvium	24.2 - 38.9	13,000	11,000	6.9	1,500	2.2 J+
SWFTS-MW02	BL01	3/29/2017	N	440-180937-7	Alluvium	18.4 - 33.1	25,000	58,000	11	2,200	2.2
	EM01	9/21/2017	N	440-192818-4	Alluvium	18.4 - 33.1	23,000	52,000	8.5	1,800	2.1
	EM02	9/27/2017	N	440-193062-11	Alluvium	18.4 - 33.1	23,000	47,000	9.4	2,000	2.2
	EM03	10/4/2017	N	440-193712-3	Alluvium	18.4 - 33.1	22,000	45,000	8.7	1,900	2.0
	EM04	10/12/2017	N	440-194204-6	Alluvium	18.4 - 33.1	20,000	23,000	6.2	1,900	2.3

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Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW02	EM05	10/26/2017	N	440-195218-2	Alluvium	18.4 - 33.1	21,000	34,000	4.6 J-	2,000	2.5
	EM06	11/14/2017	N	440-196558-3	Alluvium	18.4 - 33.1	17,000	32,000	6.5	1,900	2.5
	EM07	12/13/2017	N	440-198508-8	Alluvium	18.4 - 33.1	19,000	38,000	6.7	2,800	2.1
	EM08	2/19/2018	N	440-203775-1	Alluvium	18.4 - 33.1	14,000	28,000	4.7	1,700	2.5
	EM09	3/27/2018	N	440-207268-1	Alluvium	18.4 - 33.1	4,400	7,400	0.80	1,300	2.5
	EM10	4/30/2018	N	440-210173-3	Alluvium	18.4 - 33.1	4,600	6,100	0.95 J	1,500	2.3
	EM11	7/11/2018	N	440-215717-13	Alluvium	18.4 - 33.1	3,700	5,100	1.7	1,600	1.9
	EM12	7/27/2018	N	440-216872-11	Alluvium	18.4 - 33.1	2,100	3,900	--	--	--
	EM13	8/15/2018	N	440-218208-3	Alluvium	18.4 - 33.1	1,700	2,600	0.74 J	1,400	2.5
	EM14	9/10/2018	N	440-219797-2	Alluvium	18.4 - 33.1	1,300	2,500	<0.55	1,300	2.5
	EM15	10/10/2018	N	440-221975-15	Alluvium	18.4 - 33.1	1,400	950	<1.1	1,300	3.0
	EM16	12/20/2018	N	440-228491-3	Alluvium	18.4 - 33.1	620	77 J	<0.55	1,400 J+	2.4
	EM17	2/25/2019	N	440-234705-3	Alluvium	18.4 - 33.1	740	32 J	<1.1	1,300	2.5
	EM18	4/9/2019	N	440-238618-3	Alluvium	18.4 - 33.1	1,300	82 J	<1.1 UJ	1,500	2.1
	EM19	5/21/2019	N	440-242084-8	Alluvium	18.4 - 33.1	3,200	50 J	<1.1	1,500	2.3
	EM20	7/2/2019	N	440-245153-8	Alluvium	18.4 - 33.1	4,200	<4.0	<0.55	1,400	2.5
	EM21	8/14/2019	N	440-248104-3	Alluvium	18.4 - 33.1	3,900	<20	<0.28	1,500	2.4
	EM22	11/7/2019	N	440-254148-7	Alluvium	18.4 - 33.1	2,700	<10	<0.28	1,200	2.2
	EM23	12/17/2019	N	440-257635-8	Alluvium	18.4 - 33.1	6,800	2,700	2.6	1,300	1.9
	EM24	1/28/2020	N	440-259890-4	Alluvium	18.4 - 33.1	6,600	11,000	4.3	1,200 J+	2.9
	EM25	3/12/2020	N	440-262905-7	Alluvium	18.4 - 33.1	7,500	13,000	5.6	1,300	3.2
	EM26	4/30/2020	N	440-265382-3	Alluvium	18.4 - 33.1	9,500	17,000	7.1	1,400	2.1
	EM27	7/8/2020	N	440-268610-2	Alluvium	18.4 - 33.1	7,000	7,700	5.1	1,500	3.1
	EM28	8/17/2020	N	440-270515-1	Alluvium	18.4 - 33.1	8,800	16,000	7.2	1,400	2.2
	EM29	10/15/2020	N	550-151259-8	Alluvium	18.4 - 33.1	8,700	16,000	7.1	1,400	1.9
	EM30	12/10/2020	N	550-154531-4	Alluvium	18.4 - 33.1	8,900	16,000	7.1	1,500	1.8
	EM31	2/2/2021	N	550-157679-4	Alluvium	18.4 - 33.1	9,700	11,000 J+	7.2	1,500	2.3 J+
	EM32	3/30/2021	N	550-160995-13	Alluvium	18.4 - 33.1	4,900	2,800	2.5	1,400	2.0
	EM33	6/3/2021	N	550-164869-21	Alluvium	18.4 - 33.1	8,300	10,000	5.7	1,500	1.7
	EM34	7/21/2021	N	550-167523-11	Alluvium	18.4 - 33.1	7,600	10,000	5.1	1,400	2.3 J+
	EM35	9/16/2021	N	550-170815-5	Alluvium	18.4 - 33.1	9,800	18,000	7.0	1,400	2.1
	EM36	11/30/2021	N	550-174968-7	Alluvium	18.4 - 33.1	7,000	7,300	4.1	1,500	2.5 J+
SWFTS-MW03	BL01	3/30/2017	FD	440-181045-6	Alluvium	27.2 - 42.1	9,200	47,000	13	2,400	1.7
	BL01	3/30/2017	N	440-181045-5	Alluvium	27.2 - 42.1	9,900	47,000	13	2,200	1.6
	EM01	9/21/2017	N	440-192728-12	Alluvium	27.2 - 42.1	<4.8	<100	<0.55	2,300	4.2
	EM02	9/27/2017	N	440-193167-1	Alluvium	27.2 - 42.1	4.8	<100	<0.55	2,200	3.0
	EM03	10/4/2017	N	440-193712-7	Alluvium	27.2 - 42.1	<0.95	<50	<0.55	2,300	2.3
	EM04	10/12/2017	N	440-194204-8	Alluvium	27.2 - 42.1	21	<100	<0.55	2,200	2.0
	EM05	10/26/2017	N	440-195136-5	Alluvium	27.2 - 42.1	990	3,200	0.73 J	2,100	2.1
	EM06	11/16/2017	N	440-196786-16	Alluvium	27.2 - 42.1	3,200	15,000	3.2	2,100	1.7
	EM07	12/12/2017	N	440-198371-13	Alluvium	27.2 - 42.1	3,700	22,000	4.3	1,900	1.8
	EM08	2/21/2018	N	440-203937-5	Alluvium	27.2 - 42.1	3,400	33,000	4.2	1,900	1.7
	EM09	3/27/2018	N	440-207268-15	Alluvium	27.2 - 42.1	4,200	27,000	6.4	2,000	1.5
	EM10	5/2/2018	N	440-210430-6	Alluvium	27.2 - 42.1	4,300	30,000	7.9	2,100	1.4
	EM11	7/10/2018	N	440-215437-5	Alluvium	27.2 - 42.1	1,300	3,000	1.3	2,000	2.3
	EM12	7/27/2018	N	440-216872-10	Alluvium	27.2 - 42.1	1,900 J+	1,800	--	--	--
	EM13	8/15/2018	N	440-218208-4	Alluvium	27.2 - 42.1	1,900	280 J	3.6	1,900	1.9
	EM14	9/11/2018	N	440-219886-11	Alluvium	27.2 - 42.1	2,200	<10	4.9	1,900	1.5
	EM15	10/9/2018	N	440-221855-13	Alluvium	27.2 - 42.1	2,200	<20	5.9	2,000	2.0
	EM16	1/2/2019	N	440-229018-3	Alluvium	27.2 - 42.1	2,500	<10	7.7	2,000	1.8

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW03	EM17	2/27/2019	N	440-234938-3	Alluvium	27.2 - 42.1	2,700	27 J	10	2,000	1.5
	EM18	4/10/2019	N	440-238531-7	Alluvium	27.2 - 42.1	2,700	130	8.4	2,100	1.4
	EM19	5/21/2019	N	440-242084-12	Alluvium	27.2 - 42.1	2,800	150	7.7	2,000	1.4
	EM20	7/1/2019	N	440-245068-10	Alluvium	27.2 - 42.1	2,800	550	8.2	2,000	1.9
	EM21	8/14/2019	N	440-248104-2	Alluvium	27.2 - 42.1	3,000	2,700	8.5	2,000	1.8
	EM22	11/4/2019	N	440-253773-2	Alluvium	27.2 - 42.1	2,100	1,000	6.8	2,000	1.6
	EM23	12/19/2019	N	440-257866-5	Alluvium	27.2 - 42.1	2,600	770	7.7	1,700	1.5
	EM24	1/30/2020	N	440-260036-6	Alluvium	27.2 - 42.1	3,100	1,800	8.0	1,800	1.6
	EM25	3/9/2020	N	440-262455-2	Alluvium	27.2 - 42.1	3,800	4,200	7.6	1,600	1.8
	EM26	4/28/2020	N	440-265289-1	Alluvium	27.2 - 42.1	3,400	5,400	7.1	1,700	1.7
	EM27	7/6/2020	N	440-268415-2	Alluvium	27.2 - 42.1	2,600	610	6.5	1,800	1.9
	EM28	8/18/2020	N	440-270571-7	Alluvium	27.2 - 42.1	2,300	<10	6.7	1,800	2.1
	EM29	10/13/2020	N	440-273236-10	Alluvium	27.2 - 42.1	2,300	<10	7.9	2,000	1.9
	EM30	12/8/2020	N	550-154358-10	Alluvium	27.2 - 42.1	2,500	<10	8.6	2,000	1.4
	EM31	2/2/2021	N	550-157679-5	Alluvium	27.2 - 42.1	2,700	49 J	8.5	1,900	1.5 J+
	EM32	3/30/2021	N	550-160995-14	Alluvium	27.2 - 42.1	2,300	740	5.8	1,800	1.5
	EM33	6/3/2021	N	550-164869-15	Alluvium	27.2 - 42.1	3,200	670	5.9	1,900	1.4
	EM34	7/19/2021	N	550-167353-2	Alluvium	27.2 - 42.1	3,800	4,000	5.8	1,900	1.5
	EM35	9/15/2021	N	550-170733-1	Alluvium	27.2 - 42.1	4,800	8,800	6.7	2,000	1.4
	EM36	12/1/2021	N	550-175045-1	Alluvium	27.2 - 42.1	5,100	7,700	6.4	2,100	1.7
SWFTS-MW04	BL01	3/31/2017	N	440-181122-1	Alluvium	25.8 - 40.4	14,000	26,000	5.5	1,400	2.3
	EM01	9/20/2017	FD	440-192627-6	Alluvium	25.8 - 40.4	3,600	4,800	1.3	820	2.6
	EM01	9/20/2017	N	440-192627-5	Alluvium	25.8 - 40.4	3,600	4,900	1.3	750	2.6
	EM02	9/27/2017	FD	440-193062-4	Alluvium	25.8 - 40.4	3,500	5,400	1.5	860	3.1
	EM02	9/27/2017	N	440-193062-3	Alluvium	25.8 - 40.4	3,600	5,400	1.5	780	3.1
	EM03	10/4/2017	FD	440-193712-2	Alluvium	25.8 - 40.4	3,900	4,700	1.9	840	2.6
	EM03	10/4/2017	N	440-193712-1	Alluvium	25.8 - 40.4	4,000	4,700	1.5	840	2.7
	EM04	10/11/2017	N	440-194242-7	Alluvium	25.8 - 40.4	2,900	3,900	1.3	810	2.7
	EM05	10/24/2017	FD	440-194947-7	Alluvium	25.8 - 40.4	3,500	4,200	1.5	880	3.0
	EM05	10/24/2017	N	440-194947-6	Alluvium	25.8 - 40.4	3,600	4,200	1.4	840	2.9
	EM06	11/15/2017	N	440-196659-2	Alluvium	25.8 - 40.4	3,500	3,400	1.6	900	3.0
	EM07	12/14/2017	N	440-198571-12	Alluvium	25.8 - 40.4	4,000	4,700	1.8	910	2.9
	EM08	2/21/2018	N	440-203937-2	Alluvium	25.8 - 40.4	5,200	8,000	2.4	900	2.7
	EM09	3/27/2018	N	440-207268-5	Alluvium	25.8 - 40.4	6,100	14,000	3.5	1,100	2.5
	EM10	5/1/2018	N	440-210284-5	Alluvium	25.8 - 40.4	4,100	3,700	1.4	860	2.8
	EM11	7/10/2018	N	440-215437-4	Alluvium	25.8 - 40.4	6,400	15,000	4.5	940	2.5
	EM13	8/16/2018	N	440-218296-1	Alluvium	25.8 - 40.4	3,100	8,700	1.9 J+	730	2.9
	EM14	9/12/2018	N	440-220031-14	Alluvium	25.8 - 40.4	4,000	9,100	2.6	820	2.9
	EM15	10/11/2018	N	440-222092-9	Alluvium	25.8 - 40.4	3,400	8,300	2.0	790	3.0
	EM16	1/3/2019	N	440-229111-2	Alluvium	25.8 - 40.4	3,500	6,900	1.6	630	3.1
	EM17	3/1/2019	N	440-235133-5	Alluvium	25.8 - 40.4	3,500 J+	8,900	2.6	840	2.9
	EM18	4/9/2019	N	440-238618-2	Alluvium	25.8 - 40.4	3,100	7,500	2.3 J-	870	2.8
	EM19	5/21/2019	N	440-242084-11	Alluvium	25.8 - 40.4	2,400	5,300	1.2	690	3.0
	EM20	7/5/2019	N	440-245261-1	Alluvium	25.8 - 40.4	2,100	4,000	1.2	720	3.7
	EM21	8/14/2019	N	440-248104-10	Alluvium	25.8 - 40.4	3,300	5,400	1.7	730	3.4
	EM22	11/7/2019	N	440-254150-6	Alluvium	25.8 - 40.4	2,600	4,900	1.9	770	2.9
	EM23	12/19/2019	N	440-257866-12	Alluvium	25.8 - 40.4	4,200	9,600	2.3	820	2.8
	EM24	1/29/2020	N	440-259985-1	Alluvium	25.8 - 40.4	9,400	26,000	7.1	1,000 J+	2.7
	EM25	3/12/2020	N	440-262905-4	Alluvium	25.8 - 40.4	9,100	24,000	6.6	970	2.5
	EM26	5/1/2020	N	440-265412-1	Alluvium	25.8 - 40.4	12,000	29,000	7.1	1,100	2.2

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW04	EM27	7/7/2020	N	440-268480-5	Alluvium	25.8 - 40.4	7,100	17,000	4.4	910	2.9
	EM28	8/18/2020	N	440-270571-5	Alluvium	25.8 - 40.4	6,000	15,000	3.5	890	3.0
	EM29	10/14/2020	N	440-273303-12	Alluvium	25.8 - 40.4	5,800	15,000	3.4	840	3.0
	EM30	12/10/2020	N	550-154531-5	Alluvium	25.8 - 40.4	5,300	13,000	3.2	430	2.5
	EM31	2/2/2021	N	550-157679-6	Alluvium	25.8 - 40.4	4,600	11,000	2.5	830	2.7 J+
	EM32	3/30/2021	N	550-160995-15	Alluvium	25.8 - 40.4	4,900	13,000	3.3	840	2.6
	EM33	6/3/2021	N	550-164869-23	Alluvium	25.8 - 40.4	5,300	11,000	2.9	850	2.6
	EM34	7/21/2021	N	550-167523-9	Alluvium	25.8 - 40.4	4,600	8,900	2.2	770	3.1 J+
	EM35	9/16/2021	N	550-170815-4	Alluvium	25.8 - 40.4	10,000	24,000	6.3	1,000	2.5
	EM36	12/2/2021	N	550-175153-3	Alluvium	25.8 - 40.4	7,500	15,000	4.0	990	2.8 J+
SWFTS-MW05A	BL01	3/30/2017	N	440-181045-7	Alluvium	19.3 - 29.3	7,400	67,000	18	3,000	1.4
	EM01	9/20/2017	N	440-192728-3	Alluvium	19.3 - 29.3	5,700	51,000	17	2,500	1.1
	EM02	9/27/2017	N	440-193062-9	Alluvium	19.3 - 29.3	5,600	44,000	18	2,500	1.2
	EM03	10/3/2017	N	440-193472-4	Alluvium	19.3 - 29.3	5,800	46,000	16	2,400	0.80 J
	EM04	10/10/2017	N	440-193989-2	Alluvium	19.3 - 29.3	5,600	44,000	16	2,700	1.3
	EM05	10/23/2017	N	440-194846-4	Alluvium	19.3 - 29.3	4,700	43,000	15	2,600	1.3
	EM06	11/14/2017	N	440-196558-1	Alluvium	19.3 - 29.3	5,500	38,000	16	2,500	1.4
	EM07	12/13/2017	N	440-198508-3	Alluvium	19.3 - 29.3	5,300	43,000	17	2,500	1.3
	EM08	2/20/2018	N	440-203841-7	Alluvium	19.3 - 29.3	6,400	53,000	18	2,600	1.4
	EM09	3/26/2018	N	440-207137-5	Alluvium	19.3 - 29.3	6,600	58,000	16	2,500	1.1
	EM10	4/30/2018	N	440-210173-8	Alluvium	19.3 - 29.3	6,400 J	55,000	17	2,600	1.0
	EM11	7/11/2018	N	440-215585-14	Alluvium	19.3 - 29.3	5,200	46,000	15	2,300	0.87 J
	EM12	7/27/2018	N	440-216872-8	Alluvium	19.3 - 29.3	4,300	41,000	--	--	--
	EM13	8/14/2018	N	440-218109-2	Alluvium	19.3 - 29.3	3,600	35,000	10 J+	--	1.5
	EM14	9/11/2018	N	440-219886-7	Alluvium	19.3 - 29.3	3,400	30,000	9.5	2,500	1.2
	EM15	10/10/2018	N	440-221975-14	Alluvium	19.3 - 29.3	4,200	34,000	12	2,300	1.3
	EM16	12/20/2018	N	440-228491-11	Alluvium	19.3 - 29.3	5,000	21,000	16	2,600	1.3
	EM17	2/27/2019	N	440-234938-5	Alluvium	19.3 - 29.3	4,300	10,000	17	2,500	1.5
	EM18	4/10/2019	N	440-238531-9	Alluvium	19.3 - 29.3	3,100	56 J	13	2,500	1.5
	EM19	5/21/2019	N	440-242084-17	Alluvium	19.3 - 29.3	2,600	17 J	13	2,500	1.6
	EM20	7/1/2019	N	440-245068-6	Alluvium	19.3 - 29.3	2,700	<20	14	2,400	1.7
	EM21	8/13/2019	N	440-247965-7	Alluvium	19.3 - 29.3	3,100	33 J	13	2,500	1.9
	EM22	11/5/2019	N	440-253918-1	Alluvium	19.3 - 29.3	3,600 J+	30 J	14	2,500	1.8
	EM23	12/18/2019	N	440-257733-8	Alluvium	19.3 - 29.3	3,400	<10	12	2,400	1.3
	EM24	1/29/2020	N	440-259985-2	Alluvium	19.3 - 29.3	3,800	110	14	2,600 J+	1.4
	EM25	3/11/2020	N	440-262726-1	Alluvium	19.3 - 29.3	3,900	28 J	13 J-	2,600	1.8
	EM26	4/29/2020	N	440-265346-2	Alluvium	19.3 - 29.3	3,700	<20	13	2,600	1.4
	EM27	7/8/2020	N	440-268610-3	Alluvium	19.3 - 29.3	3,800	49 J	14	2,800	1.8 J-
	EM28	8/18/2020	N	440-270571-1	Alluvium	19.3 - 29.3	2,900	<10	11	2,700	2.9
	EM29	10/14/2020	N	440-273303-9	Alluvium	19.3 - 29.3	3,300 J-	<10	10	2,700	1.2
	EM30	12/8/2020	N	550-154358-15	Alluvium	19.3 - 29.3	3,700	<20	14	2,800	1.1
	EM31	2/2/2021	N	550-157679-7	Alluvium	19.3 - 29.3	4,300	<24	13	2,600	1.1 J+
	EM32	3/30/2021	N	550-160995-16	Alluvium	19.3 - 29.3	4,000	<49	14	2,800	1.0 J-
	EM33	6/3/2021	N	550-164869-17	Alluvium	19.3 - 29.3	4,300	<24	14	2,800	1.1
	EM34	7/20/2021	N	550-167449-7	Alluvium	19.3 - 29.3	4,000	<24	14 J-	2,700	1.1
	EM35	9/17/2021	N	550-170881-1	Alluvium	19.3 - 29.3	4,700	<24	13	2,800	1.0
	EM36	11/29/2021	N	550-174897-3	Alluvium	19.3 - 29.3	3,800	<24	13	3,000	1.2
SWFTS-MW05B	BL01	3/30/2017	N	440-181045-8	Alluvium	32.3 - 42.0	7,200	48,000	13	2,500	1.5
	EM01	9/22/2017	N	440-192818-8	Alluvium	32.3 - 42.0	190	300	<0.55	2,100	39
	EM02	9/27/2017	N	440-193062-10	Alluvium	32.3 - 42.0	<0.95	<50	<0.55	2,200	57

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW05B	EM03	10/3/2017	N	440-193472-5	Alluvium	32.3 - 42.0	8.3	<50	<0.55	1,900	90
	EM04	10/10/2017	N	440-193989-1	Alluvium	32.3 - 42.0	<0.95	<100	<0.55	2,000	100
	EM05	10/23/2017	N	440-194846-5	Alluvium	32.3 - 42.0	<0.95	<100	<0.55	1,800	68
	EM06	11/14/2017	N	440-196558-2	Alluvium	32.3 - 42.0	<0.95	16 J	<0.55	1,800	3.2
	EM07	12/13/2017	N	440-198508-4	Alluvium	32.3 - 42.0	990	5,300	0.36 J	2,000	2.3
	EM08	2/20/2018	N	440-203841-8	Alluvium	32.3 - 42.0	2,000	11,000	4.2	2,100	2.2
	EM09	3/26/2018	N	440-207137-6	Alluvium	32.3 - 42.0	2,600	18,000	4.6	1,900	1.7
	EM10	4/30/2018	N	440-210173-2	Alluvium	32.3 - 42.0	2,600	18,000	5.4	2,100	1.9
	EM11	7/10/2018	N	440-215585-10	Alluvium	32.3 - 42.0	190	1,500	0.66 J-	1,600	2.4
	EM12	7/27/2018	N	440-216872-7	Alluvium	32.3 - 42.0	240	1,600	--	--	--
	EM13	8/14/2018	N	440-218109-3	Alluvium	32.3 - 42.0	420	2,000	<0.55	--	2.5
	EM14	9/11/2018	N	440-219886-8	Alluvium	32.3 - 42.0	860	4,800	1.3	1,900	1.9
	EM15	10/9/2018	N	440-221855-14	Alluvium	32.3 - 42.0	1,400	8,700	2.5	1,800	2.3
	EM16	12/20/2018	N	440-228491-12	Alluvium	32.3 - 42.0	2,100	8,000	4.7	2,100	2.1
	EM17	2/27/2019	N	440-234938-4	Alluvium	32.3 - 42.0	910	240	3.8	1,900	2.1
	EM18	4/10/2019	N	440-238531-10	Alluvium	32.3 - 42.0	1,200	19 J	3.3	1,800	2.0
	EM19	5/21/2019	N	440-242084-18	Alluvium	32.3 - 42.0	1,200	<4.0	4.3	1,700	1.9
	EM20	7/1/2019	N	440-245068-7	Alluvium	32.3 - 42.0	1,400	<10	4.8	1,900	2.4
	EM21	8/13/2019	N	440-247965-8	Alluvium	32.3 - 42.0	1,600	<10	4.8	1,900	2.3
	EM22	11/5/2019	N	440-253918-2	Alluvium	32.3 - 42.0	790	13 J	1.6 J	1,700	2.3
	EM23	12/18/2019	N	440-257733-9	Alluvium	32.3 - 42.0	1,200	<10	3.4	2,300	1.9
	EM24	1/29/2020	N	440-259985-3	Alluvium	32.3 - 42.0	1,900	37 J	5.0	1,900 J+	2.0
	EM25	3/11/2020	N	440-262726-2	Alluvium	32.3 - 42.0	1,800	<20	4.9 J-	2,000	1.7
	EM26	4/29/2020	N	440-265346-1	Alluvium	32.3 - 42.0	1,800	<10	6.1	2,100	2.0
	EM27	7/8/2020	N	440-268610-4	Alluvium	32.3 - 42.0	1,100	<10	2.1	1,800	2.5
	EM28	8/18/2020	N	440-270571-2	Alluvium	32.3 - 42.0	1,100	32 J	4.0	1,800	3.0
	EM29	10/14/2020	N	440-273303-8	Alluvium	32.3 - 42.0	1,400	32 J	4.0	1,800	2.4
	EM30	12/8/2020	N	550-154358-16	Alluvium	32.3 - 42.0	1,300	<10	4.9	2,100	1.8
	EM31	2/2/2021	N	550-157679-8	Alluvium	32.3 - 42.0	1,500	<9.8	4.9	1,900	1.8 J+
	EM32	3/30/2021	N	550-160995-17	Alluvium	32.3 - 42.0	26	<9.8	0.093	1,700	2.4
	EM33	6/3/2021	N	550-164869-19	Alluvium	32.3 - 42.0	210	69	0.35	1,800	2.3
	EM34	7/21/2021	N	550-167523-1	Alluvium	32.3 - 42.0	520	75 J	0.31	1,900	2.2 J+
	EM35	9/16/2021	N	550-170815-7	Alluvium	32.3 - 42.0	1,200	90	1.5	2,100	1.9
	EM36	11/30/2021	N	550-174968-15	Alluvium	32.3 - 42.0	650	19 J	1.4	2,300	2.0 J+
SWFTS-MW06A	BL01	3/30/2017	N	440-181045-1	Alluvium	11.8 - 21.4	170	<10	<0.11	570	3.6
	EM01	9/21/2017	N	440-192818-2	Alluvium	11.8 - 21.4	2,400	220	1.5	890	3.0
	EM02	9/27/2017	N	440-193167-3	Alluvium	11.8 - 21.4	2,600	320	1.7	930	3.3
	EM03	10/3/2017	N	440-193622-4	Alluvium	11.8 - 21.4	2,700	300	2.0 J-	920	2.8
	EM04	10/11/2017	N	440-194090-4	Alluvium	11.8 - 21.4	5,500	1,100	1.9	970	3.0
	EM05	10/23/2017	N	440-194846-7	Alluvium	11.8 - 21.4	2,300	350	1.9	1,000	3.3
	EM06	11/16/2017	N	440-196786-19	Alluvium	11.8 - 21.4	3,300	380	2.5	1,500	2.8
	EM07	12/13/2017	N	440-198508-1	Alluvium	11.8 - 21.4	3,600	520	2.6	1,100	2.7
	EM08	2/22/2018	N	440-204033-1	Alluvium	11.8 - 21.4	1,800	200	0.88	890	3.4
	EM09	3/28/2018	N	440-207497-3	Alluvium	11.8 - 21.4	1,500	77	0.36	750	3.1
	EM10	5/1/2018	FD	440-210284-10	Alluvium	11.8 - 21.4	880	13 J	0.11	650	3.1
	EM10	5/1/2018	N	440-210284-9	Alluvium	11.8 - 21.4	760 J	10 J	0.11	650	3.1
	EM11	7/11/2018	FD	440-215585-3	Alluvium	11.8 - 21.4	840	20	<0.11	650	2.9
	EM11	7/11/2018	N	440-215585-2	Alluvium	11.8 - 21.4	830	21	0.11 J	640	2.9
	EM13	8/14/2018	FD	440-218109-5	Alluvium	11.8 - 21.4	1,500	95	0.29	--	3.3
	EM13	8/14/2018	N	440-218109-4	Alluvium	11.8 - 21.4	1,500	96	0.28	--	3.4

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW06A	EM14	9/11/2018	FD	440-219886-16	Alluvium	11.8 - 21.4	1,600	140	0.43	810	3.3
	EM14	9/11/2018	N	440-219886-15	Alluvium	11.8 - 21.4	1,700	150	0.42	750	3.4
	EM15	10/10/2018	FD	440-221975-10	Alluvium	11.8 - 21.4	2,100	210	0.79	780	3.6
	EM15	10/10/2018	N	440-221975-8	Alluvium	11.8 - 21.4	2,400	210	0.84	800	3.5
	EM16	12/28/2018	FD	440-228887-4	Alluvium	11.8 - 21.4	1,600	760	0.42	730	3.5
	EM16	12/28/2018	N	440-228887-3	Alluvium	11.8 - 21.4	1,700	760	0.41	740	3.6
	EM17	2/27/2019	FD	440-234933-7	Alluvium	11.8 - 21.4	1,500	95	0.43	830	3.1
	EM17	2/27/2019	N	440-234933-6	Alluvium	11.8 - 21.4	1,600	93	0.42	760	3.1
	EM18	4/10/2019	FD	440-238544-3	Alluvium	11.8 - 21.4	1,500	120	0.59	760	3.3
	EM18	4/10/2019	N	440-238544-2	Alluvium	11.8 - 21.4	1,500	120	0.60	760	3.4
	EM19	5/20/2019	FD	440-242015-2	Alluvium	11.8 - 21.4	1,800	160	0.86	800	3.2
	EM19	5/20/2019	N	440-242015-1	Alluvium	11.8 - 21.4	1,800	170	1.0	800	3.0
	EM20	7/1/2019	FD	440-245046-6	Alluvium	11.8 - 21.4	2,800	310 J	1.2	890	3.7
	EM20	7/1/2019	N	440-245046-5	Alluvium	11.8 - 21.4	2,500	350 J	1.3	880	3.6
	EM21	8/14/2019	FD	440-248104-8	Alluvium	11.8 - 21.4	3,300	380	1.7	970	3.2
	EM21	8/14/2019	N	440-248104-7	Alluvium	11.8 - 21.4	3,200	390	1.7	950	3.7
	EM22	11/6/2019	FD	440-254027-5	Alluvium	11.8 - 21.4	2,600	320	1.3	910	3.2
	EM22	11/6/2019	N	440-254027-4	Alluvium	11.8 - 21.4	2,500	330	1.3	910	3.3
	EM23	12/19/2019	FD	440-257866-10	Alluvium	11.8 - 21.4	1,900	190	0.77	780	2.8
	EM23	12/19/2019	N	440-257866-9	Alluvium	11.8 - 21.4	1,900	180	0.77	810	3.0
	EM24	1/29/2020	FD	440-259985-6	Alluvium	11.8 - 21.4	1,100	53 J	0.26	710 J+	3.2
	EM24	1/29/2020	N	440-259985-5	Alluvium	11.8 - 21.4	1,100	51 J	0.26	710 J+	3.2
	EM25	3/11/2020	FD	440-262720-3	Alluvium	11.8 - 21.4	600	<4.0	<0.11	600	3.3
	EM25	3/11/2020	N	440-262720-2	Alluvium	11.8 - 21.4	580	<4.0	<0.11	600	3.3
	EM26	4/29/2020	FD	440-265346-6	Alluvium	11.8 - 21.4	360	<10	<0.11	560	3.2
	EM26	4/29/2020	N	440-265346-5	Alluvium	11.8 - 21.4	350	<10	<0.11	550	3.1
	EM27	7/7/2020	FD	440-268480-3	Alluvium	11.8 - 21.4	850	<2.0	<0.11	610	3.4
	EM27	7/7/2020	N	440-268480-2	Alluvium	11.8 - 21.4	840	<2.0	<0.11	600	3.5
	EM28	8/19/2020	FD	440-270632-3	Alluvium	11.8 - 21.4	1,400	70 J	0.57	670	4.6
	EM28	8/19/2020	N	440-270632-2	Alluvium	11.8 - 21.4	1,400	63 J	0.48	680	4.3
	EM29	10/13/2020	FD	440-273236-8	Alluvium	11.8 - 21.4	2,100	140	0.54 J	740	3.3
	EM29	10/13/2020	N	440-273236-7	Alluvium	11.8 - 21.4	2,100	150	0.54 J	750	3.4
	EM30	12/8/2020	FD	550-154358-13	Alluvium	11.8 - 21.4	2,200 J	140	0.54 J+	810	2.9
	EM30	12/8/2020	N	550-154358-12	Alluvium	11.8 - 21.4	2,000 J	140	0.53 J+	810	2.9
	EM31	2/3/2021	FD	550-157817-10	Alluvium	11.8 - 21.4	2,200	78 J	0.37	790	2.9
	EM31	2/3/2021	N	550-157817-9	Alluvium	11.8 - 21.4	2,200	71 J	0.36	780	2.9
	EM32	3/31/2021	FD	550-161063-2	Alluvium	11.8 - 21.4	1,800	82 J	0.35	740	3.0
	EM32	3/31/2021	N	550-161063-1	Alluvium	11.8 - 21.4	1,700	83 J	0.36	740	3.0
	EM33	6/4/2021	FD	550-164930-21	Alluvium	11.8 - 21.4	1,800	85 J	0.46	760	2.9 J+
	EM33	6/4/2021	N	550-164930-19	Alluvium	11.8 - 21.4	1,800	86 J	0.46	760	2.9 J+
	EM34	7/19/2021	FD	550-167353-4	Alluvium	11.8 - 21.4	1,900	180	0.51	760	3.3
	EM34	7/19/2021	N	550-167353-3	Alluvium	11.8 - 21.4	1,900	170	0.52	770	3.0
	EM35	9/16/2021	FD	550-170815-2	Alluvium	11.8 - 21.4	1,300	51 J	0.30	720	3.1
	EM35	9/16/2021	N	550-170815-1	Alluvium	11.8 - 21.4	1,300	52 J	0.30	720	3.1
	EM36	12/1/2021	FD	550-175045-9	Alluvium	11.8 - 21.4	1,200	<24	0.21	760	3.2
	EM36	12/1/2021	N	550-175045-7	Alluvium	11.8 - 21.4	1,200	<24	0.20	760	3.1
SWFTS-MW06B	BL01	3/30/2017	N	440-181045-2	Alluvium	25.9 - 35.5	1,000	490	0.13 J	620	3.5
	EM01	9/21/2017	N	440-192728-9	Alluvium	25.9 - 35.5	2,000	350	0.70	770	2.8
	EM02	9/27/2017	N	440-193167-4	Alluvium	25.9 - 35.5	2,000	360	0.76	780	3.3
	EM03	10/3/2017	N	440-193622-5	Alluvium	25.9 - 35.5	2,500	340	1.0	790	2.8

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW06B	EM04	10/11/2017	N	440-194090-5	Alluvium	25.9 - 35.5	4,400	380	1.1	820	3.1
	EM05	10/23/2017	N	440-194846-6	Alluvium	25.9 - 35.5	2,000	390	1.3	890	3.1
	EM06	11/16/2017	N	440-196786-20	Alluvium	25.9 - 35.5	2,800	400	1.8	970	2.9
	EM07	12/13/2017	N	440-198508-2	Alluvium	25.9 - 35.5	3,200	590	2.2	990	2.9
	EM08	2/22/2018	N	440-204033-5	Alluvium	25.9 - 35.5	2,900	480	1.9	1,100	3.1
	EM09	3/28/2018	N	440-207497-2	Alluvium	25.9 - 35.5	2,500	370	1.1	900	2.8
	EM10	5/1/2018	N	440-210284-8	Alluvium	25.9 - 35.5	1,800	270	0.56	780	2.9
	EM11	7/11/2018	N	440-215585-4	Alluvium	25.9 - 35.5	880	140	0.18 J	660	2.9
	EM13	8/14/2018	N	440-218109-6	Alluvium	25.9 - 35.5	1,200	170	0.14	--	3.8
	EM14	9/11/2018	N	440-219886-14	Alluvium	25.9 - 35.5	1,700	230	0.23	720	3.3
	EM15	10/10/2018	N	440-221975-9	Alluvium	25.9 - 35.5	1,700	260	0.36 J	720	4.1
	EM16	12/28/2018	N	440-228887-5	Alluvium	25.9 - 35.5	1,900	270	0.66	770	3.1
	EM17	2/28/2019	N	440-235000-6	Alluvium	25.9 - 35.5	1,600	230	0.53	760	3.2
	EM18	4/10/2019	N	440-238544-4	Alluvium	25.9 - 35.5	1,600	210	1.2	740	3.4
	EM19	5/21/2019	N	440-242084-5	Alluvium	25.9 - 35.5	1,700	220	0.43	750	3.7
	EM20	7/1/2019	N	440-245046-4	Alluvium	25.9 - 35.5	2,100	340	0.73	780	3.6
	EM21	8/14/2019	N	440-248104-9	Alluvium	25.9 - 35.5	2,900	420	1.4	840	3.2
	EM22	11/6/2019	N	440-254027-6	Alluvium	25.9 - 35.5	3,000	530	1.6	930	<0.65
	EM23	12/19/2019	N	440-257866-11	Alluvium	25.9 - 35.5	2,500	410	1.0	820	2.9
	EM24	1/29/2020	N	440-259985-7	Alluvium	25.9 - 35.5	1,900	290	0.72	820 J+	3.4
	EM25	3/11/2020	N	440-262720-4	Alluvium	25.9 - 35.5	1,300	150	0.32	700	2.8
	EM26	4/29/2020	N	440-265346-4	Alluvium	25.9 - 35.5	690	70	<0.11	600	3.0
	EM27	7/7/2020	N	440-268480-4	Alluvium	25.9 - 35.5	600	29 J	<0.11	600	3.3
	EM28	8/19/2020	N	440-270632-4	Alluvium	25.9 - 35.5	890	61 J	<0.11	610	3.9
	EM29	10/13/2020	N	440-273236-6	Alluvium	25.9 - 35.5	1,800	170	0.35	700	3.4
	EM30	12/8/2020	N	550-154358-14	Alluvium	25.9 - 35.5	2,100	230	0.44 J+	750	2.8
	EM31	2/3/2021	N	550-157817-11	Alluvium	25.9 - 35.5	2,400	180	0.37	790	2.9
	EM32	3/31/2021	N	550-161063-5	Alluvium	25.9 - 35.5	1,900	180	0.25	740	3.1
	EM33	6/4/2021	N	550-164930-23	Alluvium	25.9 - 35.5	1,800	170	0.36	750	2.8 J+
	EM34	7/19/2021	N	550-167353-5	Alluvium	25.9 - 35.5	1,900	560	0.34	750	3.6
	EM35	9/16/2021	N	550-170815-3	Alluvium	25.9 - 35.5	1,900	170	0.46	760	3.1
	EM36	12/1/2021	N	550-175045-11	Alluvium	25.9 - 35.5	1,300	84 J	0.14	760	3.1
SWFTS-MW07A	BL01	3/30/2017	N	440-181045-3	Alluvium	15.0 - 29.5	14,000	44,000	11	1,600	2.1
	EM01	9/20/2017	N	440-192627-7	Alluvium	15.0 - 29.5	14,000	41,000	11	1,700	2.0
	EM02	9/26/2017	N	440-192973-1	Alluvium	15.0 - 29.5	15,000	36,000	11	1,600	2.3
	EM03	10/3/2017	N	440-193472-6	Alluvium	15.0 - 29.5	16,000	37,000	10	1,600	2.1
	EM04	10/11/2017	N	440-194242-3	Alluvium	15.0 - 29.5	12,000	39,000	12	1,600	2.0
	EM05	10/24/2017	N	440-194947-4	Alluvium	15.0 - 29.5	14,000	38,000	10	1,700	2.3
	EM06	11/15/2017	N	440-196659-7	Alluvium	15.0 - 29.5	16,000	40,000	12	1,600	2.1
	EM07	12/14/2017	N	440-198571-3	Alluvium	15.0 - 29.5	14,000	35,000	11	1,600	2.1
	EM08	2/19/2018	N	440-203775-3	Alluvium	15.0 - 29.5	12,000	36,000	12	1,600	2.2
	EM09	3/28/2018	N	440-207497-4	Alluvium	15.0 - 29.5	11,000	36,000	12	1,300	1.8
	EM10	5/2/2018	N	440-210430-2	Alluvium	15.0 - 29.5	11,000	40,000	13	1,400	1.7
	EM11	7/11/2018	N	440-215585-7	Alluvium	15.0 - 29.5	11,000	44,000	14	1,300	1.6
	EM13	8/16/2018	N	440-218296-2	Alluvium	15.0 - 29.5	8,600	76,000	15	1,300	2.0
	EM14	9/12/2018	N	440-220031-6	Alluvium	15.0 - 29.5	9,500	42,000	17	1,400	1.8
	EM15	10/10/2018	N	440-221975-11	Alluvium	15.0 - 29.5	9,300	40,000	17	1,300	2.1
	EM16	1/2/2019	N	440-229018-10	Alluvium	15.0 - 29.5	8,100	35,000	15	1,300	1.8
	EM17	2/28/2019	N	440-235000-10	Alluvium	15.0 - 29.5	7,300	34,000	15	1,200	2.5
	EM18	4/12/2019	N	440-238733-5	Alluvium	15.0 - 29.5	7,600	36,000	16	1,200	1.7

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Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW07A	EM19	5/22/2019	N	440-242200-5	Alluvium	15.0 - 29.5	6,800	35,000	15	1,200	1.9
	EM20	7/3/2019	N	440-245218-6	Alluvium	15.0 - 29.5	7,800	36,000	14	1,200	2.2
	EM21	8/15/2019	N	440-248187-1	Alluvium	15.0 - 29.5	8,500	38,000	15	1,100	2.1
	EM22	11/7/2019	N	440-254148-4	Alluvium	15.0 - 29.5	7,900	35,000	13	1,100	1.8
	EM23	12/20/2019	N	440-257938-4	Alluvium	15.0 - 29.5	8,900	35,000	13	1,000	1.8
	EM24	1/28/2020	N	440-259893-4	Alluvium	15.0 - 29.5	9,000	39,000	14 J-	1,000 J+	1.8
	EM25	3/12/2020	N	440-262887-5	Alluvium	15.0 - 29.5	12,000	44,000	13 J-	1,100	2.0
	EM26	4/30/2020	N	440-265382-5	Alluvium	15.0 - 29.5	12,000	35,000	13	1,400	1.9
	EM27	7/9/2020	N	440-268680-4	Alluvium	15.0 - 29.5	5,300	42,000	15	1,400	2.1 J-
	EM28	8/19/2020	N	440-270632-5	Alluvium	15.0 - 29.5	9,300	37,000	12	1,400	2.2
	EM29	10/16/2020	N	440-273433-1	Alluvium	15.0 - 29.5	9,800	33,000	12	1,300	1.9
	EM30	12/9/2020	N	550-154431-6	Alluvium	15.0 - 29.5	8,600	32,000	13	1,300	1.7
	EM31	2/3/2021	N	550-157817-12	Alluvium	15.0 - 29.5	9,100	31,000	12	1,200	1.5
	EM32	3/31/2021	N	550-161063-6	Alluvium	15.0 - 29.5	8,500	23,000 J+	11	1,100	1.5
	EM33	6/4/2021	N	550-164930-25	Alluvium	15.0 - 29.5	10,000	35,000	12	1,100	1.4 J+
	EM34	7/22/2021	N	550-167639-9	Alluvium	15.0 - 29.5	14,000	30,000	12	520	1.7
	EM35	9/16/2021	N	550-170815-8	Alluvium	15.0 - 29.5	17,000	39,000	13	1,200	1.6
	EM36	12/3/2021	N	550-175222-3	Alluvium	15.0 - 29.5	21,000	37,000	13	1,600	1.9
SWFTS-MW07B	BL01	3/30/2017	N	440-181045-4	Alluvium	33.8 - 38.3	13,000	40,000	11	1,800	2.0
	EM01	9/20/2017	N	440-192627-8	Alluvium	33.8 - 38.3	10,000	33,000	9.0	1,300	1.8
	EM02	9/26/2017	N	440-192973-2	Alluvium	33.8 - 38.3	11,000	29,000	10	1,500	2.2
	EM03	10/3/2017	N	440-193472-7	Alluvium	33.8 - 38.3	9,400	28,000	9.9	1,400	1.6
	EM04	10/11/2017	N	440-194242-4	Alluvium	33.8 - 38.3	8,400	28,000	11	1,400	1.7
	EM05	10/24/2017	N	440-194947-3	Alluvium	33.8 - 38.3	9,300	29,000	11	1,400	1.2
	EM06	11/15/2017	N	440-196659-8	Alluvium	33.8 - 38.3	9,700	29,000	12	1,300	2.0
	EM07	12/14/2017	N	440-198571-4	Alluvium	33.8 - 38.3	9,400	30,000	12	1,300	1.9
	EM08	2/19/2018	N	440-203775-2	Alluvium	33.8 - 38.3	9,700	37,000	14	1,300	2.2
	EM09	3/28/2018	N	440-207497-10	Alluvium	33.8 - 38.3	11,000	47,000	16	1,300	1.7
	EM10	5/2/2018	N	440-210430-1	Alluvium	33.8 - 38.3	9,100	34,000	13	1,200	1.9
	EM11	7/11/2018	N	440-215585-8	Alluvium	33.8 - 38.3	8,300	43,000	16	1,300	1.7
	EM13	8/16/2018	N	440-218296-3	Alluvium	33.8 - 38.3	6,500	44,000	17	1,200	2.0
	EM14	9/12/2018	N	440-220031-7	Alluvium	33.8 - 38.3	6,200	31,000	17	1,200	1.8
	EM15	10/10/2018	N	440-221975-12	Alluvium	33.8 - 38.3	5,700	28,000	16	1,100	1.8
	EM16	1/3/2019	N	440-229111-1	Alluvium	33.8 - 38.3	6,100	32,000	13	900	1.6
	EM17	2/28/2019	N	440-235000-11	Alluvium	33.8 - 38.3	6,700	40,000	15	1,000	2.3
	EM18	4/12/2019	N	440-238733-4	Alluvium	33.8 - 38.3	7,500	39,000	14	1,100	1.6
	EM19	5/22/2019	N	440-242200-6	Alluvium	33.8 - 38.3	7,600	37,000	14	1,100	1.4
	EM20	7/3/2019	N	440-245218-5	Alluvium	33.8 - 38.3	6,500	30,000	13	1,000	2.1
	EM21	8/15/2019	N	440-248187-2	Alluvium	33.8 - 38.3	7,200	33,000	13	940	2.0
	EM22	11/7/2019	N	440-254148-5	Alluvium	33.8 - 38.3	6,400	33,000	12	890	1.6
	EM23	12/20/2019	N	440-257938-5	Alluvium	33.8 - 38.3	9,800	38,000	13	950	1.4
	EM24	1/28/2020	N	440-259893-5	Alluvium	33.8 - 38.3	12,000	47,000	14	1,100 J+	2.1
	EM25	3/12/2020	N	440-262887-6	Alluvium	33.8 - 38.3	14,000	46,000	13 J-	1,300	2.0
	EM26	4/30/2020	N	440-265382-4	Alluvium	33.8 - 38.3	10,000	41,000	12	1,400	1.7
	EM27	7/9/2020	N	440-268680-5	Alluvium	33.8 - 38.3	8,900	30,000	14	1,400	2.3 J-
	EM28	8/19/2020	N	440-270632-6	Alluvium	33.8 - 38.3	7,300	27,000	11	1,100	2.1
	EM29	10/16/2020	N	440-273433-2	Alluvium	33.8 - 38.3	6,500	21,000	11	920	2.1
	EM30	12/9/2020	N	550-154431-7	Alluvium	33.8 - 38.3	6,000	23,000	12	930	1.5
	EM31	2/3/2021	N	550-157817-13	Alluvium	33.8 - 38.3	8,500	37,000	12	990	1.5
	EM32	3/31/2021	N	550-161063-7	Alluvium	33.8 - 38.3	8,500	24,000	9.5	1,000	1.6

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW07B	EM33	6/4/2021	N	550-164930-27	Alluvium	33.8 - 38.3	15,000	44,000	12	1,100	1.5 J+
	EM34	7/22/2021	N	550-167639-10	Alluvium	33.8 - 38.3	25,000	28,000	13	580	2.0
	EM35	9/16/2021	N	550-170815-9	Alluvium	33.8 - 38.3	25,000	47,000	14	1,400	1.7
	EM36	12/3/2021	N	550-175222-5	Alluvium	33.8 - 38.3	26,000	51,000	14	2,300	1.7
SWFTS-MW08A	BL01	3/30/2017	N	440-181045-9	Alluvium	20.2 - 34.8	14,000	20,000	11	1,700	1.5
	EM01	9/20/2017	FD	440-192627-10	Alluvium	20.2 - 34.8	10,000	46,000	13	1,500	1.4
	EM01	9/20/2017	N	440-192627-9	Alluvium	20.2 - 34.8	10,000	47,000	12	1,500	1.4
	EM02	9/26/2017	FD	440-192973-5	Alluvium	20.2 - 34.8	10,000	42,000	12	1,600	1.8
	EM02	9/26/2017	N	440-192973-4	Alluvium	20.2 - 34.8	9,800	40,000	12	1,600	1.7
	EM03	10/5/2017	FD	440-193712-15	Alluvium	20.2 - 34.8	9,800	49,000	12	1,500	2.0
	EM03	10/5/2017	N	440-193712-16	Alluvium	20.2 - 34.8	7,800	42,000	14	1,600	1.6
	EM04	10/10/2017	N	440-194094-4	Alluvium	20.2 - 34.8	9,500	43,000	12	1,500	1.6
	EM05	10/23/2017	FD	440-194846-2	Alluvium	20.2 - 34.8	8,100	40,000	12	1,500	1.8
	EM05	10/23/2017	N	440-194846-1	Alluvium	20.2 - 34.8	8,100	41,000	14	1,500	1.8
	EM06	11/15/2017	N	440-196659-4	Alluvium	20.2 - 34.8	9,000	43,000	14	1,500	1.6
	EM07	12/14/2017	N	440-198571-1	Alluvium	20.2 - 34.8	8,900	45,000	14	1,400	1.6
	EM08	2/22/2018	N	440-204033-8	Alluvium	20.2 - 34.8	9,500	54,000	14	1,600	1.9
	EM09	3/29/2018	N	440-207586-1	Alluvium	20.2 - 34.8	9,100	59,000	15	1,500	1.5
	EM10	5/3/2018	N	440-210534-5	Alluvium	20.2 - 34.8	9,100	55,000	17	1,700	1.5
	EM11	7/11/2018	N	440-215717-14	Alluvium	20.2 - 34.8	7,500	63,000	15	1,400	1.3
	EM13	8/16/2018	N	440-218296-4	Alluvium	20.2 - 34.8	5,500	47,000	15	1,300	1.8
	EM14	9/12/2018	N	440-220031-10	Alluvium	20.2 - 34.8	5,600	43,000	15	1,400	1.6
	EM15	10/10/2018	N	440-221975-13	Alluvium	20.2 - 34.8	5,500	42,000	15	1,400	1.8
	EM16	1/2/2019	N	440-229018-4	Alluvium	20.2 - 34.8	7,200	45,000	15	1,500	2.0
	EM17	2/28/2019	N	440-235000-5	Alluvium	20.2 - 34.8	7,500	53,000	16	1,300	1.7
	EM18	4/12/2019	N	440-238733-1	Alluvium	20.2 - 34.8	7,100	50,000	15	1,300	1.4
	EM19	5/22/2019	N	440-242198-4	Alluvium	20.2 - 34.8	7,600	46,000	14	1,300	1.5
	EM20	7/1/2019	N	440-245068-11	Alluvium	20.2 - 34.8	6,700	44,000	14	1,200	1.9
	EM21	8/15/2019	N	440-248187-11	Alluvium	20.2 - 34.8	6,500	41,000	12	1,300	1.9
	EM22	11/7/2019	N	440-254148-6	Alluvium	20.2 - 34.8	6,400	17,000	13	1,100	1.5
	EM23	12/19/2019	N	440-257866-13	Alluvium	20.2 - 34.8	9,100	49,000	13	1,300	1.3
	EM24	1/28/2020	N	440-259893-3	Alluvium	20.2 - 34.8	11,000	57,000	15 J-	1,300 J+	1.6
	EM25	3/12/2020	N	440-262887-4	Alluvium	20.2 - 34.8	14,000	58,000	14 J-	1,400	1.5
	EM26	4/29/2020	N	440-265346-3	Alluvium	20.2 - 34.8	12,000	51,000	14	1,400	1.4
	EM27	7/8/2020	N	440-268610-5	Alluvium	20.2 - 34.8	9,800	47,000	15	1,400	1.2
	EM28	8/17/2020	N	440-270515-5	Alluvium	20.2 - 34.8	8,500	21,000	12	1,200	1.8
	EM29	10/16/2020	N	440-273433-4	Alluvium	20.2 - 34.8	7,400	36,000	13	1,100	1.4
	EM30	12/9/2020	N	550-154431-3	Alluvium	20.2 - 34.8	9,000	38,000	13	1,300	1.4
	EM31	2/3/2021	N	550-157817-14	Alluvium	20.2 - 34.8	8,700	36,000	13	1,200	1.4
	EM32	3/31/2021	N	550-161063-8	Alluvium	20.2 - 34.8	9,100	38,000	12	1,200	1.3
	EM33	6/4/2021	N	550-164930-29	Alluvium	20.2 - 34.8	12,000	54,000	14	1,300	1.3 J+
	EM34	7/22/2021	N	550-167639-3	Alluvium	20.2 - 34.8	17,000	35,000	14	1,400	1.5
	EM35	9/16/2021	N	550-170815-10	Alluvium	20.2 - 34.8	19,000	68,000	15	1,500	1.3
	EM36	12/2/2021	N	550-175153-23	Alluvium	20.2 - 34.8	21,000	73,000	15	1,700	1.4 J+
SWFTS-MW08C	BL01	3/28/2017	N	440-180820-3	UMCf	49.9 - 69.5	7,800	55,000	13	2,800	1.3
	EM07	12/14/2017	N	440-198571-2	UMCf	49.9 - 69.5	9,300	50,000	13	--	1.1
	EM26	4/29/2020	N	440-265342-4	UMCf	49.9 - 69.5	8,800	52,000	--	--	--
SWFTS-MW09A	BL01	3/29/2017	N	440-180937-3	Alluvium	19.3 - 28.9	14,000	50,000	13	1,700	1.6
	EM01	9/21/2017	N	440-192818-1	Alluvium	19.3 - 28.9	3,400	1,200	<0.55	1,700	51
	EM02	9/28/2017	N	440-193167-14	Alluvium	19.3 - 28.9	54	<100	<0.55	1,700	40

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW09A	EM03	10/4/2017	N	440-193712-5	Alluvium	19.3 - 28.9	420	200	<0.55	1,800	22
	EM04	10/11/2017	N	440-194094-7	Alluvium	19.3 - 28.9	8.4 J+	55	<0.55	1,600	7.5
	EM05	10/25/2017	N	440-195026-2	Alluvium	19.3 - 28.9	1,300	1,700	<0.55	1,600	2.9
	EM06	11/16/2017	N	440-196786-14	Alluvium	19.3 - 28.9	3,400	8,400	1.2	1,500	2.1
	EM07	12/12/2017	N	440-198371-6	Alluvium	19.3 - 28.9	5,400	16,000	2.7	1,500	2.1
	EM08	2/20/2018	N	440-203841-14	Alluvium	19.3 - 28.9	6,800	16,000	5.3	1,500	2.1
	EM09	3/27/2018	N	440-207268-7	Alluvium	19.3 - 28.9	6,700	18,000	6.4	1,500	1.8
	EM10	5/1/2018	N	440-210284-13	Alluvium	19.3 - 28.9	7,300	19,000	8.0	1,400	1.6
	EM11	7/12/2018	N	440-215717-10	Alluvium	19.3 - 28.9	2,800	2,700	3.1	1,400	2.0
	EM12	7/27/2018	N	440-216872-9	Alluvium	19.3 - 28.9	1,900	1,600	--	--	--
	EM13	8/14/2018	N	440-218109-9	Alluvium	19.3 - 28.9	7,200	7,600	4.5	1,400	2.2
	EM14	9/11/2018	N	440-219886-12	Alluvium	19.3 - 28.9	4,000	13,000	6.5	1,500	1.7
	EM15	10/9/2018	N	440-221855-7	Alluvium	19.3 - 28.9	4,600	15,000	7.7	1,400	2.0
	EM16	12/27/2018	N	440-228818-5	Alluvium	19.3 - 28.9	3,600	14,000	9.1	1,400	1.8
	EM17	2/26/2019	N	440-234812-12	Alluvium	19.3 - 28.9	2,400	5,600	3.8	1,200	2.1
	EM18	4/10/2019	N	440-238531-3	Alluvium	19.3 - 28.9	3,500	12,000	6.0	1,400	1.8
	EM19	5/22/2019	N	440-242200-1	Alluvium	19.3 - 28.9	2,900	6,000	6.6	1,400	1.8
	EM20	7/2/2019	N	440-245153-10	Alluvium	19.3 - 28.9	3,500	13,000	6.5	1,400	2.2
	EM21	8/12/2019	N	440-247878-7	Alluvium	19.3 - 28.9	4,800	20,000	8.0	1,200	1.8
	EM22	11/5/2019	N	440-253891-1	Alluvium	19.3 - 28.9	2,500	8,400	3.6	1,200	2.0
	EM23	12/18/2019	N	440-257733-5	Alluvium	19.3 - 28.9	5,400	20,000	6.9 J+	1,000	1.7
	EM24	1/28/2020	N	440-259893-1	Alluvium	19.3 - 28.9	5,700	25,000	7.6 J-	1,200 J+	1.8
	EM25	3/10/2020	N	440-262640-5	Alluvium	19.3 - 28.9	7,100	27,000	7.5 J-	1,300	1.7
	EM26	4/28/2020	N	440-265289-4	Alluvium	19.3 - 28.9	7,500	28,000	8.2	1,300	1.6
	EM27	7/6/2020	N	440-268415-3	Alluvium	19.3 - 28.9	3,000	5,600	3.3	1,300	2.2
	EM28	8/18/2020	N	440-270573-1	Alluvium	19.3 - 28.9	5,500	17,000	5.7	1,200	2.3
	EM29	10/13/2020	N	440-273236-3	Alluvium	19.3 - 28.9	5,700	20,000	7.1	1,300	1.7
	EM30	12/9/2020	N	550-154431-1	Alluvium	19.3 - 28.9	4,800	17,000	8.0	1,400	1.6
	EM31	2/3/2021	N	550-157817-15	Alluvium	19.3 - 28.9	6,400	24,000	8.6	1,300	1.5
	EM32	4/1/2021	N	550-161146-1	Alluvium	19.3 - 28.9	3,400	6,600	4.3	1,200	1.8
	EM33	6/1/2021	N	550-164699-1	Alluvium	19.3 - 28.9	4,900	14,000	6.2	1,300	1.5
	EM34	7/20/2021	N	550-167449-3	Alluvium	19.3 - 28.9	8,400	23,000	8.7	1,300	1.6
	EM35	9/15/2021	N	550-170733-5	Alluvium	19.3 - 28.9	11,000	25,000	9.0	1,500	1.5
	EM36	12/2/2021	N	550-175153-9	Alluvium	19.3 - 28.9	8,800	19,000	5.4	1,600	2.0 J+
SWFTS-MW09B	BL01	3/29/2017	FD	440-180937-5	Alluvium	34.4 - 39.0	15,000	46,000	12	1,800	1.8
	BL01	3/29/2017	N	440-180937-4	Alluvium	34.4 - 39.0	13,000	46,000	12	1,900	1.8
	EM01	9/21/2017	N	440-192728-13	Alluvium	34.4 - 39.0	220	390	<0.55	1,700	30
	EM02	9/28/2017	N	440-193167-15	Alluvium	34.4 - 39.0	990	2,500	<0.55	1,700	25
	EM03	10/4/2017	N	440-193712-6	Alluvium	34.4 - 39.0	430	1,000	<1.1	1,500	29
	EM04	10/11/2017	N	440-194094-5	Alluvium	34.4 - 39.0	1,400	3,000	1.1	1,500	18
	EM05	10/25/2017	N	440-195026-1	Alluvium	34.4 - 39.0	2,700	7,700	1.7	1,400	2.4
	EM06	11/16/2017	N	440-196786-15	Alluvium	34.4 - 39.0	2,400	8,600	2.1	1,200	2.1
	EM07	12/12/2017	N	440-198371-7	Alluvium	34.4 - 39.0	3,500	13,000	3.4	1,300	2.1
	EM08	2/20/2018	N	440-203841-13	Alluvium	34.4 - 39.0	800	1,400	<1.1	1,200	2.5
	EM09	3/27/2018	N	440-207268-6	Alluvium	34.4 - 39.0	7,700	28,000	5.9	1,600	1.8
	EM10	4/30/2018	N	440-210173-11	Alluvium	34.4 - 39.0	7,400	23,000	7.9	1,600	1.8
	EM11	7/12/2018	N	440-215717-9	Alluvium	34.4 - 39.0	6,500	15,000	7.0	1,500	1.9
	EM12	7/26/2018	N	440-216784-1	Alluvium	34.4 - 39.0	6,600	20,000	--	--	--
	EM13	8/14/2018	N	440-218109-8	Alluvium	34.4 - 39.0	6,400	24,000	9.7	1,500	2.1
	EM14	9/11/2018	N	440-219886-13	Alluvium	34.4 - 39.0	6,600	28,000	11	1,500	1.6

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Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW09B	EM15	10/9/2018	N	440-221855-8	Alluvium	34.4 - 39.0	6,500	24,000	10	1,400	2.0
	EM16	12/28/2018	N	440-228887-1	Alluvium	34.4 - 39.0	5,500	21,000	11	1,300	1.7
	EM17	2/28/2019	N	440-235000-1	Alluvium	34.4 - 39.0	5,800	25,000	16 J-	1,400	1.9
	EM18	4/10/2019	N	440-238531-5	Alluvium	34.4 - 39.0	8,300	32,000	11	1,400	1.6
	EM19	5/22/2019	N	440-242200-2	Alluvium	34.4 - 39.0	7,300	30,000	10	1,300	1.6
	EM20	7/2/2019	N	440-245153-11	Alluvium	34.4 - 39.0	6,900	30,000	11	1,300	1.9
	EM21	8/12/2019	N	440-247878-8	Alluvium	34.4 - 39.0	7,200	28,000	11	1,100	1.9
	EM22	11/5/2019	N	440-253891-3	Alluvium	34.4 - 39.0	7,400	26,000	9.4	1,100	1.7
	EM23	12/18/2019	N	440-257733-6	Alluvium	34.4 - 39.0	8,300	28,000	11	1,100	1.5
	EM24	1/28/2020	N	440-259893-2	Alluvium	34.4 - 39.0	9,800	35,000	11 J-	1,300 J+	1.7
	EM25	3/10/2020	N	440-262640-6	Alluvium	34.4 - 39.0	11,000	36,000	11 J-	1,200	1.7
	EM26	4/28/2020	N	440-265289-3	Alluvium	34.4 - 39.0	12,000	39,000	11	1,400	1.6
	EM27	7/7/2020	N	440-268478-1	Alluvium	34.4 - 39.0	11,000	30,000	9.9	1,500	1.8
	EM28	8/18/2020	N	440-270573-3	Alluvium	34.4 - 39.0	11,000	31,000	11	1,400	2.0
	EM29	10/13/2020	N	440-273236-4	Alluvium	34.4 - 39.0	8,700	26,000	9.4	1,200	<0.65
	EM30	12/8/2020	N	550-154358-1	Alluvium	34.4 - 39.0	11,000	29,000	12	1,300	1.4
	EM31	2/1/2021	N	550-157577-7	Alluvium	34.4 - 39.0	10,000	21,000 J+	11	1,300	1.4
	EM32	4/1/2021	N	550-161146-2	Alluvium	34.4 - 39.0	9,000	20,000	12	1,200	1.5
	EM33	6/2/2021	N	550-164872-1	Alluvium	34.4 - 39.0	12,000	34,000	12	1,300	1.4
	EM34	7/20/2021	N	550-167449-2	Alluvium	34.4 - 39.0	15,000	34,000	12	1,300	1.5
	EM35	9/15/2021	N	550-170733-6	Alluvium	34.4 - 39.0	15,000	37,000	13	1,600	1.4
	EM36	12/2/2021	N	550-175153-11	Alluvium	34.4 - 39.0	20,000	46,000	13	1,700	1.7 J+
SWFTS-MW10A	BL01	3/31/2017	N	440-181122-2	Alluvium	20.4 - 35.0	13,000	27,000	5.1	1,400	2.8
	EM01	9/21/2017	N	440-192818-5	Alluvium	20.4 - 35.0	1.9 J	<50	<0.55	960	23
	EM02	9/27/2017	N	440-193062-5	Alluvium	20.4 - 35.0	100	<100	0.66 J	990	12
	EM03	10/4/2017	N	440-193625-5	Alluvium	20.4 - 35.0	14	<100	<0.28	920	10
	EM04	10/12/2017	N	440-194242-10	Alluvium	20.4 - 35.0	<0.95	13 J	<0.11	920	13
	EM05	10/24/2017	N	440-194947-8	Alluvium	20.4 - 35.0	14	630	<0.28	730	6.3
	EM06	11/16/2017	FD	440-196786-6	Alluvium	20.4 - 35.0	15	<50	<0.28	670	4.0
	EM06	11/16/2017	N	440-196786-5	Alluvium	20.4 - 35.0	11	<50	<0.28	690	4.2
	EM07	12/12/2017	FD	440-198371-11	Alluvium	20.4 - 35.0	170	180	<0.28	770	3.4
	EM07	12/12/2017	N	440-198371-10	Alluvium	20.4 - 35.0	160	190	<0.28	790	3.2
	EM08	2/20/2018	FD	440-203841-5	Alluvium	20.4 - 35.0	1,000	1,300	1.3 J	1,200	3.3
	EM08	2/20/2018	N	440-203841-4	Alluvium	20.4 - 35.0	990	1,400	<1.1	1,100	3.2
	EM09	3/26/2018	FD	440-207137-8	Alluvium	20.4 - 35.0	2,200	4,000	0.36 J	1,300	2.8 J-
	EM09	3/26/2018	N	440-207137-7	Alluvium	20.4 - 35.0	2,300	4,000	0.37 J	1,300	2.8
	EM10	5/1/2018	N	440-210284-1	Alluvium	20.4 - 35.0	4,300	4,800	0.96 J	1,300	2.5
	EM11	7/11/2018	N	440-215585-9	Alluvium	20.4 - 35.0	3,000 J-	40 J	0.89 J	1,300	2.2
	EM12	7/26/2018	N	440-216784-2	Alluvium	20.4 - 35.0	1,300	<10	--	--	--
	EM13	8/14/2018	N	440-218109-10	Alluvium	20.4 - 35.0	1,500	<10	<0.55	1,300	3.0
	EM14	9/10/2018	N	440-219797-4	Alluvium	20.4 - 35.0	1,500	<10	<0.55	1,200	2.9
	EM15	10/9/2018	N	440-221855-9	Alluvium	20.4 - 35.0	2,300	<20	<0.55	1,200	2.8
	EM16	12/20/2018	N	440-228491-6	Alluvium	20.4 - 35.0	3,000	83	1.3	1,300	3.4
	EM17	2/26/2019	N	440-234812-4	Alluvium	20.4 - 35.0	3,900	1,200	2.1 J	1,400	2.6
	EM18	4/10/2019	N	440-238544-1	Alluvium	20.4 - 35.0	2,800	1,400	1.7	1,400	2.8
	EM19	5/21/2019	N	440-242084-2	Alluvium	20.4 - 35.0	1,500	34 J	1.2	1,200	3.3
	EM20	7/1/2019	N	440-245046-3	Alluvium	20.4 - 35.0	1,500	<10	0.84 J	1,000	3.4
	EM21	8/12/2019	N	440-247878-3	Alluvium	20.4 - 35.0	870	<10	<0.55	930	3.1
	EM22	11/6/2019	N	440-254051-1	Alluvium	20.4 - 35.0	2,600	310	1.4	1,100	3.6 J-
	EM23	12/17/2019	N	440-257635-11	Alluvium	20.4 - 35.0	4,000 J+	3,600	2.1	1,200	4.4

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW10A	EM24	1/28/2020	N	440-259893-6	Alluvium	20.4 - 35.0	7,900	19,000	6.5	1,300 J+	2.3
	EM25	3/13/2020	N	440-263004-1	Alluvium	20.4 - 35.0	9,900	26,000	8.7	1,400	2.1 J+
	EM26	4/29/2020	N	440-265342-6	Alluvium	20.4 - 35.0	10,000	28,000	8.1	1,500	2.3
	EM27	7/7/2020	N	440-268478-2	Alluvium	20.4 - 35.0	9,600	24,000	7.9	1,500	2.8
	EM28	8/18/2020	N	440-270573-4	Alluvium	20.4 - 35.0	10,000	24,000	7.7	1,400	3.0
	EM29	10/14/2020	N	440-273303-4	Alluvium	20.4 - 35.0	9,100	27,000	8.3	1,500	3.1
	EM30	12/8/2020	N	550-154358-2	Alluvium	20.4 - 35.0	8,800	19,000	7.9	1,500	2.6 J-
	EM31	2/1/2021	N	550-157577-8	Alluvium	20.4 - 35.0	12,000	20,000 J+	8.6 J-	1,500 J-	2.0
	EM32	4/1/2021	N	550-161146-5	Alluvium	20.4 - 35.0	14,000 J-	19,000 J-	10 J	1,500	1.8 J-
	EM33	6/4/2021	N	550-164930-13	Alluvium	20.4 - 35.0	9,600	32,000	11	1,500	1.7 J
	EM34	7/20/2021	N	550-167449-12	Alluvium	20.4 - 35.0	12,000	17,000 J+	9.5	1,400	1.8
	EM35	9/15/2021	N	550-170733-7	Alluvium	20.4 - 35.0	12,000	24,000 J+	12	1,700	1.6
	EM36	11/30/2021	N	550-174968-17	Alluvium	20.4 - 35.0	12,000	25,000	7.8	1,600	1.9 J+
SWFTS-MW10C	BL01	3/28/2017	N	440-180820-4	UMCf	43.5 - 63.1	8,300	39,000	7.6	2,400	1.5
	EM07	12/12/2017	N	440-198371-9	UMCf	43.5 - 63.1	9,200	38,000	8.4	--	1.3
	EM26	5/1/2020	N	440-265414-1	UMCf	43.5 - 63.1	9,900	51,000	--	--	--
SWFTS-MW11	BL02	7/12/2017	N	440-188244-7	Alluvium	14.8 - 39.6	13,000 J+	41,000	12	1,900	1.8
	EM01	9/20/2017	N	440-192627-11	Alluvium	14.8 - 39.6	13,000	40,000	11	1,700	1.7
	EM02	9/26/2017	N	440-192973-3	Alluvium	14.8 - 39.6	14,000	37,000	12	1,800	2.1
	EM03	10/3/2017	N	440-193472-1	Alluvium	14.8 - 39.6	13,000	36,000	12	1,800	1.8
	EM04	10/11/2017	N	440-194094-8	Alluvium	14.8 - 39.6	16,000	38,000	11	1,800	1.6
	EM05	10/24/2017	N	440-194947-9	Alluvium	14.8 - 39.6	13,000	36,000	12	1,800	5.7
	EM06	11/16/2017	N	440-196786-3	Alluvium	14.8 - 39.6	14,000	37,000	12	1,800	1.7
	EM07	12/14/2017	N	440-198571-13	Alluvium	14.8 - 39.6	12,000	40,000	11	1,800	2.0
	EM08	2/21/2018	FD	440-203937-11	Alluvium	14.8 - 39.6	12,000	46,000	13	2,000	1.9
	EM08	2/21/2018	N	440-203937-10	Alluvium	14.8 - 39.6	12,000	45,000	14	1,900	1.7
	EM09	3/28/2018	FD	440-207497-8	Alluvium	14.8 - 39.6	13,000	49,000	14	2,100	1.5
	EM09	3/28/2018	N	440-207497-7	Alluvium	14.8 - 39.6	13,000	49,000	14	1,900	1.5
	EM10	5/1/2018	FD	440-210367-1	Alluvium	14.8 - 39.6	12,000	48,000	14	1,900	1.4
	EM10	5/1/2018	N	440-210284-11	Alluvium	14.8 - 39.6	13,000	52,000	14	1,900	1.5
	EM11	7/12/2018	FD	440-215717-18	Alluvium	14.8 - 39.6	11,000	52,000	16	1,900	1.2
	EM11	7/12/2018	N	440-215717-17	Alluvium	14.8 - 39.6	11,000	52,000	16	1,900	1.2
	EM13	8/16/2018	FD	440-218296-13	Alluvium	14.8 - 39.6	9,600	52,000	16	1,900	1.8
	EM13	8/16/2018	N	440-218296-12	Alluvium	14.8 - 39.6	9,400	53,000	16	1,900	1.7
	EM14	9/12/2018	FD	440-220031-9	Alluvium	14.8 - 39.6	11,000	52,000	16	1,800	1.4
	EM14	9/12/2018	N	440-220031-8	Alluvium	14.8 - 39.6	11,000	52,000	16	1,800	1.5
	EM15	10/11/2018	FD	440-222092-11	Alluvium	14.8 - 39.6	11,000	52,000	17	1,900	1.7
	EM15	10/11/2018	N	440-222092-10	Alluvium	14.8 - 39.6	10,000	54,000	17	1,900	1.6
	EM16	1/2/2019	FD	440-229018-9	Alluvium	14.8 - 39.6	8,400	45,000	16	1,700	1.5
	EM16	1/2/2019	N	440-229018-8	Alluvium	14.8 - 39.6	8,600	44,000	16	1,700	1.5
	EM17	3/1/2019	FD	440-235133-4	Alluvium	14.8 - 39.6	7,700 J+	41,000	17	1,700	1.6
	EM17	3/1/2019	N	440-235133-3	Alluvium	14.8 - 39.6	7,900 J+	42,000	17	1,700	1.5
	EM18	4/12/2019	FD	440-238733-7	Alluvium	14.8 - 39.6	7,800	42,000	17	1,600	1.4
	EM18	4/12/2019	N	440-238733-6	Alluvium	14.8 - 39.6	7,700	41,000	15	1,600	1.9
	EM19	5/22/2019	FD	440-242200-4	Alluvium	14.8 - 39.6	7,800	44,000	16	1,600	1.8
	EM19	5/22/2019	N	440-242200-3	Alluvium	14.8 - 39.6	8,000	44,000	14	1,500	1.7
	EM20	7/3/2019	FD	440-245218-4	Alluvium	14.8 - 39.6	7,500	43,000	17	1,500	1.9
	EM20	7/3/2019	N	440-245218-3	Alluvium	14.8 - 39.6	7,100	43,000	16	1,500	1.9
	EM21	8/15/2019	FD	440-248187-4	Alluvium	14.8 - 39.6	8,900	43,000	16	1,400	1.8
	EM21	8/15/2019	N	440-248187-3	Alluvium	14.8 - 39.6	9,200	43,000	16	1,400	1.8

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW11	EM22	11/7/2019	FD	440-254150-4	Alluvium	14.8 - 39.6	7,400	43,000	14	1,300	1.5
	EM22	11/7/2019	N	440-254150-3	Alluvium	14.8 - 39.6	7,600	42,000	14	1,300	1.5
	EM23	12/17/2019	FD	440-257635-4	Alluvium	14.8 - 39.6	8,300	20,000	14	1,600	1.4
	EM23	12/17/2019	N	440-257635-3	Alluvium	14.8 - 39.6	8,200	21,000	14	1,600	1.6
	EM24	1/28/2020	FD	440-259893-8	Alluvium	14.8 - 39.6	10,000	47,000	15	1,700 J+	1.5
	EM24	1/28/2020	N	440-259893-7	Alluvium	14.8 - 39.6	10,000	47,000	15	1,500 J+	1.6
	EM25	3/13/2020	FD	440-263003-4	Alluvium	14.8 - 39.6	12,000	51,000	14	1,800	2.2
	EM25	3/13/2020	N	440-263003-2	Alluvium	14.8 - 39.6	12,000	51,000	15	1,700	2.0
	EM26	4/30/2020	FD	440-265383-5	Alluvium	14.8 - 39.6	12,000	51,000	15	1,800	1.5
	EM26	4/30/2020	N	440-265383-4	Alluvium	14.8 - 39.6	11,000	52,000	14	1,800	1.6
	EM27	7/7/2020	FD	440-268478-4	Alluvium	14.8 - 39.6	11,000	41,000	13	2,000	1.9
	EM27	7/7/2020	N	440-268478-3	Alluvium	14.8 - 39.6	11,000	41,000	13	2,000	1.7
	EM28	8/18/2020	FD	440-270573-6	Alluvium	14.8 - 39.6	11,000	41,000	12	1,900	2.0
	EM28	8/18/2020	N	440-270573-5	Alluvium	14.8 - 39.6	10,000	42,000	13	1,900	2.0
	EM29	10/16/2020	FD	440-273433-8	Alluvium	14.8 - 39.6	9,500	35,000	11 J+	1,700	2.2
	EM29	10/16/2020	N	440-273433-7	Alluvium	14.8 - 39.6	9,500	34,000	11 J+	1,700	1.7
	EM30	12/8/2020	FD	550-154358-4	Alluvium	14.8 - 39.6	8,200	32,000	13	1,800	1.4
	EM30	12/8/2020	N	550-154358-3	Alluvium	14.8 - 39.6	8,100	32,000	13	1,800	1.3
	EM31	2/1/2021	FD	550-157577-10	Alluvium	14.8 - 39.6	8,600	27,000 J+	13	1,700	1.4
	EM31	2/1/2021	N	550-157577-9	Alluvium	14.8 - 39.6	8,700	29,000	13	1,700	1.2
	EM32	4/1/2021	FD	550-161146-7	Alluvium	14.8 - 39.6	8,800	19,000	13 J	1,700	1.5
	EM32	4/1/2021	N	550-161146-6	Alluvium	14.8 - 39.6	8,600	22,000	13 J	1,700	1.4
	EM33	6/4/2021	FD	550-164930-9	Alluvium	14.8 - 39.6	9,400	33,000	13	1,600	1.3 J+
	EM33	6/4/2021	N	550-164930-7	Alluvium	14.8 - 39.6	9,300	37,000	13	1,600	1.3 J+
	EM34	7/22/2021	FD	550-167639-8	Alluvium	14.8 - 39.6	13,000	28,000	13	700 J	1.4
	EM34	7/22/2021	N	550-167639-7	Alluvium	14.8 - 39.6	13,000	29,000	13	1,500 J	1.5
	EM35	9/16/2021	FD	550-170815-12	Alluvium	14.8 - 39.6	17,000	36,000	14	1,600	1.4
	EM35	9/16/2021	N	550-170815-11	Alluvium	14.8 - 39.6	16,000	33,000 J+	14	1,600	1.4
	EM36	12/3/2021	FD	550-175222-9	Alluvium	14.8 - 39.6	20,000	53,000	14	2,000	1.4
	EM36	12/3/2021	N	550-175222-7	Alluvium	14.8 - 39.6	20,000	53,000	14	2,400	1.5
SWFTS-MW12	BL02	7/13/2017	N	440-188324-6	Alluvium	15.8 - 40.6	5,100	37,000	16	2,600	0.88 J
	EM01	9/19/2017	N	440-192627-2	Alluvium	15.8 - 40.6	5,100	36,000	14	2,700	1.1
	EM02	9/26/2017	N	440-192973-10	Alluvium	15.8 - 40.6	4,900	34,000	14	2,600	1.6
	EM03	10/3/2017	N	440-193622-2	Alluvium	15.8 - 40.6	5,400	34,000	14 J-	2,500	0.78 J
	EM04	10/11/2017	N	440-194090-1	Alluvium	15.8 - 40.6	4,800	35,000	13	2,600	0.93 J
	EM05	10/24/2017	N	440-194947-10	Alluvium	15.8 - 40.6	5,000	37,000	14	2,600	1.2
	EM06	11/14/2017	N	440-196558-5	Alluvium	15.8 - 40.6	4,700	33,000	14	2,700	0.99 J
	EM07	12/14/2017	N	440-198571-15	Alluvium	15.8 - 40.6	4,900	30,000	13	2,800	1.5
	EM08	2/22/2018	N	440-204033-2	Alluvium	15.8 - 40.6	4,500	26,000	12	2,300	1.6
	EM09	3/28/2018	N	440-207497-5	Alluvium	15.8 - 40.6	6,400	39,000	14	2,300	1.3
	EM10	5/3/2018	N	440-210534-4	Alluvium	15.8 - 40.6	4,200	28,000	13	2,700	0.89 J
	EM11	7/12/2018	N	440-215717-16	Alluvium	15.8 - 40.6	4,600	35,000	13	2,500	0.69 J
	EM13	8/16/2018	N	440-218296-14	Alluvium	15.8 - 40.6	4,000	34,000	14	2,800	1.2
	EM14	9/12/2018	N	440-220031-11	Alluvium	15.8 - 40.6	4,800	36,000	14	2,400	1.1
	EM15	10/11/2018	N	440-222092-12	Alluvium	15.8 - 40.6	4,200	28,000	14	2,400	1.3
	EM16	1/2/2019	N	440-229018-7	Alluvium	15.8 - 40.6	5,800	55,000	17	2,500	1.2
	EM17	2/28/2019	N	440-235000-4	Alluvium	15.8 - 40.6	3,700	29,000	14	2,700	1.1
	EM18	4/12/2019	N	440-238733-2	Alluvium	15.8 - 40.6	4,500	31,000	14	2,500	1.2
	EM19	5/22/2019	N	440-242198-7	Alluvium	15.8 - 40.6	4,400	32,000	12	2,700	0.87 J
	EM20	7/5/2019	N	440-245259-4	Alluvium	15.8 - 40.6	4,300	33,000	13 J+	2,600	1.2

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Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW12	EM21	8/16/2019	N	440-248259-2	Alluvium	15.8 - 40.6	4,200	31,000	13	2,800	1.2
	EM22	11/7/2019	N	440-254150-2	Alluvium	15.8 - 40.6	<4.8	88 J	<0.55	1,300	560
	EM22	11/26/2019	FD	440-255698-2	Alluvium	15.8 - 40.6	<4.8	<20	<0.55	84	610 J-
	EM22	11/26/2019	N	440-255698-1	Alluvium	15.8 - 40.6	<4.8	<20	<0.55	78	610 J-
	EM23	12/20/2019	N	440-257938-1	Alluvium	15.8 - 40.6	<4.8	<10	<0.55	2.6 J	230
	EM24	1/29/2020	N	440-259981-1	Alluvium	15.8 - 40.6	22	60 J	<0.55	130 J+	14 J-
	EM25	3/12/2020	N	440-262887-3	Alluvium	15.8 - 40.6	170	<10	0.55 R	1,100	9.3
	EM26	4/30/2020	N	440-265383-3	Alluvium	15.8 - 40.6	<4.8	<10	<0.55	780	8.2
	EM27	7/7/2020	N	440-268478-5	Alluvium	15.8 - 40.6	<0.95	<10	<0.55	990	13
	EM28	8/18/2020	N	440-270573-7	Alluvium	15.8 - 40.6	<0.95	<10	<0.55	1,100	9.3
	EM29	10/16/2020	N	440-273433-6	Alluvium	15.8 - 40.6	<0.95	<10	<0.55	1,500	4.8
	EM30	12/8/2020	N	550-154358-5	Alluvium	15.8 - 40.6	0.48 J	<20	<0.014	1,900	8.2
	EM31	2/2/2021	N	550-157679-9	Alluvium	15.8 - 40.6	<0.31	<9.8	<0.014	2,000	2.6 J+
	EM32	4/1/2021	N	550-161146-8	Alluvium	15.8 - 40.6	0.97 J	<49	<0.014 UJ	1,800	5.5
	EM33	6/4/2021	N	550-164930-5	Alluvium	15.8 - 40.6	540	83	1.9	2,200	2.2 J+
	EM34	7/22/2021	N	550-167639-5	Alluvium	15.8 - 40.6	840	430	2.8	2,300	6.1
	EM35	9/15/2021	N	550-170733-4	Alluvium	15.8 - 40.6	390	950	1.5	2,000	3.2
	EM36	12/2/2021	N	550-175153-19	Alluvium	15.8 - 40.6	1,500	4,400	4.6	2,600	2.2 J+
SWFTS-MW13	BL02	7/12/2017	N	440-188244-6	Alluvium	17.8 - 47.6	4,600	40,000	12	2,100	1.6
	EM01	9/20/2017	N	440-192627-12	Alluvium	17.8 - 47.6	10,000	52,000	17	2,500	1.1
	EM02	9/26/2017	N	440-192973-9	Alluvium	17.8 - 47.6	6,200	53,000	18	2,500	1.4
	EM03	10/3/2017	N	440-193622-1	Alluvium	17.8 - 47.6	6,900	100	17 J-	2,600	1.1
	EM04	10/10/2017	N	440-193989-4	Alluvium	17.8 - 47.6	6,300	51,000	16	2,900	0.98 J
	EM05	10/24/2017	N	440-194947-11	Alluvium	17.8 - 47.6	6,100	52,000	19	2,800	1.3
	EM06	11/15/2017	N	440-196659-1	Alluvium	17.8 - 47.6	5,900	49,000	16	2,800	0.93 J
	EM07	12/14/2017	N	440-198571-14	Alluvium	17.8 - 47.6	6,200	49,000	16	2,800	1.2
	EM08	2/22/2018	N	440-204033-7	Alluvium	17.8 - 47.6	5,800	50,000	15	2,600	1.5
	EM09	3/26/2018	N	440-207137-4	Alluvium	17.8 - 47.6	6,400	52,000	16 J+	2,700	1.2
	EM10	5/3/2018	N	440-210534-1	Alluvium	17.8 - 47.6	6,000	49,000	18	2,700	1.1
	EM11	7/12/2018	N	440-215717-15	Alluvium	17.8 - 47.6	6,300	49,000	16	2,700	0.80 J
	EM13	8/16/2018	N	440-218296-15	Alluvium	17.8 - 47.6	5,200	54,000	17	2,600	1.3
	EM14	9/13/2018	N	440-220125-6	Alluvium	17.8 - 47.6	5,000	48,000	16	2,700	1.2
	EM15	10/11/2018	N	440-222092-14	Alluvium	17.8 - 47.6	5,800	55,000	17	2,600	1.2
	EM16	1/2/2019	N	440-229018-6	Alluvium	17.8 - 47.6	3,900	28,000	13	2,400	1.1
	EM17	2/28/2019	N	440-235000-3	Alluvium	17.8 - 47.6	5,500	53,000	18	2,900	1.1
	EM18	4/12/2019	N	440-238733-3	Alluvium	17.8 - 47.6	5,300	45,000	18	2,500	1.2
	EM19	5/22/2019	N	440-242198-5	Alluvium	17.8 - 47.6	5,300	45,000	17	2,600	0.94 J
	EM20	7/5/2019	N	440-245259-5	Alluvium	17.8 - 47.6	5,600	48,000	17	2,700	1.3
	EM21	8/16/2019	N	440-248259-3	Alluvium	17.8 - 47.6	5,200	51,000	18	2,600	1.3
	EM22	11/6/2019	N	440-254051-6	Alluvium	17.8 - 47.6	6,200	50,000	16	2,700	1.2
	EM23	12/20/2019	N	440-257938-3	Alluvium	17.8 - 47.6	5,300	43,000	14	2,400	0.84 J
	EM24	1/29/2020	N	440-259981-3	Alluvium	17.8 - 47.6	5,400	48,000	16	2,700 J+	1.1
	EM25	3/12/2020	N	440-262887-2	Alluvium	17.8 - 47.6	5,100	46,000	15 J-	2,700	0.89 J
	EM26	4/30/2020	N	440-265383-2	Alluvium	17.8 - 47.6	4,900	48,000	18	2,700	0.79 J
	EM27	7/10/2020	N	440-268742-4	Alluvium	17.8 - 47.6	5,700	51,000	17	2,900	1.1
	EM28	8/18/2020	N	440-270573-8	Alluvium	17.8 - 47.6	5,600	49,000	16	2,700	1.2
	EM29	10/15/2020	N	550-151259-6	Alluvium	17.8 - 47.6	5,300	57,000	18	2,700	0.82 J
	EM30	12/8/2020	N	550-154358-6	Alluvium	17.8 - 47.6	7,200	54,000	18	2,800	1.1
	EM31	2/2/2021	N	550-157679-10	Alluvium	17.8 - 47.6	6,900	28,000 J+	17	2,600	0.95 J+
	EM32	3/31/2021	N	550-161063-13	Alluvium	17.8 - 47.6	5,400	27,000 J+	18	2,800	1.1

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW13	EM33	6/4/2021	N	550-164930-3	Alluvium	17.8 - 47.6	5,300	40,000	18	3,000	0.95 J+
	EM34	7/22/2021	N	550-167639-4	Alluvium	17.8 - 47.6	5,900	50,000	18	2,800	0.98
	EM35	9/15/2021	N	550-170733-3	Alluvium	17.8 - 47.6	5,900	53,000	19	3,900	0.91
	EM36	12/2/2021	N	550-175153-17	Alluvium	17.8 - 47.6	5,900	49,000	18	3,100	1.1 J+
SWFTS-MW14	BL02	7/12/2017	FD	440-188244-9	Alluvium	16.8 - 36.6	22,000	52,000	12	2,000	2.3
	BL02	7/12/2017	N	440-188244-8	Alluvium	16.8 - 36.6	23,000	54,000	12	2,000	2.6
	EM01	9/20/2017	N	440-192728-1	Alluvium	16.8 - 36.6	<9.5	<100	<0.55	1,900	100
	EM02	9/26/2017	N	440-193062-15	Alluvium	16.8 - 36.6	<4.8	2,400	<1.1	1,800	81
	EM03	10/3/2017	N	440-193622-3	Alluvium	16.8 - 36.6	4.8	<100	<0.55 UJ	1,500	36
	EM04	10/11/2017	N	440-194242-8	Alluvium	16.8 - 36.6	<9.5	<50	<0.55	1,200	4.1
	EM05	10/27/2017	N	440-195218-4	Alluvium	16.8 - 36.6	26	<50	<0.28	1,100	3.5
	EM06	11/15/2017	N	440-196659-3	Alluvium	16.8 - 36.6	20 J+	<50	<0.55	1,100	3.1
	EM07	12/12/2017	N	440-198371-12	Alluvium	16.8 - 36.6	1,600	2,400	<0.55	1,200	2.6
	EM08	2/20/2018	N	440-203841-11	Alluvium	16.8 - 36.6	2,200	<100	<1.1	780	670
	EM09	3/26/2018	N	440-207137-9	Alluvium	16.8 - 36.6	5,500	<50	<0.28	410	220
	EM10	4/30/2018	N	440-210173-9	Alluvium	16.8 - 36.6	4,300	26 J	<0.55	160	91
	EM11	7/10/2018	N	440-215437-8	Alluvium	16.8 - 36.6	6.5	<25	<0.55	110	180
	EM12	7/26/2018	N	440-216784-3	Alluvium	16.8 - 36.6	<95	<10	--	--	--
	EM13	8/14/2018	N	440-218109-11	Alluvium	16.8 - 36.6	8.2 J	<10	<0.55	320	130
	EM14	9/11/2018	N	440-219886-17	Alluvium	16.8 - 36.6	6.4 J	<10	<0.55	440	91
	EM15	10/9/2018	N	440-221855-10	Alluvium	16.8 - 36.6	<0.95	<20	<1.1	610	80
	EM16	12/20/2018	N	440-228491-2	Alluvium	16.8 - 36.6	<0.95	<10	<0.28	720 J+	16
	EM17	2/26/2019	N	440-234812-1	Alluvium	16.8 - 36.6	<0.95	<10	<0.55	790	6.2
	EM18	4/9/2019	N	440-238618-4	Alluvium	16.8 - 36.6	38	150	<0.55 UJ	600	5.3
	EM19	5/21/2019	N	440-242084-1	Alluvium	16.8 - 36.6	<0.95	<20	<0.55	830	6.3
	EM20	7/2/2019	N	440-245153-7	Alluvium	16.8 - 36.6	2.8 J	<4.0	<0.11	860	6.5
	EM21	8/13/2019	N	440-247965-6	Alluvium	16.8 - 36.6	<0.50	<10	<0.55	870	6.7
	EM22	11/6/2019	N	440-254051-2	Alluvium	16.8 - 36.6	<0.95	28 J	<0.55	990	5.6
	EM23	12/17/2019	N	440-257635-7	Alluvium	16.8 - 36.6	<4.8	<10	<0.55	1,200	4.0
	EM24	1/29/2020	N	440-259981-4	Alluvium	16.8 - 36.6	<0.95	<10	<0.55	1,200 J+	3.9
	EM25	3/13/2020	N	440-263004-2	Alluvium	16.8 - 36.6	<0.95	<20	<0.28	1,300	4.2 J+
	EM26	5/1/2020	N	440-265414-2	Alluvium	16.8 - 36.6	97	<20	<0.55	1,400	3.8
	EM27	7/7/2020	N	440-268478-6	Alluvium	16.8 - 36.6	<0.95	<10	<0.55	1,500	4.0
	EM28	8/19/2020	N	440-270634-1	Alluvium	16.8 - 36.6	210	<10	<0.55	1,600	4.7
	EM29	10/14/2020	N	440-273303-5	Alluvium	16.8 - 36.6	460	21 J	<0.55	1,600	4.0
	EM30	12/8/2020	N	550-154358-7	Alluvium	16.8 - 36.6	2,900	<20	0.89 J+	1,600	2.2
	EM31	2/2/2021	N	550-157679-13	Alluvium	16.8 - 36.6	3,300	<49	1.4	1,500	2.2 J+
	EM32	3/31/2021	N	550-161063-12	Alluvium	16.8 - 36.6	760	<49	0.086	1,400	2.4
	EM33	6/4/2021	N	550-164930-1	Alluvium	16.8 - 36.6	3,400	73 J	0.99	1,400	2.2 J+
	EM34	7/21/2021	N	550-167523-12	Alluvium	16.8 - 36.6	2,700	2,300	0.91	1,300	4.5
	EM35	9/16/2021	N	550-170815-16	Alluvium	16.8 - 36.6	6,000	100	1.9	1,400	2.4
	EM36	12/3/2021	N	550-175222-1	Alluvium	16.8 - 36.6	670	59 J	0.16	2,000	2.9
SWFTS-MW15	BL02	7/13/2017	N	440-188325-3	Alluvium	14.8 - 34.6	15,000	43,000	10	1,700	1.6
	EM01	9/20/2017	N	440-192728-2	Alluvium	14.8 - 34.6	11,000	40,000	10	1,600	1.6
	EM02	9/26/2017	N	440-193062-13	Alluvium	14.8 - 34.6	12,000	41,000	11	1,600	1.5
	EM03	10/4/2017	N	440-193625-4	Alluvium	14.8 - 34.6	11,000	39,000	12	1,500	1.4
	EM04	10/10/2017	N	440-194094-1	Alluvium	14.8 - 34.6	18,000	40,000	11	1,500	1.6
	EM05	10/27/2017	N	440-195218-3	Alluvium	14.8 - 34.6	13,000	38,000	13	1,600	1.8
	EM06	11/14/2017	N	440-196558-4	Alluvium	14.8 - 34.6	9,900	38,000	12	1,600	1.8
	EM07	12/13/2017	N	440-198508-13	Alluvium	14.8 - 34.6	13,000	38,000	12	1,700	1.6

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW15	EM08	2/19/2018	N	440-203775-4	Alluvium	14.8 - 34.6	12,000	47,000	11	1,600	1.6
	EM09	3/26/2018	N	440-207137-10	Alluvium	14.8 - 34.6	12,000	52,000	12	1,600	1.7
	EM10	5/2/2018	N	440-210430-3	Alluvium	14.8 - 34.6	13,000	59,000	14	1,500	1.4
	EM11	7/11/2018	N	440-215717-1	Alluvium	14.8 - 34.6	9,300	45,000	12 J-	1,500	3.5
	EM12	7/26/2018	N	440-216784-4	Alluvium	14.8 - 34.6	6,800	39,000	--	--	--
	EM13	8/15/2018	N	440-218208-12	Alluvium	14.8 - 34.6	9,000	52,000	16	1,400	1.9
	EM14	9/11/2018	N	440-219886-2	Alluvium	14.8 - 34.6	7,800	48,000	16	1,500	1.4
	EM15	10/9/2018	N	440-221855-11	Alluvium	14.8 - 34.6	6,400	28,000	7.5	1,500	3.3
	EM16	12/20/2018	N	440-228491-1	Alluvium	14.8 - 34.6	5,300	33,000	9.4	1,400	1.8
	EM17	2/25/2019	N	440-234705-1	Alluvium	14.8 - 34.6	6,200	31,000	9.2	1,200	3.0
	EM18	4/9/2019	N	440-238618-11	Alluvium	14.8 - 34.6	9,700	53,000	14 J-	1,400	1.4
	EM19	5/20/2019	N	440-242014-1	Alluvium	14.8 - 34.6	9,200	48,000	15	1,300	1.6
	EM20	7/2/2019	N	440-245153-9	Alluvium	14.8 - 34.6	8,800	49,000	13	1,300	2.0
	EM21	8/13/2019	N	440-247965-5	Alluvium	14.8 - 34.6	6,400	50,000	14	1,200	1.7
	EM22	11/6/2019	N	440-254051-3	Alluvium	14.8 - 34.6	9,900	46,000	13	1,200	1.4
	EM23	12/17/2019	N	440-257635-6	Alluvium	14.8 - 34.6	9,700	46,000	13	1,200	1.3
	EM24	1/29/2020	N	440-259981-5	Alluvium	14.8 - 34.6	12,000	49,000	15	1,500 J+	1.6
	EM25	3/13/2020	N	440-263004-3	Alluvium	14.8 - 34.6	14,000	44,000	13	1,400	1.8 J+
	EM26	4/29/2020	N	440-265342-3	Alluvium	14.8 - 34.6	13,000	46,000	13	1,400	1.5
	EM27	7/7/2020	N	440-268478-7	Alluvium	14.8 - 34.6	9,700	24,000	4.6	1,400	34
	EM28	8/19/2020	N	440-270634-2	Alluvium	14.8 - 34.6	4,400	14,000	3.8	1,300	11
	EM29	10/15/2020	N	550-151259-4	Alluvium	14.8 - 34.6	4,800	16,000	5.7	1,300	3.5
	EM30	12/8/2020	N	550-154358-8	Alluvium	14.8 - 34.6	6,200	22,000	7.0	1,300	2.0
	EM31	2/2/2021	N	550-157679-14	Alluvium	14.8 - 34.6	7,700	31,000	7.7	1,300	1.5 J+
	EM32	3/31/2021	N	550-161063-11	Alluvium	14.8 - 34.6	7,900	23,000	6.0	1,200	3.8
	EM33	6/3/2021	N	550-164869-13	Alluvium	14.8 - 34.6	17,000	40,000	11	1,300	1.9
	EM34	7/21/2021	N	550-167523-4	Alluvium	14.8 - 34.6	11,000	24,000	8.0	1,200	2.5 J+
	EM35	9/16/2021	N	550-170815-14	Alluvium	14.8 - 34.6	18,000	30,000	12	1,500	1.8
	EM36	11/30/2021	N	550-174968-9	Alluvium	14.8 - 34.6	23,000	58,000	15	1,700	1.7 J+
SWFTS-MW16	BL02	7/13/2017	N	440-188325-2	Alluvium	21.8 - 41.6	8,400	38,000	12	2,100	1.6
	EM01	9/22/2017	N	440-192818-7	Alluvium	21.8 - 41.6	1,700	8,700	3.3	1,900	120
	EM02	9/26/2017	N	440-192973-6	Alluvium	21.8 - 41.6	1,300	8,800	3.8	2,000	68
	EM03	10/3/2017	N	440-193472-3	Alluvium	21.8 - 41.6	1,600	6,300	2.7	1,800	92
	EM04	10/12/2017	N	440-194204-7	Alluvium	21.8 - 41.6	1,100	5,800	2.1	1,500	180
	EM05	10/24/2017	N	440-194947-2	Alluvium	21.8 - 41.6	830	4,700	1.5	520	180
	EM06	11/16/2017	N	440-196786-4	Alluvium	21.8 - 41.6	<0.95	4,000	1.2	480	110
	EM07	12/12/2017	N	440-198371-4	Alluvium	21.8 - 41.6	490	3,100	1.1	550	5.9
	EM08	2/21/2018	N	440-203937-6	Alluvium	21.8 - 41.6	620	2,800	<1.1	1,000	7.7
	EM09	3/27/2018	N	440-207268-13	Alluvium	21.8 - 41.6	9,000	46,000	12	1,700	1.5
	EM10	5/2/2018	N	440-210430-13	Alluvium	21.8 - 41.6	1,500 J	11,000	3.5	1,600	2.3
	EM11	7/11/2018	N	440-215585-12	Alluvium	21.8 - 41.6	<4.8	<5.0	<0.55	690	7.9
	EM12	7/26/2018	N	440-216784-5	Alluvium	21.8 - 41.6	<0.95	<4.0	--	--	--
	EM13	8/15/2018	N	440-218208-13	Alluvium	21.8 - 41.6	12	67	<0.28	1,100	3.2
	EM14	9/10/2018	N	440-219797-6	Alluvium	21.8 - 41.6	200	1,400	0.42 J	1,300	2.9
	EM15	10/11/2018	N	440-222092-3	Alluvium	21.8 - 41.6	340	2,200	0.76 J	1,800	2.8
	EM16	12/19/2018	N	440-228394-1	Alluvium	21.8 - 41.6	270	2,300	1.0 J	1,600	2.5
	EM17	2/26/2019	N	440-234812-7	Alluvium	21.8 - 41.6	<0.95	<10	<0.55	970	5.6
	EM18	4/9/2019	N	440-238618-12	Alluvium	21.8 - 41.6	<0.95	<10	<0.55 UJ	970	2.9
	EM19	5/20/2019	N	440-242014-3	Alluvium	21.8 - 41.6	<0.95 UJ	<10	<0.55	1,100	3.5
	EM20	7/1/2019	N	440-245068-1	Alluvium	21.8 - 41.6	<0.95	<10	<0.55	1,100	4.0

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Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW16	EM21	8/13/2019	N	440-247965-4	Alluvium	21.8 - 41.6	19	100	<0.55	1,300	3.6
	EM22	11/6/2019	N	440-254051-5	Alluvium	21.8 - 41.6	<0.95	<40	<0.55	820	3.2
	EM23	12/17/2019	N	440-257635-1	Alluvium	21.8 - 41.6	<4.8	<10	<0.55	990	2.3
	EM24	1/29/2020	N	440-259981-6	Alluvium	21.8 - 41.6	<0.95	<100	<0.55	1,200 J+	2.7
	EM25	3/13/2020	N	440-263003-3	Alluvium	21.8 - 41.6	<0.95	<10	<0.55	1,300	3.6
	EM26	4/30/2020	N	440-265383-1	Alluvium	21.8 - 41.6	<4.8	<10	<0.55	1,300	5.7
	EM27	7/9/2020	N	440-268679-1	Alluvium	21.8 - 41.6	<0.95	16 J	<0.55	950	4.9
	EM28	8/19/2020	N	440-270634-3	Alluvium	21.8 - 41.6	<4.8	<10	<0.55	1,100	4.9
	EM29	10/15/2020	N	550-151259-1	Alluvium	21.8 - 41.6	<0.95	16 J	<0.014	1,100	3.6
	EM30	12/8/2020	N	550-154358-9	Alluvium	21.8 - 41.6	<0.31	<20	<0.014	1,100	2.7
	EM31	2/2/2021	N	550-157679-15	Alluvium	21.8 - 41.6	<0.31	<49	<0.014	1,200	2.8 J+
	EM32	3/31/2021	N	550-161063-10	Alluvium	21.8 - 41.6	2.4	<9.8	0.051	1,200	2.8
	EM33	6/3/2021	N	550-164869-11	Alluvium	21.8 - 41.6	450	<9.8	0.096	1,300	1.9
	EM34	7/21/2021	N	550-167523-3	Alluvium	21.8 - 41.6	960	<24	0.20	1,300	2.3 J+
	EM35	9/16/2021	N	550-170815-15	Alluvium	21.8 - 41.6	1,100	33 J	0.20	1,400	2.9
	EM36	11/30/2021	N	550-174968-11	Alluvium	21.8 - 41.6	1,900	16 J	0.43	1,500	3.6 J+
SWFTS-MW17	BL02	7/12/2017	N	440-188244-1	Alluvium	22.8 - 52.6	3,200	--	16	2,200	1.1
	EM01	9/19/2017	FD	440-192627-4	Alluvium	22.8 - 52.6	2,600	18,000	16	2,300	1.3
	EM01	9/19/2017	N	440-192627-3	Alluvium	22.8 - 52.6	2,600	18,000	16	2,200	1.2
	EM02	9/26/2017	FD	440-192973-8	Alluvium	22.8 - 52.6	2,800	17,000	17	2,300	1.5
	EM02	9/26/2017	N	440-192973-7	Alluvium	22.8 - 52.6	2,800	17,000	17	2,300	1.5
	EM03	10/3/2017	FD	440-193472-9	Alluvium	22.8 - 52.6	3,300	19,000	16	2,300	1.0
	EM03	10/3/2017	N	440-193472-8	Alluvium	22.8 - 52.6	3,300	19,000	15	2,300	1.1
	EM04	10/10/2017	N	440-193989-3	Alluvium	22.8 - 52.6	2,800	16,000	16	2,500	1.3
	EM05	10/24/2017	FD	440-194947-5	Alluvium	22.8 - 52.6	2,700	15,000	16	2,200	2.2
	EM05	10/24/2017	N	440-194947-1	Alluvium	22.8 - 52.6	2,700	15,000	17	2,200	1.2
	EM06	11/15/2017	FD	440-196659-6	Alluvium	22.8 - 52.6	2,200	15,000	17	2,100	1.2
	EM06	11/15/2017	N	440-196659-5	Alluvium	22.8 - 52.6	2,300	16,000	17	2,200	1.3
	EM07	12/13/2017	FD	440-198508-7	Alluvium	22.8 - 52.6	2,300	13,000	16	2,100	1.2
	EM07	12/13/2017	N	440-198508-6	Alluvium	22.8 - 52.6	2,200	14,000	16	2,100	1.2
	EM08	2/22/2018	N	440-204033-11	Alluvium	22.8 - 52.6	2,000	15,000	16	2,100	2.1
	EM09	3/28/2018	N	440-207497-11	Alluvium	22.8 - 52.6	2,000	14,000	15	1,900	1.2
	EM10	5/3/2018	N	440-210534-3	Alluvium	22.8 - 52.6	1,900 J-	11,000	15	2,000	1.1
	EM11	7/11/2018	N	440-215585-13	Alluvium	22.8 - 52.6	1,300	11,000	15	1,900	1.1
	EM13	8/16/2018	N	440-218296-19	Alluvium	22.8 - 52.6	1,600	12,000	16	2,000	1.4
	EM14	9/12/2018	N	440-220031-5	Alluvium	22.8 - 52.6	1,900	13,000	15	1,900	1.0
	EM15	10/11/2018	N	440-222092-4	Alluvium	22.8 - 52.6	2,100	15,000	16	2,100	1.6
	EM16	1/2/2019	N	440-229018-5	Alluvium	22.8 - 52.6	1,700	11,000	15	1,900	1.2
	EM17	2/28/2019	N	440-235000-2	Alluvium	22.8 - 52.6	1,700	13,000	15	2,000	1.3
	EM18	4/11/2019	N	440-238688-5	Alluvium	22.8 - 52.6	1,700	12,000	14	2,000	1.3
	EM19	5/22/2019	N	440-242198-6	Alluvium	22.8 - 52.6	1,900	13,000	14	1,900	1.1
	EM20	7/5/2019	N	440-245259-3	Alluvium	22.8 - 52.6	1,800	13,000	16	2,000	1.3
	EM21	8/16/2019	N	440-248259-1	Alluvium	22.8 - 52.6	2,200	13,000	16	2,100	1.4
	EM22	11/7/2019	N	440-254150-1	Alluvium	22.8 - 52.6	2,100	15,000	12	1,600	1.3
	EM23	12/20/2019	N	440-257938-2	Alluvium	22.8 - 52.6	2,100	16,000	14	2,000	1.2
	EM24	1/30/2020	N	440-260037-1	Alluvium	22.8 - 52.6	2,200	18,000	14	2,100	1.1
	EM25	3/13/2020	N	440-263003-1	Alluvium	22.8 - 52.6	2,100	17,000	14	2,100	1.6
	EM26	4/30/2020	N	440-265383-6	Alluvium	22.8 - 52.6	2,000	17,000	13	2,000	1.0
	EM27	7/9/2020	N	440-268679-2	Alluvium	22.8 - 52.6	2,000	16,000	14	2,300	0.93 J
	EM28	8/19/2020	N	440-270634-4	Alluvium	22.8 - 52.6	1,900	15,000	15	2,200	1.7

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW17	EM29	10/15/2020	N	550-151259-5	Alluvium	22.8 - 52.6	2,200	16,000	15	2,000	1.1
	EM30	12/9/2020	N	550-154431-10	Alluvium	22.8 - 52.6	2,100	15,000	15	2,000	1.3
	EM31	2/2/2021	N	550-157679-16	Alluvium	22.8 - 52.6	2,300	8,000 J+	15	2,000	1.1 J+
	EM32	3/31/2021	N	550-161063-9	Alluvium	22.8 - 52.6	2,100	7,400	13	2,000	1.1
	EM33	6/3/2021	N	550-164869-9	Alluvium	22.8 - 52.6	2,300	8,400	16	2,100	1.0
	EM34	7/21/2021	N	550-167523-5	Alluvium	22.8 - 52.6	2,100	12,000	15	2,000	1.2 J+
	EM35	9/16/2021	N	550-170815-17	Alluvium	22.8 - 52.6	2,000	7,900	17	2,100	1.2
	EM36	12/2/2021	N	550-175153-21	Alluvium	22.8 - 52.6	2,700	17,000	15	2,300	1.5 J+
SWFTS-MW18	BL02	7/11/2017	N	440-188133-17	Alluvium	16.8 - 36.6	13,000	52,000	12	1,600	1.5
	EM01	9/21/2017	N	440-192728-8	Alluvium	16.8 - 36.6	9,700	34,000	8.9	1,700	2.0
	EM02	9/27/2017	N	440-193167-5	Alluvium	16.8 - 36.6	11,000	36,000	12	1,700	2.2
	EM03	10/3/2017	N	440-193472-2	Alluvium	16.8 - 36.6	8,100	30,000	8.6	1,700	1.5
	EM04	10/10/2017	N	440-194094-3	Alluvium	16.8 - 36.6	9,700	40,000	12	1,800	1.7
	EM05	10/23/2017	N	440-194846-3	Alluvium	16.8 - 36.6	8,200	38,000	12	1,700	1.7
	EM06	11/15/2017	N	440-196690-11	Alluvium	16.8 - 36.6	11,000	37,000	11	1,800	1.8
	EM07	12/13/2017	N	440-198508-5	Alluvium	16.8 - 36.6	9,100	39,000	12	1,600	1.6
	EM08	2/22/2018	N	440-204033-4	Alluvium	16.8 - 36.6	8,900	45,000	12	1,600	2.3
	EM09	3/27/2018	FD	440-207268-12	Alluvium	16.8 - 36.6	2,100	11,000	3.5	1,500	2.4
	EM09	3/27/2018	N	440-207268-11	Alluvium	16.8 - 36.6	2,000	11,000	3.9	1,400	2.5
	EM10	5/1/2018	N	440-210284-6	Alluvium	16.8 - 36.6	9,200	50,000	13	1,600	1.5
	EM11	7/11/2018	N	440-215717-2	Alluvium	16.8 - 36.6	6,900	41,000	11	1,700	1.6
	EM12	7/26/2018	N	440-216784-6	Alluvium	16.8 - 36.6	6,100	43,000	--	--	--
	EM13	8/15/2018	N	440-218208-14	Alluvium	16.8 - 36.6	5,900	41,000	13	1,700	2.0
	EM14	9/11/2018	N	440-219886-1	Alluvium	16.8 - 36.6	5,600	41,000	13	1,700	1.6
	EM15	10/11/2018	N	440-222092-5	Alluvium	16.8 - 36.6	5,300	41,000	13	1,400	2.1
	EM16	12/20/2018	N	440-228491-8	Alluvium	16.8 - 36.6	5,000	38,000	15	1,500	1.8
	EM17	2/26/2019	N	440-234812-9	Alluvium	16.8 - 36.6	4,600	28,000	11	1,600	1.9
	EM18	4/9/2019	N	440-238618-13	Alluvium	16.8 - 36.6	4,800	26,000	11 J-	1,700	1.6
	EM19	5/21/2019	N	440-242084-15	Alluvium	16.8 - 36.6	4,600	25,000	12	1,600	1.5
	EM20	7/1/2019	N	440-245068-3	Alluvium	16.8 - 36.6	4,300	29,000	12	1,600	1.9
	EM21	8/13/2019	N	440-247965-3	Alluvium	16.8 - 36.6	4,600	25,000	12	1,400	1.8
	EM22	11/6/2019	N	440-254051-4	Alluvium	16.8 - 36.6	2,600	6,600	2.8	1,400	2.0
	EM23	12/17/2019	N	440-257635-13	Alluvium	16.8 - 36.6	4,200	19,000	8.8	1,400	1.9
	EM24	1/29/2020	N	440-259981-7	Alluvium	16.8 - 36.6	5,800	23,000	10	1,500 J+	2.0
	EM25	3/11/2020	N	440-262726-7	Alluvium	16.8 - 36.6	7,100	30,000	9.4	1,300	1.7
	EM26	4/29/2020	N	440-265342-2	Alluvium	16.8 - 36.6	6,700	31,000	10	1,400	1.9
	EM27	7/9/2020	N	440-268679-4	Alluvium	16.8 - 36.6	4,400	12,000	6.0	1,600	1.8
	EM28	8/19/2020	N	440-270634-5	Alluvium	16.8 - 36.6	3,900	13,000	9.5	1,600	3.0
	EM29	10/15/2020	N	550-151259-2	Alluvium	16.8 - 36.6	3,600	12,000	10	1,500	2.2
	EM30	12/9/2020	N	550-154431-11	Alluvium	16.8 - 36.6	3,100	8,100	8.9	1,600	1.7
	EM31	2/3/2021	N	550-157817-1	Alluvium	16.8 - 36.6	4,100	12,000 J+	10	1,600	1.4
	EM32	3/30/2021	N	550-160995-9	Alluvium	16.8 - 36.6	1,400	1,100 J+	0.94	1,400	2.7
	EM33	6/3/2021	N	550-164869-7	Alluvium	16.8 - 36.6	4,200	6,100	7.8	1,600	1.7
	EM34	7/21/2021	N	550-167523-2	Alluvium	16.8 - 36.6	5,600	14,000 J+	10	1,600	1.7 J+
	EM35	9/16/2021	N	550-170815-13	Alluvium	16.8 - 36.6	6,700	1,000 J+	10	1,600	1.9
	EM36	12/1/2021	N	550-175045-5	Alluvium	16.8 - 36.6	760	330	0.76	1,500	4.1
SWFTS-MW19	BL02	7/12/2017	N	440-188244-2	Alluvium	11.3 - 31.1	840	130	0.33	660	2.6
	EM01	9/21/2017	N	440-192728-10	Alluvium	11.3 - 31.1	1,400	220	0.51	670	2.3
	EM02	9/28/2017	N	440-193167-6	Alluvium	11.3 - 31.1	1,400	260	0.74	680	2.8
	EM03	10/5/2017	N	440-193712-13	Alluvium	11.3 - 31.1	1,400	220	0.63	690	2.6

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW19	EM04	10/12/2017	N	440-194204-1	Alluvium	11.3 - 31.1	1,400	220 J+	0.70	760	2.2
	EM05	10/27/2017	N	440-195218-5	Alluvium	11.3 - 31.1	1,900	250	0.77	720	2.6
	EM06	11/16/2017	N	440-196786-12	Alluvium	11.3 - 31.1	1,500	270	0.97	740	2.3
	EM07	12/12/2017	N	440-198371-8	Alluvium	11.3 - 31.1	2,000	410	1.2	780	2.4
	EM08	2/20/2018	N	440-203841-6	Alluvium	11.3 - 31.1	1,900	610	0.73	890	2.6
	EM09	3/27/2018	N	440-207268-3	Alluvium	11.3 - 31.1	1,800	650	0.71	860	2.2
	EM10	4/30/2018	FD	440-210173-5	Alluvium	11.3 - 31.1	1,700	760	0.67	910	2.2
	EM10	4/30/2018	N	440-210173-4	Alluvium	11.3 - 31.1	1,800	820	0.70	960	2.2
	EM11	7/10/2018	FD	440-215437-11	Alluvium	11.3 - 31.1	2,000	1,000	0.52	850	1.9
	EM11	7/10/2018	N	440-215437-10	Alluvium	11.3 - 31.1	2,000	1,100	0.52	840	1.9
	EM12	7/26/2018	FD	440-216784-8	Alluvium	11.3 - 31.1	1,700	890	--	--	--
	EM12	7/26/2018	N	440-216784-7	Alluvium	11.3 - 31.1	1,800	890	--	--	--
	EM13	8/15/2018	N	440-218208-15	Alluvium	11.3 - 31.1	1,700	900	0.44	820	2.4
	EM14	9/11/2018	N	440-219886-6	Alluvium	11.3 - 31.1	1,500	850	0.37	790	2.0
	EM15	10/9/2018	FD	440-221855-5	Alluvium	11.3 - 31.1	1,700	870	0.40 J	800	2.4
	EM15	10/9/2018	N	440-221855-4	Alluvium	11.3 - 31.1	2,000	870	0.41 J	800	2.4
	EM16	12/27/2018	FD	440-228818-4	Alluvium	11.3 - 31.1	1,300	760	0.36	860	2.1
	EM16	12/27/2018	N	440-228818-3	Alluvium	11.3 - 31.1	1,400	760	0.36	860	2.4
	EM17	2/27/2019	FD	440-234933-2	Alluvium	11.3 - 31.1	1,300	560	0.38 J	940	2.1
	EM17	2/27/2019	N	440-234933-1	Alluvium	11.3 - 31.1	1,300	590	0.35	900	2.1
	EM18	4/10/2019	FD	440-238544-8	Alluvium	11.3 - 31.1	1,300	510	0.37 J	880	2.1
	EM18	4/10/2019	N	440-238544-5	Alluvium	11.3 - 31.1	1,500	530	0.33 J	840	2.2
	EM19	5/21/2019	FD	440-242084-7	Alluvium	11.3 - 31.1	1,200	400	0.24	830	3.2
	EM19	5/21/2019	N	440-242084-6	Alluvium	11.3 - 31.1	1,200	420	0.18 J	790	3.3
	EM20	7/2/2019	FD	440-245153-2	Alluvium	11.3 - 31.1	1,100	340	0.11	740	3.1
	EM20	7/2/2019	N	440-245153-1	Alluvium	11.3 - 31.1	1,100	340	0.11	740	2.9
	EM21	8/15/2019	FD	440-248187-6	Alluvium	11.3 - 31.1	1,200	260	<0.28	690	2.6
	EM21	8/15/2019	N	440-248187-5	Alluvium	11.3 - 31.1	1,200	260	<0.28	680	2.6
	EM22	11/5/2019	FD	440-253891-7	Alluvium	11.3 - 31.1	1,300	270	0.37 J	800	2.3
	EM22	11/5/2019	N	440-253891-6	Alluvium	11.3 - 31.1	1,300	270	0.36 J	780	2.3
	EM23	12/19/2019	FD	440-257866-2	Alluvium	11.3 - 31.1	1,300	370	0.32 J	820	2.1
	EM23	12/19/2019	N	440-257866-1	Alluvium	11.3 - 31.1	1,200	420	0.31 J	810	2.0
	EM24	1/29/2020	FD	440-259981-9	Alluvium	11.3 - 31.1	1,300	570	0.62	990 J+	2.2
	EM24	1/29/2020	N	440-259981-8	Alluvium	11.3 - 31.1	1,400	550	0.61	990 J+	2.3
	EM25	3/11/2020	FD	440-262720-6	Alluvium	11.3 - 31.1	1,300	740	0.72 J	1,200	2.3
	EM25	3/11/2020	N	440-262720-5	Alluvium	11.3 - 31.1	1,300	780	0.70 J	1,200	2.3
	EM26	4/28/2020	FD	440-265288-7	Alluvium	11.3 - 31.1	1,200	1,100	0.56 J	1,300	2.6
	EM26	4/28/2020	N	440-265288-4	Alluvium	11.3 - 31.1	1,200	1,100	<0.55	1,300	2.5
	EM27	7/9/2020	FD	440-268679-7	Alluvium	11.3 - 31.1	1,400	1,300	0.61	1,100	2.1
	EM27	7/9/2020	N	440-268679-6	Alluvium	11.3 - 31.1	1,300	1,400	0.47 J	1,100	2.3
	EM28	8/19/2020	FD	440-270634-7	Alluvium	11.3 - 31.1	1,300	1,300	0.44	910	2.6
	EM28	8/19/2020	N	440-270634-6	Alluvium	11.3 - 31.1	1,300	1,300	0.43	930	2.4
	EM29	10/14/2020	FD	440-273303-3	Alluvium	11.3 - 31.1	1,400	1,300	0.43 J	1,000	2.2
	EM29	10/14/2020	N	440-273303-2	Alluvium	11.3 - 31.1	1,500	1,300	0.43 J	910	2.3
	EM30	12/9/2020	FD	550-154431-13	Alluvium	11.3 - 31.1	1,500	1,000	0.33 J+	940	2.0
	EM30	12/9/2020	N	550-154431-12	Alluvium	11.3 - 31.1	1,500	990	0.36 J+	940	2.0
	EM31	2/3/2021	FD	550-157817-3	Alluvium	11.3 - 31.1	1,700	800	0.26	960	2.2
	EM31	2/3/2021	N	550-157817-2	Alluvium	11.3 - 31.1	1,600	920	0.26	950	2.0
	EM32	3/30/2021	FD	550-160995-8	Alluvium	11.3 - 31.1	1,300	740	0.17	990	2.3
	EM32	3/30/2021	N	550-160995-7	Alluvium	11.3 - 31.1	1,300	730	0.20	1,000	2.3

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW19	EM33	6/3/2021	FD	550-164869-5	Alluvium	11.3 - 31.1	1,200	560	0.16	990	2.1
	EM33	6/3/2021	N	550-164869-3	Alluvium	11.3 - 31.1	1,100	580	0.16	970	2.1
	EM34	7/20/2021	FD	550-167449-11	Alluvium	11.3 - 31.1	1,200	430	0.14	860	2.4
	EM34	7/20/2021	N	550-167449-10	Alluvium	11.3 - 31.1	1,100	420	0.14	880	2.1
	EM35	9/16/2021	FD	550-170815-31	Alluvium	11.3 - 31.1	1,200	570	0.18 J	950	2.7
	EM35	9/16/2021	N	550-170815-30	Alluvium	11.3 - 31.1	1,200	580	0.19 J	970	2.5
	EM36	12/1/2021	FD	550-175045-15	Alluvium	11.3 - 31.1	1,100	800	0.21	1,000	2.8
	EM36	12/1/2021	N	550-175045-13	Alluvium	11.3 - 31.1	1,100	800	0.21	1,000	2.6
SWFTS-MW20	BL02	7/12/2017	N	440-188244-5	Alluvium	12.8 - 37.6	20,000	51,000	13	2,200	1.7
	EM01	9/21/2017	N	440-192818-3	Alluvium	12.8 - 37.6	17,000	30,000	7.3	2,000	2.5
	EM02	9/26/2017	N	440-193062-1	Alluvium	12.8 - 37.6	16,000	33,000	7.6	2,100	3.0
	EM03	10/4/2017	N	440-193712-4	Alluvium	12.8 - 37.6	19,000	38,000	9.6	2,200	2.6
	EM04	10/12/2017	FD	440-194202-2	Alluvium	12.8 - 37.6	14,000	40,000	9.1	2,100	2.2
	EM04	10/12/2017	N	440-194202-1	Alluvium	12.8 - 37.6	14,000	42,000	8.5	2,000	2.2
	EM05	10/25/2017	N	440-195026-5	Alluvium	12.8 - 37.6	17,000	40,000	11	2,100	2.6
	EM06	11/16/2017	N	440-196786-7	Alluvium	12.8 - 37.6	7,900	16,000	4.0	1,700	3.0
	EM07	12/12/2017	N	440-198371-3	Alluvium	12.8 - 37.6	16,000	43,000	8.5	2,200	2.2
	EM08	2/19/2018	N	440-203775-5	Alluvium	12.8 - 37.6	6,600	16,000	3.2	1,600	2.5
	EM09	3/27/2018	N	440-207268-9	Alluvium	12.8 - 37.6	11,000	24,000	5.2	2,100	2.2
	EM10	4/30/2018	N	440-210173-10	Alluvium	12.8 - 37.6	6,700	14,000	3.3	1,600	2.3
	EM11	7/11/2018	N	440-215717-8	Alluvium	12.8 - 37.6	6,700	16,000	3.2	1,600	2.8
	EM12	7/26/2018	N	440-216784-9	Alluvium	12.8 - 37.6	7,500	19,000	--	--	--
	EM13	8/15/2018	FD	440-218208-17	Alluvium	12.8 - 37.6	4,300	5,700	2.7	1,400	2.8
	EM13	8/15/2018	N	440-218208-16	Alluvium	12.8 - 37.6	4,300	5,600	2.8	1,500	2.8
	EM14	9/11/2018	FD	440-219886-4	Alluvium	12.8 - 37.6	3,900	9,500	6.9 J	1,500	2.6
	EM14	9/11/2018	N	440-219886-3	Alluvium	12.8 - 37.6	3,400	8,500	2.3 J	1,400	2.6
	EM15	10/9/2018	N	440-221855-1	Alluvium	12.8 - 37.6	4,000	5,900	2.2	1,400	3.0
	EM16	12/20/2018	N	440-228491-7	Alluvium	12.8 - 37.6	2,800	830	2.1	1,500 J+	2.8
	EM17	2/26/2019	N	440-234812-5	Alluvium	12.8 - 37.6	1,500	170	1.5 J	1,100	3.2
	EM18	4/9/2019	N	440-238618-5	Alluvium	12.8 - 37.6	1,400	300	1.7 J	1,600	2.9
	EM19	5/21/2019	N	440-242084-3	Alluvium	12.8 - 37.6	1,000	69 J	1.3 J	1,600	2.8
	EM20	7/2/2019	N	440-245153-3	Alluvium	12.8 - 37.6	870	37 J	0.70 J	1,400	4.0
	EM21	8/13/2019	N	440-247965-1	Alluvium	12.8 - 37.6	390	23 J	0.41 J	1,400	3.4
	EM22	11/5/2019	N	440-253918-6	Alluvium	12.8 - 37.6	430	26 J	<1.1	1,400	3.4
	EM23	12/17/2019	N	440-257635-12	Alluvium	12.8 - 37.6	290	30 J	<1.1	1,400	2.8
	EM24	1/29/2020	N	440-259981-10	Alluvium	12.8 - 37.6	340	32 J	0.49 J	1,400 J+	3.0
	EM25	3/12/2020	N	440-262887-1	Alluvium	12.8 - 37.6	220	370	0.55 R	1,500	4.8
	EM26	4/29/2020	N	440-265342-5	Alluvium	12.8 - 37.6	180	38 J	<0.28	1,500	4.3
	EM27	7/9/2020	N	440-268679-8	Alluvium	12.8 - 37.6	170	<10	<0.55	2,000	3.0
	EM28	8/20/2020	N	440-270697-1	Alluvium	12.8 - 37.6	89	27 J	<0.55	1,500	4.6
	EM29	10/14/2020	N	440-273303-6	Alluvium	12.8 - 37.6	110	<10	<0.55	1,800	3.8
	EM30	12/9/2020	N	550-154431-14	Alluvium	12.8 - 37.6	140	27 J	0.18 J+	2,100	3.3
	EM31	2/3/2021	N	550-157817-4	Alluvium	12.8 - 37.6	79	<9.8	<0.014	1,800	3.1
	EM32	3/30/2021	N	550-160995-6	Alluvium	12.8 - 37.6	68	24 R	0.057	1,800	3.7
	EM33	6/3/2021	N	550-164869-1	Alluvium	12.8 - 37.6	44	<9.8	<0.014	1,500	3.7
	EM34	7/20/2021	N	550-167449-13	Alluvium	12.8 - 37.6	<31	83	0.037 J	1,600	4.6
	EM35	9/16/2021	N	550-170815-24	Alluvium	12.8 - 37.6	50	140	0.076 J	1,300	4.9
	EM36	11/29/2021	N	550-174897-1	Alluvium	12.8 - 37.6	3.3	76 J	0.054	1,600	4.6
SWFTS-MW21	BL02	7/13/2017	N	440-188324-5	Alluvium	14.8 - 39.6	5,800	49,000	15	2,600	0.94 J
	EM01	9/21/2017	N	440-192728-11	Alluvium	14.8 - 39.6	5,200	15,000	3.9	2,600	7.5

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW21	EM02	9/27/2017	N	440-193062-12	Alluvium	14.8 - 39.6	950	4,700	1.8 J	2,800	19
	EM03	10/5/2017	N	440-193712-17	Alluvium	14.8 - 39.6	1,100	7,700	3.2	2,500	24
	EM04	10/11/2017	N	440-194090-8	Alluvium	14.8 - 39.6	820	4,200	1.8	2,500	25
	EM05	10/27/2017	N	440-195218-6	Alluvium	14.8 - 39.6	890	5,000	2.0	2,600	2.8
	EM06	11/15/2017	N	440-196665-5	Alluvium	14.8 - 39.6	2,300	13,000	3.7	2,500	2.1
	EM07	12/13/2017	N	440-198508-10	Alluvium	14.8 - 39.6	3,500	26,000	4.7	2,500 J-	1.6
	EM08	2/20/2018	FD	440-203841-10	Alluvium	14.8 - 39.6	4,900	33,000	11	2,600	1.6
	EM08	2/20/2018	N	440-203841-9	Alluvium	14.8 - 39.6	4,800	34,000	11	2,600	1.6
	EM09	3/27/2018	N	440-207268-14	Alluvium	14.8 - 39.6	4,600	32,000	10	2,800	1.1
	EM10	4/30/2018	N	440-210173-7	Alluvium	14.8 - 39.6	4,400	27,000	10	2,700	1.3
	EM11	7/12/2018	N	440-215717-3	Alluvium	14.8 - 39.6	1,300	7,900	2.8	2,600	3.7
	EM12	7/27/2018	N	440-216872-3	Alluvium	14.8 - 39.6	1,000	9,000	--	--	--
	EM13	8/15/2018	N	440-218208-18	Alluvium	14.8 - 39.6	1,300	2,900	1.9	2,000	2.7
	EM14	9/12/2018	N	440-220031-4	Alluvium	14.8 - 39.6	2,000	2,600	1.3	1,900	2.2
	EM15	10/9/2018	N	440-221855-3	Alluvium	14.8 - 39.6	2,700	2,600	2.9	2,200	1.9
	EM16	12/20/2018	N	440-228491-13	Alluvium	14.8 - 39.6	3,000	5,200	7.5	2,500	1.6
	EM17	2/26/2019	N	440-234812-10	Alluvium	14.8 - 39.6	2,800	2,500	9.3	2,700	1.4
	EM18	4/10/2019	N	440-238531-8	Alluvium	14.8 - 39.6	2,400	200	7.1	2,500	1.3
	EM19	5/22/2019	N	440-242198-3	Alluvium	14.8 - 39.6	3,100	530	9.6	2,600	1.3
	EM20	7/1/2019	N	440-245068-8	Alluvium	14.8 - 39.6	3,400	4,500	11	2,400	1.8
	EM21	8/13/2019	N	440-247965-2	Alluvium	14.8 - 39.6	4,000	5,400	11	2,500	1.5
	EM22	11/4/2019	N	440-253773-3	Alluvium	14.8 - 39.6	690	1,200	1.9	2,500	5.2
	EM23	12/18/2019	N	440-257733-7	Alluvium	14.8 - 39.6	810	230	2.0	2,100	1.5
	EM24	1/30/2020	N	440-260037-2	Alluvium	14.8 - 39.6	2,300	2,500	3.7	2,400	1.4
	EM25	3/11/2020	N	440-262726-4	Alluvium	14.8 - 39.6	2,600	2,700	7.2 J-	2,200	1.4
	EM26	4/29/2020	N	440-265342-1	Alluvium	14.8 - 39.6	4,200	17,000	9.7	1,900	1.5
	EM27	7/10/2020	N	440-268742-1	Alluvium	14.8 - 39.6	1,500	690	3.6	2,200	3.1
	EM28	8/20/2020	N	440-270697-2	Alluvium	14.8 - 39.6	1,700	110	3.1	2,400	2.4
	EM29	10/14/2020	N	440-273303-7	Alluvium	14.8 - 39.6	2,900	62 J	6.0	2,500	1.5
	EM30	12/9/2020	N	550-154431-15	Alluvium	14.8 - 39.6	2,700	52 J	9.0	2,900	1.2
	EM31	2/3/2021	N	550-157817-5	Alluvium	14.8 - 39.6	3,400	<9.8	8.9	2,400	1.2
	EM32	3/30/2021	N	550-160995-5	Alluvium	14.8 - 39.6	1,100	24 R	2.3	2,400	1.6
	EM33	6/2/2021	N	550-164872-15	Alluvium	14.8 - 39.6	600 J-	<9.8 UJ	2.0 J-	2,200 J-	1.4 J-
	EM34	7/20/2021	N	550-167449-6	Alluvium	14.8 - 39.6	890	58 J	2.0	2,500	1.4
	EM35	9/16/2021	N	550-170815-29	Alluvium	14.8 - 39.6	1,200	<24	3.7 J	3,200	1.3
	EM36	12/1/2021	N	550-175045-3	Alluvium	14.8 - 39.6	720	<24	1.9	2,600	1.8
SWFTS-MW22	BL02	7/13/2017	N	440-188324-1	Alluvium	11.8 - 31.6	5,000	7,900	2.2	980	2.2
	EM01	9/20/2017	N	440-192728-4	Alluvium	11.8 - 31.6	4,000	6,700	1.7	930	2.2
	EM02	9/27/2017	N	440-193167-2	Alluvium	11.8 - 31.6	3,800	6,300	1.7	980	2.6
	EM03	10/5/2017	N	440-193712-14	Alluvium	11.8 - 31.6	3,500	6,000	1.7	920	2.7
	EM04	10/12/2017	N	440-194242-9	Alluvium	11.8 - 31.6	2,600	5,700	1.4	1,000	2.3
	EM05	10/26/2017	N	440-195136-10	Alluvium	11.8 - 31.6	3,700	5,500	1.6	930	2.6
	EM06	11/16/2017	N	440-196786-18	Alluvium	11.8 - 31.6	3,000	4,400	1.3	960	2.5
	EM07	12/14/2017	N	440-198571-17	Alluvium	11.8 - 31.6	2,500	4,900	1.4	1,000	2.6
	EM08	2/21/2018	N	440-203937-1	Alluvium	11.8 - 31.6	2,000	2,400	0.89 J	880	2.4
	EM09	3/28/2018	N	440-207497-1	Alluvium	11.8 - 31.6	2,000	2,600	0.83	900	2.4
	EM10	4/30/2018	N	440-210173-6	Alluvium	11.8 - 31.6	1,900	1,800	<0.055	19	2.2
	EM11	7/10/2018	N	440-215437-9	Alluvium	11.8 - 31.6	2,900	840	0.81	970	2.3
	EM12	7/27/2018	N	440-216872-4	Alluvium	11.8 - 31.6	2,200	3,600	--	--	--
	EM13	8/16/2018	N	440-218296-16	Alluvium	11.8 - 31.6	2,400	1,300	0.95 J+	980	2.4

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW22	EM14	9/11/2018	N	440-219886-5	Alluvium	11.8 - 31.6	2,800	1,600 J+	1.2	1,000	2.2
	EM15	10/9/2018	N	440-221855-2	Alluvium	11.8 - 31.6	3,100	1,600	1.2	930	2.7
	EM16	12/27/2018	N	440-228818-2	Alluvium	11.8 - 31.6	2,400	1,700	1.3	910	2.4
	EM17	2/27/2019	N	440-234933-3	Alluvium	11.8 - 31.6	2,500	2,100	1.5	950	2.4
	EM18	4/11/2019	N	440-238688-2	Alluvium	11.8 - 31.6	2,500	2,700	1.7	1,000	2.4
	EM19	5/21/2019	N	440-242084-4	Alluvium	11.8 - 31.6	2,500	2,500	1.6	930	3.4
	EM20	7/2/2019	N	440-245153-5	Alluvium	11.8 - 31.6	2,300	2,200	1.5	920	2.7
	EM21	8/12/2019	N	440-247878-5	Alluvium	11.8 - 31.6	2,300	2,300	1.3	660	2.6
	EM22	11/5/2019	N	440-253891-4	Alluvium	11.8 - 31.6	2,000	2,300	1.2	820	2.4
	EM23	12/19/2019	N	440-257866-3	Alluvium	11.8 - 31.6	1,600	2,200	0.92	840	2.2
	EM24	1/30/2020	N	440-260037-3	Alluvium	11.8 - 31.6	1,700	2,100	1.0	800	2.2
	EM25	3/11/2020	N	440-262720-7	Alluvium	11.8 - 31.6	1,900	3,100	1.3	820	2.3
	EM26	4/28/2020	N	440-265288-5	Alluvium	11.8 - 31.6	3,000	4,700	1.9	870	2.3
	EM27	7/10/2020	N	440-268742-2	Alluvium	11.8 - 31.6	2,700	4,700	2.0	890	2.7
	EM28	8/20/2020	N	440-270697-3	Alluvium	11.8 - 31.6	4,400	9,600	2.8	980	3.0
	EM29	10/14/2020	N	440-273303-1	Alluvium	11.8 - 31.6	4,400	8,600	3.1	1,000	2.4
	EM30	12/9/2020	N	550-154431-16	Alluvium	11.8 - 31.6	3,500	7,300	2.8	1,000	2.2
	EM31	2/3/2021	N	550-157817-6	Alluvium	11.8 - 31.6	4,700	8,800	2.7	1,000	2.1 J-
	EM32	3/30/2021	N	550-160995-4	Alluvium	11.8 - 31.6	3,600	5,200 J+	2.2	950	2.5
	EM33	6/2/2021	N	550-164872-11	Alluvium	11.8 - 31.6	3,200 J-	6,300 J-	2.3 J-	940 J-	2.1 J-
	EM35	9/16/2021	N	550-170815-28	Alluvium	11.8 - 31.6	3,400	4,800	2.3 J	970	2.3
	EM36	12/2/2021	N	550-175153-1	Alluvium	11.8 - 31.6	3,500	5,700	2.1	1,000	2.7 J+
SWFTS-MW23	BL02	7/13/2017	N	440-188325-7	Alluvium	13.8 - 33.6	930	20	0.14 J	3,300	2.9
	EM01	9/22/2017	N	440-192818-15	Alluvium	13.8 - 33.6	1,700	160 J	0.64	760	3.1
	EM02	9/28/2017	N	440-193167-13	Alluvium	13.8 - 33.6	1,700	120	0.67	740	3.3
	EM03	10/5/2017	N	440-193712-11	Alluvium	13.8 - 33.6	1,900	<2,000	0.79	760	3.2
	EM04	10/11/2017	N	440-194090-7	Alluvium	13.8 - 33.6	4,000	220	0.88	780	2.9
	EM05	10/26/2017	N	440-195136-11	Alluvium	13.8 - 33.6	2,400	270	1.2	820	2.8
	EM06	11/15/2017	N	440-196665-3	Alluvium	13.8 - 33.6	2,400	270	1.4	900	3.0
	EM07	12/12/2017	N	440-198371-2	Alluvium	13.8 - 33.6	2,800	370	1.5	970	2.7
	EM08	2/21/2018	N	440-203937-14	Alluvium	13.8 - 33.6	2,800	300 J-	1.6	1,000	3.1
	EM09	3/28/2018	N	440-207497-9	Alluvium	13.8 - 33.6	2,100	180	0.83	910	2.8
	EM10	5/2/2018	N	440-210430-5	Alluvium	13.8 - 33.6	1,400	120	0.43	700	2.8
	EM11	7/10/2018	N	440-215437-7	Alluvium	13.8 - 33.6	1,000	18 J	0.11	710	2.7
	EM13	8/16/2018	N	440-218296-17	Alluvium	13.8 - 33.6	870	28	0.055 J	710	3.2
	EM14	9/12/2018	N	440-220031-1	Alluvium	13.8 - 33.6	1,300	52	0.11	720	2.7
	EM15	10/11/2018	N	440-222092-7	Alluvium	13.8 - 33.6	1,500	95 J	<0.28	740	3.2
	EM16	12/28/2018	N	440-228887-6	Alluvium	13.8 - 33.6	1,700	110	0.46	760	2.9
	EM17	2/27/2019	N	440-234933-4	Alluvium	13.8 - 33.6	1,400	66	0.30	780	2.9
	EM18	4/11/2019	N	440-238688-3	Alluvium	13.8 - 33.6	1,400	76	0.26	760	3.3
	EM19	5/22/2019	N	440-242201-7	Alluvium	13.8 - 33.6	1,400	100	0.35	790	2.9
	EM20	7/3/2019	N	440-245218-2	Alluvium	13.8 - 33.6	1,800	160	0.73	740	3.4
	EM21	8/14/2019	N	440-248104-6	Alluvium	13.8 - 33.6	2,500	250	1.2	880	3.1
	EM22	11/5/2019	N	440-253891-5	Alluvium	13.8 - 33.6	3,000	310	1.4	920	2.7
	EM23	12/19/2019	N	440-257866-7	Alluvium	13.8 - 33.6	2,300	290	0.94	930	2.6
	EM24	1/30/2020	N	440-260037-4	Alluvium	13.8 - 33.6	1,700	140	0.66	890	2.7
	EM25	3/10/2020	N	440-262640-3	Alluvium	13.8 - 33.6	1,200	50	0.24 J-	730	3.0
	EM26	4/28/2020	N	440-265288-3	Alluvium	13.8 - 33.6	670	8.8 J	<0.11	700	2.9
	EM27	7/10/2020	N	440-268741-2	Alluvium	13.8 - 33.6	470	<10	<0.11	630	3.3
	EM28	8/20/2020	N	440-270697-4	Alluvium	13.8 - 33.6	740	<10	<0.11	640	3.4

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Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW23	EM29	10/13/2020	N	440-273236-1	Alluvium	13.8 - 33.6	1,500	39	0.92	650	3.0
	EM30	12/9/2020	N	550-154431-17	Alluvium	13.8 - 33.6	1,800	87	0.31 J+	780	2.7
	EM31	2/3/2021	N	550-157817-7	Alluvium	13.8 - 33.6	2,100	50	0.26	790	2.7
	EM32	3/30/2021	N	550-160995-3	Alluvium	13.8 - 33.6	1,700	50 J+	0.16	760	2.8
	EM33	6/2/2021	N	550-164872-3	Alluvium	13.8 - 33.6	1,500	44	0.25 J-	750	2.6
	EM34	7/21/2021	N	550-167523-8	Alluvium	13.8 - 33.6	1,800	46 J+	0.29	720	2.8 J+
	EM35	9/16/2021	N	550-170815-27	Alluvium	13.8 - 33.6	1,800	45	0.22 J	750	3.0
	EM36	12/2/2021	N	550-175153-15	Alluvium	13.8 - 33.6	1,100	<9.8	0.072	760	2.8 J+
SWFTS-MW24	BL02	7/13/2017	N	440-188324-2	Alluvium	12.8 - 37.6	13,000	47,000	13	1,900	1.3
	EM01	9/22/2017	N	440-192818-9	Alluvium	12.8 - 37.6	9,400	32,000	9.0	1,900	1.7
	EM02	9/28/2017	N	440-193167-12	Alluvium	12.8 - 37.6	5,200	12,000	4.5	1,900	4.3
	EM03	10/5/2017	N	440-193712-12	Alluvium	12.8 - 37.6	7,800	34,000	9.4	3,900	2.0
	EM04	10/11/2017	N	440-194242-2	Alluvium	12.8 - 37.6	4,400	17,000	4.7	1,900	1.9
	EM05	10/26/2017	N	440-195136-3	Alluvium	12.8 - 37.6	7,000	24,000	7.9	1,900	2.0 J-
	EM06	11/15/2017	N	440-196665-1	Alluvium	12.8 - 37.6	4,100	14,000	3.9	1,900	1.9
	EM07	12/12/2017	N	440-198371-5	Alluvium	12.8 - 37.6	6,600	26,000	6.1	1,900	1.5
	EM08	2/21/2018	N	440-203937-8	Alluvium	12.8 - 37.6	6,100	22,000	6.9	1,800	2.0
	EM09	3/28/2018	N	440-207497-12	Alluvium	12.8 - 37.6	4,800	15,000	5.4	1,600 J	1.6
	EM10	5/2/2018	N	440-210430-7	Alluvium	12.8 - 37.6	4,800	12,000	6.6	2,000	1.5
	EM11	7/12/2018	N	440-215717-5	Alluvium	12.8 - 37.6	5,000	6,100	7.3	1,800	1.3
	EM12	7/27/2018	N	440-216872-5	Alluvium	12.8 - 37.6	4,000	7,100	--	--	--
	EM13	8/15/2018	N	440-218208-11	Alluvium	12.8 - 37.6	4,000	4,800	7.6	1,800	1.9
	EM14	9/12/2018	N	440-220031-3	Alluvium	12.8 - 37.6	3,700	3,500	6.1	1,800	1.6
	EM15	10/10/2018	N	440-221975-7	Alluvium	12.8 - 37.6	3,500	2,700	6.5	1,700	2.0
	EM16	1/2/2019	N	440-229018-2	Alluvium	12.8 - 37.6	3,500	2,000	7.7	1,800	1.7
	EM17	2/27/2019	N	440-234938-2	Alluvium	12.8 - 37.6	3,400	2,100	7.8	1,700	1.5
	EM18	4/10/2019	N	440-238531-6	Alluvium	12.8 - 37.6	2,700	1,100	6.1	1,700	1.5
	EM19	5/22/2019	N	440-242198-1	Alluvium	12.8 - 37.6	2,700	1,900	5.8	1,700	1.6
	EM20	7/1/2019	N	440-245068-9	Alluvium	12.8 - 37.6	2,800	1,900	5.1	1,900	2.0
	EM21	8/14/2019	N	440-248104-1	Alluvium	12.8 - 37.6	3,400	5,500	6.9	1,700	1.9
	EM22	11/5/2019	N	440-253891-2	Alluvium	12.8 - 37.6	3,500	6,900	6.9	1,700	1.6
	EM23	12/19/2019	N	440-257866-6	Alluvium	12.8 - 37.6	2,400	2,400	5.4	1,600	1.4
	EM24	1/30/2020	N	440-260037-5	Alluvium	12.8 - 37.6	2,500	2,900	4.8	1,600	1.6
	EM25	3/10/2020	N	440-262640-1	Alluvium	12.8 - 37.6	3,400	6,000	4.9 J-	1,500	1.5
	EM26	4/28/2020	N	440-265288-1	Alluvium	12.8 - 37.6	5,800	15,000	6.9	1,500	1.4
	EM27	7/10/2020	N	440-268742-3	Alluvium	12.8 - 37.6	4,800	12,000	6.7	1,600	2.1
	EM28	8/18/2020	N	440-270571-8	Alluvium	12.8 - 37.6	3,900	7,700	5.3	1,400	2.3
	EM29	10/12/2020	N	440-273153-1	Alluvium	12.8 - 37.6	3,800	5,300	5.3	1,600	1.9
	EM30	12/9/2020	N	550-154431-18	Alluvium	12.8 - 37.6	3,600	6,800	5.5	1,600	1.4
	EM31	2/3/2021	N	550-157817-8	Alluvium	12.8 - 37.6	3,900	4,800 J+	5.9	1,600	1.5
	EM32	3/30/2021	N	550-160995-1	Alluvium	12.8 - 37.6	3,500	4,900 J+	5.4	1,600	1.4
	EM33	6/2/2021	N	550-164872-7	Alluvium	12.8 - 37.6	2,600	3,700	4.7	1,600	1.4
	EM34	7/19/2021	N	550-167353-1	Alluvium	12.8 - 37.6	3,100	4,000	3.9	1,500	1.6
	EM35	9/16/2021	N	550-170815-26	Alluvium	12.8 - 37.6	4,200	6,700	5.0 J	1,700	1.6
	EM36	12/1/2021	N	550-175045-17	Alluvium	12.8 - 37.6	5,100	11,000	6.1	1,900	1.5
SWFTS-MW25	BL02	7/13/2017	N	440-188324-4	Alluvium	12.8 - 42.6	17,000	43,000	10	1,700	1.8
	EM01	9/22/2017	N	440-192818-14	Alluvium	12.8 - 42.6	280	<200	<0.55	1,800	13
	EM02	9/28/2017	N	440-193167-11	Alluvium	12.8 - 42.6	370	130	<0.55	1,900	4.8
	EM03	10/5/2017	N	440-193712-9	Alluvium	12.8 - 42.6	230	<500	<0.55	1,600	3.3
	EM04	10/11/2017	N	440-194242-1	Alluvium	12.8 - 42.6	140	160	<0.55	1,600	2.7

Table E.1
Groundwater Analytical Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	EPA 314.0	EPA 300.1B	Anions by EPA 300.0		SM5310B/ SW9060
							Perchlorate	Chlorate	Nitrate (as N)	Sulfate	Total Organic Carbon
							µg/L	µg/L	mg/L	mg/L	mg/L
SWFTS-MW25	EM05	10/26/2017	N	440-195136-2	Alluvium	12.8 - 42.6	420	170	<0.28	830	2.6
	EM06	11/15/2017	N	440-196665-2	Alluvium	12.8 - 42.6	440	630	<0.55	1,400	2.5
	EM07	12/12/2017	N	440-198371-1	Alluvium	12.8 - 42.6	2,300	1,700	<0.55	1,300	2.3
	EM08	2/21/2018	N	440-203937-7	Alluvium	12.8 - 42.6	2,800	4,700	<1.1	1,500	2.4
	EM09	3/28/2018	N	440-207497-13	Alluvium	12.8 - 42.6	4,600	11,000	2.8	1,400	2.0
	EM10	5/3/2018	N	440-210534-2	Alluvium	12.8 - 42.6	5,700	3,600	4.2	1,600	1.9
	EM11	7/10/2018	N	440-215437-12	Alluvium	12.8 - 42.6	4,300	2,100	3.6	1,500	1.7
	EM12	7/27/2018	N	440-216872-6	Alluvium	12.8 - 42.6	3,500	2,300	--	--	--
	EM13	8/15/2018	N	440-218208-10	Alluvium	12.8 - 42.6	4,500	4,300	5.2	1,500	2.3
	EM14	9/12/2018	N	440-220031-2	Alluvium	12.8 - 42.6	5,200	6,800	6.9	1,400	1.9
	EM15	10/11/2018	N	440-222092-6	Alluvium	12.8 - 42.6	5,000	7,600	7.9	1,400	2.0
	EM16	1/2/2019	N	440-229018-1	Alluvium	12.8 - 42.6	6,300	11,000	8.7	1,500	2.0
	EM17	2/27/2019	N	440-234933-5	Alluvium	12.8 - 42.6	4,000	6,400	4.9	1,400	2.0
	EM18	4/11/2019	N	440-238688-4	Alluvium	12.8 - 42.6	5,300	13,000	7.4	1,400	2.1
	EM19	5/22/2019	N	440-242201-6	Alluvium	12.8 - 42.6	5,700	15,000	9.2	1,400	1.9
	EM20	7/3/2019	N	440-245218-1	Alluvium	12.8 - 42.6	5,600	15,000	8.1	1,200	2.2
	EM21	8/14/2019	N	440-248104-4	Alluvium	12.8 - 42.6	6,600	19,000	8.2	1,200	2.5
	EM22	11/5/2019	N	440-253918-4	Alluvium	12.8 - 42.6	6,100	14,000	7.7	1,200	1.8
	EM23	12/19/2019	N	440-257866-8	Alluvium	12.8 - 42.6	6,000	15,000	7.4	1,200	1.7
	EM24	1/30/2020	N	440-260037-6	Alluvium	12.8 - 42.6	7,500	21,000	8.7	1,300	1.9
	EM25	3/10/2020	N	440-262640-2	Alluvium	12.8 - 42.6	8,300	22,000	8.6 J-	1,300	2.0
	EM26	4/28/2020	N	440-265288-2	Alluvium	12.8 - 42.6	8,400	23,000	9.5	1,400	1.8
	EM27	7/10/2020	N	440-268741-1	Alluvium	12.8 - 42.6	7,600	17,000	7.1	1,500	2.3
	EM28	8/19/2020	N	440-270632-1	Alluvium	12.8 - 42.6	7,600	19,000	8.5	1,400	2.8
	EM29	10/13/2020	N	440-273236-2	Alluvium	12.8 - 42.6	7,600	19,000	9.5	1,400	1.9
	EM30	12/9/2020	N	550-154431-19	Alluvium	12.8 - 42.6	7,100	17,000	9.5	1,300	1.5
	EM31	2/4/2021	N	550-157924-1	Alluvium	12.8 - 42.6	8,800	9,200 J+	9.3	1,400 J-	2.0
	EM32	3/30/2021	N	550-160995-2	Alluvium	12.8 - 42.6	4,800	8,600	4.6	1,300	2.2
	EM33	6/2/2021	N	550-164872-5	Alluvium	12.8 - 42.6	7,000	14,000	7.1 J-	1,200	1.8 J
	EM34	7/21/2021	N	550-167523-7	Alluvium	12.8 - 42.6	10,000	15,000	8.2	1,200	2.1 J+
	EM35	9/16/2021	N	550-170815-25	Alluvium	12.8 - 42.6	13,000	9,700	9.1 J	1,300	2.4
	EM36	12/1/2021	N	550-175045-19	Alluvium	12.8 - 42.6	13,000	19,000	6.1	1,500	1.9

Notes:
1. Lithology of monitoring well COH-2b1 was inferred from state records of well construction and generalized stratigraphy.
FD - Field duplicate
J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte
J- - The result is an estimated quantity, but the result may be biased low.
J+ - The result is an estimated quantity, but the result may be biased high.
mg/L - milligrams per liter
µg/L - micrograms per liter
N - Normal field sample
R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The
UMCf- Upper Muddy Creek Formation
< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
-- Not tested.

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COH-2B1	BL02	8/9/2017	N	440-189933-1	Alluvium/UMCf	36.0 - 66.0	520	--	--	<0.050	0.018	<0.0010	1.4	<0.0025	160	<0.0025
	EM04	10/12/2017	N	440-194204-2	Alluvium/UMCf	36.0 - 66.0	570	--	--	<0.050	0.016	<0.0010	1.5	<0.0025	160	<0.0025
	EM07	12/14/2017	N	440-198571-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-2	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-11	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	<0.050	0.017	<0.0010	1.5	<0.0025	190	<0.0025
	EM15	10/11/2018	N	440-222092-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	<0.25	<0.025	<0.0050	1.5	<0.013	160	<0.013
	EM19	5/22/2019	N	440-242201-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	<0.050	0.015	<0.0010	1.4	<0.0025	150	<0.0025
	EM22	11/4/2019	N	440-253773-1	Alluvium/UMCf	36.0 - 66.0	--	--	<0.25	0.37	0.020	<0.0010	1.5	<0.0025	210	0.0095 J+
	EM26	4/27/2020	N	440-265243-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	<0.050	0.014	<0.0010	1.2	<0.0025	140	<0.0025
	EM29	10/13/2020	N	440-273236-9	Alluvium/UMCf	36.0 - 66.0	--	--	0.34 J	<0.050	0.013	<0.0010	1.5	<0.0025	250	0.0050
PC-58	BL01	3/28/2017	N	440-180820-1	Qal	7.8 - 32.8	--	--	--	<0.050	0.020	<0.0010	2.0	<0.0025	220	0.018
	BL02	7/13/2017	N	440-188324-3	Qal	7.8 - 32.8	520	--	--	<0.050	0.025	<0.0010	2.0	<0.0025	230	0.026
	EM04	10/11/2017	N	440-194094-6	Qal	7.8 - 32.8	440	--	--	<0.050	0.015	<0.0010	1.7	<0.0025	160	0.012
	EM06	11/16/2017	N	440-196786-11	Qal	7.8 - 32.8	610	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-9	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-13	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-6	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-10	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-7	Qal	7.8 - 32.8	--	--	--	<0.050	0.018	<0.0010	1.8	<0.0025	190	0.025
	EM15	10/11/2018	N	440-222092-19	Qal	7.8 - 32.8	--	--	--	0.081 J	0.016	<0.0010	1.5	<0.0025	150	0.011
	EM19	5/22/2019	N	440-242200-7	Qal	7.8 - 32.8	--	--	--	<0.050	0.017	<0.0010	1.9	<0.0025	190	0.030
	EM22	11/7/2019	N	440-254148-1	Qal	7.8 - 32.8	--	--	<0.25	0.072 J	0.017	<0.0010	1.3	<0.0025	140	0.016 J+
	EM26	5/1/2020	N	440-265414-3	Qal	7.8 - 32.8	--	--	--	<0.050	0.017	<0.0010	1.6	<0.0025	160	0.020
	EM29	10/16/2020	N	440-273433-5	Qal	7.8 - 32.8	--	--	0.14 J	0.067 J	0.013	<0.0010	1.3	<0.0025	97	0.014
	EM33	6/2/2021	N	550-164872-23/24	Qal	7.8 - 32.8	--	--	--	0.19 J	0.017 J+	<0.00019	1.2	<0.00072	120	0.013
	EM36	12/3/2021	N	550-175222-11/12	Qal	7.8 - 32.8	--	--	<0.63	0.18 J	0.017	<0.00019	1.4	<0.00072	120	0.012
PC-88	EM04	10/11/2017	FD	440-194090-3	Qal	40.0 - 50.0	800	--	--	<0.050	0.017	<0.0010	1.5	<0.0025	180	<0.0025
	EM04	10/11/2017	N	440-194090-2	Qal	40.0 - 50.0	810	--	--	<0.050	0.016	<0.0010	1.5	<0.0025	180	<0.0025
	EM06	11/15/2017	FD	440-196690-10	Qal	40.0 - 50.0	800	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196690-9	Qal	40.0 - 50.0	800	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	FD	440-210430-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-8	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-12	Qal	40.0 - 50.0	--	--	--	<0.050	0.019	<0.0010	1.1	<0.0025	150	<0.0025
	EM11	7/12/2018	N	440-215717-11	Qal	40.0 - 50.0	--	--	--	<0.050	0.020	<0.0010	1.1	<0.0025	150	<0.0025
	EM15	10/11/2018	FD	440-222092-16	Qal	40.0 - 50.0	--	--	--	0.059 J	0.020	<0.0010	1.4	<0.0025	180	<0.0025
	EM15	10/11/2018	N	440-222092-15	Qal	40.0 - 50.0	--	--	--	0.088 J	0.019	<0.0010	1.5	<0.0025	180	<0.0025
	EM19	5/22/2019	FD	440-242201-3	Qal	40.0 - 50.0	--	--	--	<0.050	0.014	<0.0010	1.1	<0.0025	120	<0.0025
	EM19	5/22/2019	N	440-242201-2	Qal	40.0 - 50.0	--	--	--	<0.050	0.015	<0.0010	1.2	<0.0025	130	<0.0025
	EM22	11/7/2019	FD	440-254148-3	Qal	40.0 - 50.0	--	--	<0.25	<0.050	0.016	<0.0010	1.0	<0.0025	120	0.0042 J
	EM22	11/7/2019	N	440-254148-2	Qal	40.0 - 50.0	--	--	<0.25	<0.050	0.015	<0.0010	0.96	<0.0025	130	0.0056 J+
	EM26	5/1/2020	FD	440-265412-3	Qal	40.0 - 50.0	--	--	--	0.050 J	0.017	<0.0010	1.2	<0.0025	140	<0.0025

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-88	EM26	5/1/2020	N	440-265412-2	Qal	40.0 - 50.0	--	--	--	0.051 J	0.017	<0.0010	1.2	<0.0025	140	<0.0025
	EM29	10/15/2020	FD	550-151259-11	Qal	40.0 - 50.0	--	--	<0.078	<0.050	0.017	<0.0010	0.98	<0.0025	160	<0.0025
	EM29	10/15/2020	N	550-151259-10	Qal	40.0 - 50.0	--	--	<0.078	<0.050	0.017	<0.0010	0.98	<0.0025	160	<0.0025
	EM33	6/3/2021	FD	550-164869-27/28	Qal	40.0 - 50.0	--	--	--	0.12 J	0.0090 J+	<0.00019	0.74	<0.00072	77	<0.0011
	EM33	6/3/2021	N	550-164869-25/26	Qal	40.0 - 50.0	--	--	--	0.11 J	0.0094 J+	0.00022 J	0.73	<0.00072	77	<0.0011
	EM36	12/2/2021	FD	550-175153-7/8	Qal	40.0 - 50.0	--	--	<0.63	0.097 J	0.012 J+	<0.00019	0.84	<0.00072	90	<0.0011
	EM36	12/2/2021	N	550-175153-5/6	Qal	40.0 - 50.0	--	--	<0.63	0.11 J	0.011 J+	<0.00019	0.81	<0.00072	89	<0.0011
PC-91	BL01	3/29/2017	N	440-180937-1	Qal	11.5 - 21.5	590	--	--	<0.050	0.012	<0.0010	1.3	<0.0025	150	<0.0025
	BL02	7/12/2017	FD	440-188244-4	Qal	11.5 - 21.5	600	--	--	<0.050	0.012	<0.0010	1.3	<0.0025	140	<0.0025
	BL02	7/12/2017	N	440-188247-5	Qal	11.5 - 21.5	630	--	--	<0.050	0.012	<0.0010	1.3	<0.0025	160	<0.0025
	EM04	10/12/2017	N	440-194204-3	Qal	11.5 - 21.5	580	--	--	<0.050	0.011	<0.0010	1.2	<0.0025	130	<0.0025
	EM06	11/16/2017	N	440-196786-8	Qal	11.5 - 21.5	520	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-9	Qal	11.5 - 21.5	--	<0.14	--	<0.050	0.014	<0.0010	1.4	<0.0025	130	<0.0025
	EM08	2/20/2018	N	440-203841-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-6	Qal	11.5 - 21.5	--	--	--	<0.050	0.015	<0.0010	1.5	<0.0025	160	<0.0025
	EM15	10/10/2018	N	440-221975-16	Qal	11.5 - 21.5	--	--	--	<0.25	<0.025	<0.0050	1.7	<0.013	190	<0.013
	EM19	5/21/2019	N	440-242084-9	Qal	11.5 - 21.5	--	--	--	<0.050	0.026	<0.0010	1.9	<0.0025	190	<0.0025
	EM22	11/6/2019	N	440-254027-3	Qal	11.5 - 21.5	--	--	330	0.051 J	0.044	<0.0010	2.2	<0.0025	180	<0.0025
	EM26	4/30/2020	N	440-265382-2	Qal	11.5 - 21.5	--	--	--	<0.050	0.021	<0.0010	1.3	<0.0025	140	<0.0025
	EM29	10/14/2020	N	440-273303-11	Qal	11.5 - 21.5	--	--	950	0.061 J	0.082	<0.0010	1.7	<0.0025	150	<0.0025
	EM33	6/2/2021	N	550-164872-17/18	Qal	11.5 - 21.5	--	--	--	0.12 J	0.56	<0.00019	1.8	<0.00072	160	<0.0011
	EM36	11/30/2021	N	550-174968-1/2	Qal	11.5 - 21.5	--	--	12,000	<0.080	0.087	<0.00019	1.5	<0.00072	72	<0.0011
PC-92	BL01	3/29/2017	N	440-180937-2	Qal	26.5 - 36.5	970	--	--	<0.050	0.018	<0.0010	1.8	<0.0025	300	<0.0025
	BL02	7/12/2017	N	440-188247-6	Qal	26.5 - 36.5	800	--	--	<0.050	0.017	<0.0010	1.4	<0.0025	190	<0.0025
	EM04	10/12/2017	FD	440-194204-5	Qal	26.5 - 36.5	670	<0.35	<0.25	<0.050	0.016	<0.0010	1.3	<0.0025	200	<0.0025
	EM04	10/12/2017	N	440-194204-4	Qal	26.5 - 36.5	710	<0.35	<0.25	<0.050	0.016	<0.0010	1.2	<0.0025	200	<0.0025
	EM06	11/16/2017	FD	440-196786-10	Qal	26.5 - 36.5	600	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-9	Qal	26.5 - 36.5	500	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	FD	440-198571-8	Qal	26.5 - 36.5	--	<0.35	<0.25	<0.050	0.027	<0.0010	1.4	<0.0025	220	<0.0025
	EM07	12/14/2017	N	440-198571-7	Qal	26.5 - 36.5	--	<0.14	<0.25	<0.050	0.029	<0.0010	1.5	<0.0025	240	<0.0025
	EM08	2/20/2018	FD	440-203841-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	FD	440-207137-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-5	Qal	26.5 - 36.5	--	--	--	<0.050	0.018	<0.0010	1.6	<0.0025	230	<0.0025
	EM15	10/11/2018	N	440-222092-17	Qal	26.5 - 36.5	--	--	--	0.068 J	0.017	<0.0010	1.6	<0.0025	210	<0.0025
	EM19	5/21/2019	N	440-242084-10	Qal	26.5 - 36.5	--	--	--	<0.050	0.019	<0.0010	1.0	<0.0025	150	<0.0025
	EM22	11/6/2019	N	440-254027-2	Qal	26.5 - 36.5	--	--	5.50	0.057 J	0.019	<0.0010	1.3	<0.0025	220	0.0048 J
	EM26	4/30/2020	N	440-265382-1	Qal	26.5 - 36.5	--	--	--	<0.050	0.024	<0.0010	1.1	<0.0025	190	0.0025 J
	EM29	10/14/2020	N	440-273303-10	Qal	26.5 - 36.5	--	--	0.14 J	0.060 J	0.016	<0.0010	1.4	<0.0025	220	<0.0025
	EM33	6/2/2021	N	550-164872-19/20	Qal	26.5 - 36.5	--	--	--	0.25	0.018 J+	<0.00019	1.5	<0.00072	240	<0.0011
	EM36	11/30/2021	N	550-174968-3/4	Qal	26.5 - 36.5	--	--	320	0.25	0.032	<0.00019	1.7	<0.00072	270	<0.0011
PC-94	BL01	3/28/2017	N	440-180820-2	Qal	9.5 - 19.5	1,300	--	--	<0.050	0.026	<0.0010	2.9	<0.0025	390	0.035

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-94	BL02	7/13/2017	N	440-188325-1	Qal	9.5 - 19.5	1,300	--	--	0.37	0.033	<0.0010	2.7	<0.0025	430	0.038
	EM04	10/11/2017	N	440-194090-6	Qal	9.5 - 19.5	1,200	<0.70	<0.25	0.38 J+	0.044	<0.0010	2.6	<0.0025	360	<0.0025
	EM06	11/16/2017	N	440-196786-17	Qal	9.5 - 19.5	1,100	<0.70	--	0.098 J	0.030	<0.0010	2.7	<0.0025	320	<0.0025
	EM07	12/12/2017	N	440-198371-14	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-12	Qal	9.5 - 19.5	--	<1.4	--	<0.050	0.030	<0.0010	2.9	<0.0025	320	<0.0025
	EM09	3/27/2018	N	440-207268-8	Qal	9.5 - 19.5	--	<0.70	--	4.1	0.077	<0.0010	2.5	<0.0025	270	0.0067
	EM10	5/1/2018	N	440-210284-14	Qal	9.5 - 19.5	--	<0.70	--	0.052 J	0.029	<0.0010	2.6 J+	<0.0025	300	<0.0025
	EM11	7/10/2018	N	440-215437-1	Qal	9.5 - 19.5	--	<0.70	--	<0.050	0.028	<0.0010	2.5	<0.0025	290	<0.0025
	EM13	8/15/2018	N	440-218208-2	Qal	9.5 - 19.5	--	<0.25	--	0.77	0.030	<0.0010	2.7	<0.0025	310	<0.0025
	EM14	9/11/2018	N	440-219886-9	Qal	9.5 - 19.5	--	0.41 J	--	<0.050	0.026	<0.0010	2.6	<0.0025	290	<0.0025
	EM15	10/11/2018	N	440-222092-18	Qal	9.5 - 19.5	--	<0.25	--	0.076 J	0.027	<0.0010	2.8	<0.0025	310	<0.0025
	EM19	5/22/2019	N	440-242201-4	Qal	9.5 - 19.5	--	--	--	<0.050	0.028	<0.0010	2.3	<0.0025	270	<0.0025
	EM22	11/6/2019	N	440-254027-1	Qal	9.5 - 19.5	--	--	<0.25	0.056 J	0.028	<0.0010	2.0	<0.0025	240	0.0037 J
	EM26	4/28/2020	N	440-265289-2	Qal	9.5 - 19.5	--	--	--	<0.050	0.035	<0.0010	2.0	<0.0025	290	<0.0025
	EM29	10/15/2020	N	550-151259-7	Qal	9.5 - 19.5	--	--	<0.078	<0.050	0.026	<0.0010	1.7	<0.0025	240	<0.0025
	EM33	6/2/2021	N	550-164872-21/22	Qal	9.5 - 19.5	--	--	--	0.30	0.034	<0.00019	1.9	<0.00072	270	<0.0011
	EM36	11/30/2021	N	550-174968-5/6	Qal	9.5 - 19.5	--	--	<0.63	0.31	0.035	<0.00019	1.8	<0.00072	340	<0.0011
PC-97	BL02	7/13/2017	N	440-188325-8	Qal	23.0 - 33.0	--	--	--	0.050 J	0.025	<0.0010	0.96	<0.0025	220	<0.0025
	EM04	10/11/2017	FD	440-194242-6	Qal	23.0 - 33.0	540	--	--	0.056 J	0.023	<0.0010	1.3	<0.0025	260	<0.0025
	EM04	10/11/2017	N	440-194242-5	Qal	23.0 - 33.0	540	--	--	0.051 J	0.021	<0.0010	1.1	<0.0025	230	<0.0025
	EM06	11/16/2017	N	440-196786-13	Qal	23.0 - 33.0	580	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-12	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-11	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-3	Qal	23.0 - 33.0	--	--	--	<0.050	0.022	<0.0010	0.90	<0.0025	170	<0.0025
	EM15	10/11/2018	N	440-222092-13	Qal	23.0 - 33.0	--	--	--	0.059 J	0.020	<0.0010	0.99	<0.0025	180	<0.0025
	EM19	5/22/2019	N	440-242201-1	Qal	23.0 - 33.0	--	--	--	<0.050	0.021	<0.0010	1.0	<0.0025	190	<0.0025
	EM22	11/6/2019	N	440-254027-7	Qal	23.0 - 33.0	--	--	<0.25	0.066 J	0.018	<0.0010	1.0	<0.0025	160	0.0046 J
	EM26	4/30/2020	N	440-265383-7	Qal	23.0 - 33.0	--	--	--	<0.050	0.023	<0.0010	0.72	<0.0025	140	<0.0025
	EM29	10/15/2020	N	550-151259-9	Qal	23.0 - 33.0	--	--	0.38 J	<0.050	0.019	<0.0010	0.74	<0.0025	150	<0.0025
SWFTS-IW01A	BL02	7/11/2017	N	440-188133-3	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW01B	BL02	7/11/2017	N	440-188133-13	Qal	26.9 - 36.7	--	--	--	--	--	--	--	--	--	--
SWFTS-IW02A	BL02	7/11/2017	N	440-188133-14	Qal	16.8 - 26.6	--	--	<0.25	--	--	--	--	--	--	--
SWFTS-IW02B	BL02	7/11/2017	N	440-188133-2	Qal	26.3 - 36.1	--	--	<0.25	--	--	--	--	--	--	--
SWFTS-IW03	BL02	7/11/2017	FD	440-188133-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW04	BL02	7/11/2017	FD	440-188133-12	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-11	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW05	BL02	7/11/2017	N	440-188133-16	Qal	14.6 - 34.4	--	--	0.610 J	--	--	--	--	--	--	--
SWFTS-IW06A	BL02	7/11/2017	N	440-188133-10	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW06B	BL02	7/11/2017	N	440-188133-6	Qal	28.8 - 33.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW07	BL02	7/11/2017	N	440-188133-7	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW08	BL02	7/12/2017	N	440-188247-7	Qal	17.5 - 37.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW09	BL02	7/12/2017	FD	440-188244-3	Qal	26.6 - 46.4	--	--	<0.25	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-IW09	BL02	7/12/2017	N	440-188247-8	Qal	26.6 - 46.4	--	--	<0.25	--	--	--	--	--	--	--
SWFTS-IW10	BL02	7/12/2017	N	440-188247-9	Qal	26.8 - 46.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW11	BL02	7/12/2017	N	440-188247-3	Qal	17.3 - 37.1	--	--	<0.25	--	--	--	--	--	--	--
SWFTS-IW12	BL02	7/12/2017	N	440-188247-4	Qal	14.3 - 39.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13A	BL02	7/11/2017	N	440-188133-1	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13B	BL02	7/11/2017	N	440-188133-15	Qal	27.8 - 37.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW14	BL02	7/12/2017	N	440-188247-1	Qal	16.2 - 36.1	--	--	<0.25	--	--	--	--	--	--	--
SWFTS-IW15	BL02	7/12/2017	N	440-188247-2	Qal	16.4 - 36.2	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16A	BL02	7/11/2017	N	440-188133-9	Qal	17.3 - 27.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16B	BL02	7/11/2017	N	440-188133-8	Qal	26.5 - 36.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW17	BL02	7/13/2017	N	440-188325-6	Qal	17.3 - 37.1	--	--	<0.25	--	--	--	--	--	--	--
SWFTS-IW18	BL02	7/13/2017	N	440-188325-4	Qal	18.1 - 38.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW19	BL02	7/13/2017	N	440-188325-5	Qal	24.3 - 44.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW20	BL02	7/12/2017	N	440-188247-10	Qal	30.8 - 50.6	--	--	<0.25	--	--	--	--	--	--	--
SWFTS-MW01	BL01	3/29/2017	N	440-180937-6	Qal	24.2 - 38.9	1,400	--	--	<0.050	0.024	<0.0010	2.9	<0.0025	390	0.031
	EM04	10/10/2017	N	440-194094-2	Qal	24.2 - 38.9	1,400	<0.70	<0.25	<0.050	0.029	<0.0010	2.7	<0.0025	330	0.0037 J
	EM06	11/15/2017	N	440-196665-4	Qal	24.2 - 38.9	1,500	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-12	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-2	Qal	24.2 - 38.9	--	--	--	<0.050	0.036	<0.0010	2.5	<0.0025	280	<0.0025
	EM14	9/10/2018	N	440-219797-1	Qal	24.2 - 38.9	--	<0.25	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-12	Qal	24.2 - 38.9	--	--	--	<0.25	0.039 J	<0.0050	2.8	<0.013	290	<0.013
	EM19	5/21/2019	N	440-242084-14	Qal	24.2 - 38.9	--	--	--	<0.050	0.047	<0.0010	2.3	<0.0025	240	<0.0025
	EM22	11/5/2019	N	440-253918-3	Qal	24.2 - 38.9	--	--	4,300	0.057 J	0.051	<0.0010	2.0	<0.0025	190	0.0053 J+
	EM26	4/28/2020	N	440-265289-5	Qal	24.2 - 38.9	--	--	--	<0.050	0.041	<0.0010	2.0	<0.0025	260	<0.0025
	EM29	10/13/2020	N	440-273236-11	Qal	24.2 - 38.9	--	--	1,500	<0.050	0.035	<0.0010	2.2	<0.0025	260	<0.0025
	EM33	6/4/2021	N	550-164930-17/18	Qal	24.2 - 38.9	--	--	--	0.29	0.040	<0.00019	2.0	<0.00072	260	<0.0011
	EM36	11/30/2021	N	550-174968-19/20	Qal	24.2 - 38.9	--	--	2.1 J	0.28	0.042	<0.00019	1.8	<0.00072	350	<0.0011
SWFTS-MW02	BL01	3/29/2017	N	440-180937-7	Qal	18.4 - 33.1	--	--	--	<0.050	0.015	<0.0010	3.2	<0.0025	520	<0.0025
	EM04	10/12/2017	N	440-194204-6	Qal	18.4 - 33.1	1,600	<1.4	<0.25	<0.050	0.015	<0.0010	2.9	<0.0025	450	<0.0025
	EM06	11/14/2017	N	440-196558-3	Qal	18.4 - 33.1	1,800	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-13	Qal	18.4 - 33.1	--	--	--	<0.050	0.021	<0.0010	2.8	<0.0025	320	<0.0025
	EM14	9/10/2018	N	440-219797-2	Qal	18.4 - 33.1	--	<0.25	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-15	Qal	18.4 - 33.1	--	--	--	0.68 J+	0.032 J	<0.0050	3.0	<0.013	340	<0.013
	EM19	5/21/2019	N	440-242084-8	Qal	18.4 - 33.1	--	--	--	<0.050	0.025	<0.0010	3.0	<0.0025	350	<0.0025
	EM22	11/7/2019	N	440-254148-7	Qal	18.4 - 33.1	--	--	3,300	0.11	0.027	<0.0010	2.7	<0.0025	290	0.0049 J
	EM26	4/30/2020	N	440-265382-3	Qal	18.4 - 33.1	--	--	--	<0.050	0.022	<0.0010	2.5	<0.0025	280	<0.0025
	EM29	10/15/2020	N	550-151259-8	Qal	18.4 - 33.1	--	--	0.29 J	<0.050	0.019	<0.0010	2.2	<0.0025	260	<0.0025
	EM33	6/3/2021	N	550-164869-21/22	Qal	18.4 - 33.1	--	--	--	0.31	0.020	<0.00019	2.7	<0.00072	290	<0.0011
	EM36	11/30/2021	N	550-174968-7/8	Qal	18.4 - 33.1	--	--	150	0.31	0.020	<0.00019	2.7	<0.00072	280	<0.0011

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW03	BL01	3/30/2017	FD	440-181045-6	Qal	27.2 - 42.1	--	--	--	0.34 J	0.023	<0.0010	3.2	<0.0025	440	0.038
	BL01	3/30/2017	N	440-181045-5	Qal	27.2 - 42.1	--	--	--	<0.050 UJ	0.021	<0.0010	3.2	<0.0025	450	0.039
	EM04	10/12/2017	N	440-194204-8	Qal	27.2 - 42.1	1,100	<0.70	<0.25	<0.050	0.021	<0.0010	3.0	<0.0025	440	<0.0025
	EM06	11/16/2017	N	440-196786-16	Qal	27.2 - 42.1	1,000	<0.70	--	<0.050	0.034	<0.0010	2.9	<0.0025	410	<0.0025
	EM07	12/12/2017	N	440-198371-13	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-5	Qal	27.2 - 42.1	--	<1.4	--	0.43 J+	0.040	<0.0010	3.1	<0.0025	420	<0.0025
	EM09	3/27/2018	N	440-207268-15	Qal	27.2 - 42.1	--	<0.70	--	0.10 J+	0.026	<0.0010	2.6	<0.0025	360	<0.0025
	EM10	5/2/2018	N	440-210430-6	Qal	27.2 - 42.1	--	<0.35	--	0.13 J+	0.032	<0.0010	3.1	<0.0025	480	<0.0025
	EM11	7/10/2018	N	440-215437-5	Qal	27.2 - 42.1	--	<0.70	--	<0.050	0.030	<0.0010	2.9 J+	<0.0025	390	<0.0025
	EM13	8/15/2018	N	440-218208-4	Qal	27.2 - 42.1	--	<0.25	--	0.18	0.031	<0.0010	2.9	<0.0025	410	<0.0025
	EM14	9/11/2018	N	440-219886-11	Qal	27.2 - 42.1	--	<0.25	--	0.056 J	0.028	<0.0010	2.9	<0.0025	400	<0.0025
	EM15	10/9/2018	N	440-221855-13	Qal	27.2 - 42.1	--	--	--	0.49 J	0.034 J	<0.0050	3.1	<0.013	460	<0.013
	EM19	5/21/2019	N	440-242084-12	Qal	27.2 - 42.1	--	--	--	<0.050	0.027	<0.0010	3.0	<0.0025	460	<0.0025
	EM22	11/4/2019	N	440-253773-2	Qal	27.2 - 42.1	--	--	38.0	0.11	0.023	<0.0010	2.6	<0.0025	370	0.0042 J
	EM26	4/28/2020	N	440-265289-1	Qal	27.2 - 42.1	--	--	--	<0.050	0.021	<0.0010	2.2	<0.0025	350	<0.0025
	EM29	10/13/2020	N	440-273236-10	Qal	27.2 - 42.1	--	--	280	<0.050	0.024	<0.0010	2.6	<0.0025	400	<0.0025
	EM33	6/3/2021	N	550-164869-15/16	Qal	27.2 - 42.1	--	--	--	0.38	0.024 J+	<0.00019	2.5	<0.00072	400	<0.0011
	EM36	12/1/2021	N	550-175045-1/2	Qal	27.2 - 42.1	--	--	<0.63	0.37	0.024	<0.00019	2.3	<0.00072	410	<0.0011
SWFTS-MW04	BL01	3/31/2017	N	440-181122-1	Qal	25.8 - 40.4	--	--	--	<0.050	0.018	<0.0010	2.0	<0.0025	330	<0.0025
	EM04	10/11/2017	N	440-194242-7	Qal	25.8 - 40.4	570	<0.14	<0.25	<0.050	0.018	<0.0010	1.1	<0.0025	140	<0.0025
	EM06	11/15/2017	N	440-196659-2	Qal	25.8 - 40.4	590	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-12	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-4	Qal	25.8 - 40.4	--	--	--	<0.050	0.020	<0.0010	1.4	<0.0025	160	<0.0025
	EM15	10/11/2018	N	440-222092-9	Qal	25.8 - 40.4	--	--	--	0.072 J	0.017	<0.0010	1.4	<0.0025	170	<0.0025
	EM19	5/21/2019	N	440-242084-11	Qal	25.8 - 40.4	--	--	--	<0.050	0.018	<0.0010	1.1	<0.0025	150	<0.0025
	EM22	11/7/2019	N	440-254150-6	Qal	25.8 - 40.4	--	--	<0.25	<0.050	0.015	<0.0010	1.1	<0.0025	150	<0.0025
	EM26	5/1/2020	N	440-265412-1	Qal	25.8 - 40.4	--	--	--	<0.050	0.019	<0.0010	1.6	<0.0025	250	0.0025 J
	EM29	10/14/2020	N	440-273303-12	Qal	25.8 - 40.4	--	--	0.15 J	<0.050	0.017	<0.0010	1.2	<0.0025	170	<0.0025
	EM33	6/3/2021	N	550-164869-23/24	Qal	25.8 - 40.4	--	--	--	0.18 J	0.016	<0.00019	1.2	<0.00072	180	<0.0011
	EM36	12/2/2021	N	550-175153-3/4	Qal	25.8 - 40.4	--	--	<0.63	0.16 J	0.017 J+	<0.00019	1.3	<0.00072	190	<0.0011
SWFTS-MW05A	BL01	3/30/2017	N	440-181045-7	Qal	19.3 - 29.3	--	--	--	0.32 J	0.034 J	<0.0050	3.7	<0.013	820	0.075
	EM04	10/10/2017	N	440-193989-2	Qal	19.3 - 29.3	1,000	--	--	<0.050	0.026	<0.0010	3.0	<0.0025	700	0.056
	EM06	11/14/2017	N	440-196558-1	Qal	19.3 - 29.3	1,000	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-3	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-5	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-8	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-14	Qal	19.3 - 29.3	--	--	--	<0.050	0.024	<0.0010	3.2	<0.0025	680	0.045
	EM15	10/10/2018	N	440-221975-14	Qal	19.3 - 29.3	--	--	--	0.40 J	0.032 J	<0.0050	3.4 J+	<0.013	680	0.029
	EM19	5/21/2019	N	440-242084-17	Qal	19.3 - 29.3	--	--	--	<0.050	0.025	<0.0010	3.2	<0.0025	630	0.017
	EM22	11/5/2019	N	440-253918-1	Qal	19.3 - 29.3	--	--	3,700	0.055 J	0.024	<0.0010	2.6	<0.0025	600	0.022 J+
	EM26	4/29/2020	N	440-265346-2	Qal	19.3 - 29.3	--	--	--	<0.050	0.025	<0.0010	3.2	<0.0025	660	0.021
	EM29	10/14/2020	N	440-273303-9	Qal	19.3 - 29.3	--	--	3,300	<0.050	0.027	<0.0010	3.4	<0.0025	660	0.015

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW05A	EM33	6/3/2021	N	550-164869-17/18	Qal	19.3 - 29.3	--	--	--	0.47	0.025 J+	0.00072 J	3.2	0.00097 J	610	0.016
	EM36	11/29/2021	N	550-174897-3/4	Qal	19.3 - 29.3	--	--	11,000	0.47	0.027	<0.00019	3.2	<0.00072	650	0.011
SWFTS-MW05B	BL01	3/30/2017	N	440-181045-8	Qal	32.3 - 42.0	--	--	--	0.16	0.020	<0.0010	3.2	<0.0025	560	0.050
	EM04	10/10/2017	N	440-193989-1	Qal	32.3 - 42.0	990	--	--	<0.050	0.11	<0.0010	2.7	<0.0025	490	<0.0025
	EM06	11/14/2017	N	440-196558-2	Qal	32.3 - 42.0	970	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-4	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-6	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215585-10	Qal	32.3 - 42.0	--	--	--	<0.050	0.032	<0.0010	2.9	<0.0025	430	<0.0025
	EM15	10/9/2018	N	440-221855-14	Qal	32.3 - 42.0	--	--	--	<0.25	0.038 J	<0.0050	2.7	<0.013	450	<0.013
	EM19	5/21/2019	N	440-242084-18	Qal	32.3 - 42.0	--	--	--	<0.050	0.029	<0.0010	2.5	<0.0025	420	<0.0025
	EM22	11/5/2019	N	440-253918-2	Qal	32.3 - 42.0	--	--	3,300	0.056 J	0.028	<0.0010	2.4	<0.0025	420	0.0041 J
	EM26	4/29/2020	N	440-265346-1	Qal	32.3 - 42.0	--	--	--	<0.050	0.025	<0.0010	2.6	<0.0025	490	<0.0025
	EM29	10/14/2020	N	440-273303-8	Qal	32.3 - 42.0	--	--	920	<0.050	0.028	<0.0010	2.4	<0.0025	400	<0.0025
	EM33	6/3/2021	N	550-164869-19/20	Qal	32.3 - 42.0	--	--	--	0.38	0.043	<0.00019	2.7	<0.00072	450	<0.0011
	EM36	11/30/2021	N	550-174968-15/16	Qal	32.3 - 42.0	--	--	7,900	0.40	0.029	<0.00019	2.5	<0.00072	500	<0.0011
SWFTS-MW06A	BL01	3/30/2017	N	440-181045-1	Qal	11.8 - 21.4	--	--	--	<0.050	0.025	<0.0010	0.86	<0.0025	180	<0.0025
	EM04	10/11/2017	N	440-194090-4	Qal	11.8 - 21.4	510	--	--	<0.050	0.022	<0.0010	1.1	<0.0025	230	<0.0025
	EM06	11/16/2017	N	440-196786-19	Qal	11.8 - 21.4	620	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-3	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210284-10	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-9	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	FD	440-215585-3	Qal	11.8 - 21.4	--	--	--	<0.050	0.019	<0.0010	0.94	<0.0025	170	<0.0025
	EM11	7/11/2018	N	440-215585-2	Qal	11.8 - 21.4	--	--	--	<0.050	0.017	<0.0010	0.84	<0.0025	150	<0.0025
	EM15	10/10/2018	FD	440-221975-10	Qal	11.8 - 21.4	--	--	--	0.073 J	0.019	<0.0010	0.92	<0.0025	170	<0.0025
	EM15	10/10/2018	N	440-221975-8	Qal	11.8 - 21.4	--	--	--	0.074 J	0.021	<0.0010	1.0	<0.0025	190	<0.0025
	EM19	5/20/2019	FD	440-242015-2	Qal	11.8 - 21.4	--	--	--	<0.050	0.018	<0.0010	0.92	<0.0025	160	<0.0025
	EM19	5/20/2019	N	440-242015-1	Qal	11.8 - 21.4	--	--	--	<0.050	0.017	<0.0010	0.88	<0.0025	180	<0.0025
	EM22	11/6/2019	FD	440-254027-5	Qal	11.8 - 21.4	--	--	<0.25	0.13	0.018	<0.0010	1.2	<0.0025	200	0.0041 J
	EM22	11/6/2019	N	440-254027-4	Qal	11.8 - 21.4	--	--	<0.25	0.10	0.017	<0.0010	1.2	<0.0025	200	0.0056 J+
	EM26	4/29/2020	FD	440-265346-6	Qal	11.8 - 21.4	--	--	--	<0.050	0.017	<0.0010	0.72	<0.0025	130	0.0028 J
	EM26	4/29/2020	N	440-265346-5	Qal	11.8 - 21.4	--	--	--	<0.050	0.017	<0.0010	0.77	<0.0025	130	0.0036 J
	EM29	10/13/2020	FD	440-273236-8	Qal	11.8 - 21.4	--	--	0.23 J	<0.050	0.019	<0.0010	0.92	<0.0025	180	<0.0025
	EM29	10/13/2020	N	440-273236-7	Qal	11.8 - 21.4	--	--	0.25 J	<0.050	0.020	<0.0010	0.90	<0.0025	180	<0.0025
	EM33	6/4/2021	FD	550-164930-21/22	Qal	11.8 - 21.4	--	--	--	0.22	0.018 J+	<0.00019	0.95	<0.00072	190	<0.0011
	EM33	6/4/2021	N	550-164930-19/20	Qal	11.8 - 21.4	--	--	--	0.20	0.018 J+	<0.00019	0.95	<0.00072	180	<0.0011
	EM36	12/1/2021	FD	550-175045-10/9	Qal	11.8 - 21.4	--	--	5.2	0.14 J	0.017	<0.00019	0.85	<0.00072	160	<0.0011
	EM36	12/1/2021	N	550-175045-7/8	Qal	11.8 - 21.4	--	--	5.8	0.13 J	0.017	<0.00019	0.85	<0.00072	160	<0.0011
SWFTS-MW06B	BL01	3/30/2017	N	440-181045-2	Qal	25.9 - 35.5	--	--	--	0.081 J	0.019	<0.0010	0.95	<0.0025	160	<0.0025
	EM04	10/11/2017	N	440-194090-5	Qal	25.9 - 35.5	470	--	--	<0.050	0.018	<0.0010	0.91	<0.0025	190	<0.0025
	EM06	11/16/2017	N	440-196786-20	Qal	25.9 - 35.5	540	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW06B	EM09	3/28/2018	N	440-207497-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-8	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-4	Qal	25.9 - 35.5	--	--	--	<0.050	0.014	<0.0010	0.99	<0.0025	160	<0.0025
	EM15	10/10/2018	N	440-221975-9	Qal	25.9 - 35.5	--	--	--	0.094 J	0.016	<0.0010	0.99	<0.0025	180	<0.0025
	EM19	5/21/2019	N	440-242084-5	Qal	25.9 - 35.5	--	--	--	<0.050	0.015	<0.0010	0.96	<0.0025	180	<0.0025
	EM22	11/6/2019	N	440-254027-6	Qal	25.9 - 35.5	--	--	<0.25	0.11	0.018	<0.0010	1.1	<0.0025	220	0.0044 J
	EM26	4/29/2020	N	440-265346-4	Qal	25.9 - 35.5	--	--	--	<0.050	0.014	<0.0010	0.92	<0.0025	140	0.0035 J
	EM29	10/13/2020	N	440-273236-6	Qal	25.9 - 35.5	--	--	0.52 J	<0.050	0.016	<0.0010	0.83	<0.0025	170	<0.0025
	EM33	6/4/2021	N	550-164930-23/24	Qal	25.9 - 35.5	--	--	--	0.19 J	0.015 J+	<0.00019	0.93	<0.00072	180	<0.0011
	EM36	12/1/2021	N	550-175045-11/12	Qal	25.9 - 35.5	--	--	1.3 J	0.16 J	0.015	<0.00019	0.88	<0.00072	160	<0.0011
SWFTS-MW07A	BL01	3/30/2017	N	440-181045-3	Qal	15.0 - 29.5	--	--	--	<0.050	0.019	<0.0010	3.0	<0.0025	380	<0.0025
	EM04	10/11/2017	N	440-194242-3	Qal	15.0 - 29.5	1,300	--	--	<0.050	0.018	<0.0010	2.6	<0.0025	370	<0.0025
	EM06	11/15/2017	N	440-196659-7	Qal	15.0 - 29.5	1,300	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-2	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-7	Qal	15.0 - 29.5	--	--	--	<0.050	0.017	<0.0010	2.3	<0.0025	290	<0.0025
	EM15	10/10/2018	N	440-221975-11	Qal	15.0 - 29.5	--	--	--	<0.25	<0.025	<0.0050	2.3	<0.013	270	<0.013
	EM19	5/22/2019	N	440-242200-5	Qal	15.0 - 29.5	--	--	--	<0.050	0.017	<0.0010	1.7	<0.0025	210	0.0036 J
	EM22	11/7/2019	N	440-254148-4	Qal	15.0 - 29.5	--	--	<0.25	0.060 J	0.016	<0.0010	1.8	<0.0025	190	0.0050 J+
	EM26	4/30/2020	N	440-265382-5	Qal	15.0 - 29.5	--	--	--	0.054 J	0.021	<0.0010	1.7	<0.0025	240	0.0063
	EM29	10/16/2020	N	440-273433-1	Qal	15.0 - 29.5	--	--	0.15 J	0.066 J	0.017	<0.0010	1.7	<0.0025	240	0.0030 J
	EM33	6/4/2021	N	550-164930-25/26	Qal	15.0 - 29.5	--	--	--	0.27	0.016 J+	<0.00019	1.7	<0.00072	230	<0.0011
	EM36	12/3/2021	N	550-175222-3/4	Qal	15.0 - 29.5	--	--	<0.63	0.27	0.019	<0.00019	1.6	<0.00072	270	<0.0011
SWFTS-MW07B	BL01	3/30/2017	N	440-181045-4	Qal	33.8 - 38.3	--	--	--	<0.050	0.021	<0.0010	2.6	<0.0025	380	<0.0025
	EM04	10/11/2017	N	440-194242-4	Qal	33.8 - 38.3	1,100	--	--	<0.050	0.017	<0.0010	2.3	<0.0025	280	0.0033 J
	EM06	11/15/2017	N	440-196659-8	Qal	33.8 - 38.3	1,000	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-2	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-10	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-1	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-8	Qal	33.8 - 38.3	--	--	--	<0.050	0.018	<0.0010	2.0	<0.0025	250	0.0043 J
	EM15	10/10/2018	N	440-221975-12	Qal	33.8 - 38.3	--	--	--	<0.25	<0.025	<0.0050	2.1	<0.013	210	<0.013
	EM19	5/22/2019	N	440-242200-6	Qal	33.8 - 38.3	--	--	--	<0.050	0.016	<0.0010	2.1	<0.0025	220	<0.0025
	EM22	11/7/2019	N	440-254148-5	Qal	33.8 - 38.3	--	--	<0.25	0.073 J	0.015	<0.0010	1.4	<0.0025	170	0.0087 J+
	EM26	4/30/2020	N	440-265382-4	Qal	33.8 - 38.3	--	--	--	<0.050	0.020	<0.0010	1.7	<0.0025	290	0.0049 J
	EM29	10/16/2020	N	440-273433-2	Qal	33.8 - 38.3	--	--	0.098 J	0.058 J	0.015	<0.0010	1.6	<0.0025	200	0.0038 J
	EM33	6/4/2021	N	550-164930-27/28	Qal	33.8 - 38.3	--	--	--	0.28	0.019 J+	<0.00019	1.3	<0.00072	280	0.0018 J
	EM36	12/3/2021	N	550-175222-5/6	Qal	33.8 - 38.3	--	--	<0.63	0.31	0.024	<0.00019	1.8	<0.00072	410	<0.0011
SWFTS-MW08A	BL01	3/30/2017	N	440-181045-9	Qal	20.2 - 34.8	1,300	--	--	<0.050	0.025	<0.0010	2.9	<0.0025	400	0.043
	EM04	10/10/2017	N	440-194094-4	Qal	20.2 - 34.8	1,100	--	--	<0.050	0.022	<0.0010	2.5	<0.0025	320	0.038
	EM06	11/15/2017	N	440-196659-4	Qal	20.2 - 34.8	1,000	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-8	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW08A	EM10	5/3/2018	N	440-210534-5	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-14	Qal	20.2 - 34.8	--	--	--	<0.050	0.022	<0.0010	2.3	<0.0025	280	0.044
	EM15	10/10/2018	N	440-221975-13	Qal	20.2 - 34.8	--	--	--	<0.25	0.026 J	<0.0050	2.3	<0.013	260	0.045
	EM19	5/22/2019	N	440-242198-4	Qal	20.2 - 34.8	--	--	--	<0.050	0.023	<0.0010	1.9	<0.0025	250	0.042
	EM22	11/7/2019	N	440-254148-6	Qal	20.2 - 34.8	--	--	<0.25	0.057 J	0.024	<0.0010	1.6	<0.0025	230	0.042 J+
	EM26	4/29/2020	N	440-265346-3	Qal	20.2 - 34.8	--	--	--	<0.050	0.027	<0.0010	1.8	<0.0025	320	0.052
	EM29	10/16/2020	N	440-273433-4	Qal	20.2 - 34.8	--	--	0.15 J	0.065 J	0.024	<0.0010	1.8	<0.0025	250	0.045
	EM33	6/4/2021	N	550-164930-29/30	Qal	20.2 - 34.8	--	--	--	0.30	0.028 J+	<0.00019	1.7	<0.00072	330	0.049
	EM36	12/2/2021	N	550-175153-23/24	Qal	20.2 - 34.8	--	--	<0.63	0.30	0.031 J+	<0.00019	1.9	<0.00072	410	0.055
SWFTS-MW08C	BL01	3/28/2017	N	440-180820-3	UMCf	49.9 - 69.5	1,500	--	--	0.096 J	0.015	<0.0010	2.7	<0.0025	590	0.056
SWFTS-MW09A	BL01	3/29/2017	N	440-180937-3	Qal	19.3 - 28.9	1,300	--	--	<0.050	0.025	<0.0010	2.8	<0.0025	330	0.035
	EM04	10/11/2017	N	440-194094-7	Qal	19.3 - 28.9	1,200	--	--	<0.050	0.075	<0.0010	2.4	<0.0025	340	<0.0025
	EM06	11/16/2017	N	440-196786-14	Qal	19.3 - 28.9	1,300	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-6	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-13	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-10	Qal	19.3 - 28.9	--	--	--	<0.050	0.035	<0.0010	2.4	<0.0025	270	<0.0025
	EM15	10/9/2018	N	440-221855-7	Qal	19.3 - 28.9	--	--	--	<0.25	0.044 J	<0.0050	3.0	<0.013	290	<0.013
	EM19	5/22/2019	N	440-242200-1	Qal	19.3 - 28.9	--	--	--	<0.050	0.036	<0.0010	2.2	<0.0025	270	<0.0025
	EM22	11/5/2019	N	440-253891-1	Qal	19.3 - 28.9	--	--	12.0	0.051 J	0.032	<0.0010	2.0	<0.0025	230	0.0050 J+
	EM26	4/28/2020	N	440-265289-4	Qal	19.3 - 28.9	--	--	--	<0.050	0.036	<0.0010	2.0	<0.0025	290	<0.0025
	EM29	10/13/2020	N	440-273236-3	Qal	19.3 - 28.9	--	--	<0.078	<0.050	0.032	<0.0010	2.1	<0.0025	270	<0.0025
	EM33	6/1/2021	N	550-164699-1/2	Qal	19.3 - 28.9	--	--	--	0.35	0.036	<0.00019	2.0	<0.00072	280	<0.0011
	EM36	12/2/2021	N	550-175153-10/9	Qal	19.3 - 28.9	--	--	7.5	0.27	0.038	<0.00019	2.0	<0.00072	340	<0.0011
SWFTS-MW09B	BL01	3/29/2017	FD	440-180937-5	Qal	34.4 - 39.0	1,300	--	--	0.072 J	0.016	<0.0010	2.3	<0.0025	390	0.015
	BL01	3/29/2017	N	440-180937-4	Qal	34.4 - 39.0	1,300	--	--	0.067 J	0.017	<0.0010	2.7	<0.0025	380	0.015
	EM04	10/11/2017	N	440-194094-5	Qal	34.4 - 39.0	1,200	--	--	<0.050	0.090	<0.0010	2.7	<0.0025	320	<0.0025
	EM06	11/16/2017	N	440-196786-15	Qal	34.4 - 39.0	1,200	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-7	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-13	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-6	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-11	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-9	Qal	34.4 - 39.0	--	--	--	<0.050	0.042	<0.0010	2.4	<0.0025	280	0.0029 J
	EM15	10/9/2018	N	440-221855-8	Qal	34.4 - 39.0	--	--	--	<0.25	0.046 J	<0.0050	2.6	<0.013	290	<0.013
	EM19	5/22/2019	N	440-242200-2	Qal	34.4 - 39.0	--	--	--	<0.050	0.032	<0.0010	2.1	<0.0025	260	0.0039 J
	EM22	11/5/2019	N	440-253891-3	Qal	34.4 - 39.0	--	--	<0.25	0.058 J	0.032	<0.0010	1.8	<0.0025	220	0.0055 J+
	EM26	4/28/2020	N	440-265289-3	Qal	34.4 - 39.0	--	--	--	<0.050	0.032	<0.0010	1.8	<0.0025	290	0.0052
	EM29	10/13/2020	N	440-273236-4	Qal	34.4 - 39.0	--	--	0.22 J	<0.050	0.030	<0.0010	2.0	<0.0025	280	0.0067
	EM33	6/2/2021	N	550-164872-1/2	Qal	34.4 - 39.0	--	--	--	0.31	0.029	<0.00019	1.8	<0.00072	280	0.0038 J
	EM36	12/2/2021	N	550-175153-11/12	Qal	34.4 - 39.0	--	--	<0.63	0.30	0.035 J+	<0.00019	1.9	<0.00072	360	0.0022 J
SWFTS-MW10A	BL01	3/31/2017	N	440-181122-2	Qal	20.4 - 35.0	1,200	--	--	0.14	0.020	<0.0010	2.1	<0.0025	350	<0.0025
	EM04	10/12/2017	N	440-194242-10	Qal	20.4 - 35.0	910	--	--	<0.050	0.058	<0.0010	1.5	<0.0025	200	<0.0025
	EM06	11/16/2017	FD	440-196786-6	Qal	20.4 - 35.0	920	<0.35	33.0	<0.050	0.047	<0.0010	1.6	<0.0025	170	<0.0025
	EM06	11/16/2017	N	440-196786-5	Qal	20.4 - 35.0	910	<0.35	31.0	<0.050	0.046	<0.0010	1.5	<0.0025	180	<0.0025
	EM07	12/12/2017	FD	440-198371-11	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW10A	EM07	12/12/2017	N	440-198371-10	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-5	Qal	20.4 - 35.0	--	<1.4	4,100	<0.050	0.040	<0.0010	2.3	<0.0025	260	<0.0025
	EM08	2/20/2018	N	440-203841-4	Qal	20.4 - 35.0	--	<1.4	4,000	<0.050	0.040	<0.0010	2.3	<0.0025	260	<0.0025
	EM09	3/26/2018	FD	440-207137-8	Qal	20.4 - 35.0	--	<0.35	2,800	<0.050	0.032	<0.0010	2.3	<0.0025	280	<0.0025
	EM09	3/26/2018	N	440-207137-7	Qal	20.4 - 35.0	--	<0.35	3,300	0.072 J	0.035	<0.0010	2.5	<0.0025	300	<0.0025
	EM10	5/1/2018	N	440-210284-1	Qal	20.4 - 35.0	--	<0.70	2,700	<0.050	0.035	<0.0010	2.7	<0.0025	340	<0.0025
	EM11	7/11/2018	N	440-215585-9	Qal	20.4 - 35.0	--	<0.70	2,400	<0.050	0.026	<0.0010	2.4	<0.0025	290	<0.0025
	EM13	8/14/2018	N	440-218109-10	Qal	20.4 - 35.0	--	<0.25	2,200	<0.050	0.024	<0.0010	2.2	<0.0025	270	<0.0025
	EM14	9/10/2018	N	440-219797-4	Qal	20.4 - 35.0	--	<0.25	1,500	<0.050	0.023	<0.0010	2.1	<0.0025	250	<0.0025
	EM15	10/9/2018	N	440-221855-9	Qal	20.4 - 35.0	--	<0.25	2,000	<0.25	0.028 J	<0.0050	2.3	<0.013	280	<0.013
	EM19	5/21/2019	N	440-242084-2	Qal	20.4 - 35.0	--	--	--	<0.050	0.022	<0.0010	2.1	<0.0025	240	<0.0025
	EM22	11/6/2019	N	440-254051-1	Qal	20.4 - 35.0	--	--	560	0.065 J	0.022	<0.0010	2.2 J	<0.0025	250	0.0040 J
	EM26	4/29/2020	N	440-265342-6	Qal	20.4 - 35.0	--	--	--	<0.050	0.023	<0.0010	2.5	<0.0025	300	<0.0025
	EM29	10/14/2020	N	440-273303-4	Qal	20.4 - 35.0	--	--	0.079 J	0.067 J	0.019	<0.0010	2.4	<0.0025	290	<0.0025
	EM33	6/4/2021	N	550-164930-13/14	Qal	20.4 - 35.0	--	--	--	0.34	0.020 J+	0.00051 J	2.5	<0.00072	280	<0.0011
	EM36	11/30/2021	N	550-174968-17/18	Qal	20.4 - 35.0	--	--	22	0.32	0.020	<0.00019	2.3	<0.00072	280	<0.0011
SWFTS-MW10C	BL01	3/28/2017	N	440-180820-4	UMCf	43.5 - 63.1	1,500	--	--	<0.050	0.015	<0.0010	3.1	<0.0025	600	0.0070
SWFTS-MW11	BL02	7/12/2017	N	440-188244-7	Qal	14.8 - 39.6	1,300	<1.4	3.70	0.098 J	0.040	<0.0010	2.9	<0.0025	430	0.021
	EM04	10/11/2017	N	440-194094-8	Qal	14.8 - 39.6	1,300	<0.70	<0.25	<0.050	0.021	<0.0010	2.8	<0.0025	370	0.018
	EM06	11/16/2017	N	440-196786-3	Qal	14.8 - 39.6	1,500	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-13	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	FD	440-203937-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	FD	440-207497-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210367-1	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-18	Qal	14.8 - 39.6	--	<0.70	<0.25	<0.050	0.017	<0.0010	2.6	<0.0025	320	0.020
	EM11	7/12/2018	N	440-215717-17	Qal	14.8 - 39.6	--	<0.70	<0.25	<0.050	0.017	<0.0010	2.6	<0.0025	320	0.021
	EM15	10/11/2018	FD	440-222092-11	Qal	14.8 - 39.6	--	<0.50	<0.25	<0.050	0.017	<0.0010	2.7	<0.0025	350	0.024
	EM15	10/11/2018	N	440-222092-10	Qal	14.8 - 39.6	--	<0.50	<0.25	<0.050	0.024	<0.0010	3.2	<0.0025	360	0.029
	EM19	5/22/2019	FD	440-242200-4	Qal	14.8 - 39.6	--	--	--	<0.050	0.016	<0.0010	2.3	<0.0025	260	0.017
	EM19	5/22/2019	N	440-242200-3	Qal	14.8 - 39.6	--	--	--	<0.050	0.016	<0.0010	2.3	<0.0025	260	0.018
	EM22	11/7/2019	FD	440-254150-4	Qal	14.8 - 39.6	--	--	<0.25	0.066 J	0.015	<0.0010	2.0	<0.0025	220	0.017 J+
	EM22	11/7/2019	N	440-254150-3	Qal	14.8 - 39.6	--	--	<0.25	0.062 J	0.014	<0.0010	1.9	<0.0025	220	0.017 J+
	EM26	4/30/2020	FD	440-265383-5	Qal	14.8 - 39.6	--	--	--	<0.050	0.018	<0.0010	1.9	<0.0025	330	0.028
	EM26	4/30/2020	N	440-265383-4	Qal	14.8 - 39.6	--	--	--	<0.050	0.018	<0.0010	1.9	<0.0025	340	0.029
	EM29	10/16/2020	FD	440-273433-8	Qal	14.8 - 39.6	--	--	0.13 J	0.063 J	0.016	<0.0010	2.0	<0.0025	320	0.022
	EM29	10/16/2020	N	440-273433-7	Qal	14.8 - 39.6	--	--	0.17 J	0.061 J	0.016	<0.0010	2.0	<0.0025	310	0.023
	EM33	6/4/2021	FD	550-164930-10/9	Qal	14.8 - 39.6	--	--	--	0.31	0.014 J+	<0.00019	1.8	<0.00072	300	0.012
	EM33	6/4/2021	N	550-164930-7/8	Qal	14.8 - 39.6	--	--	--	0.33	0.014 J+	<0.00019	1.8	<0.00072	300	0.012
	EM36	12/3/2021	FD	550-175222-10/9	Qal	14.8 - 39.6	--	--	<0.63	0.31	0.018	<0.00019	1.8	<0.00072	390	0.0060
	EM36	12/3/2021	N	550-175222-7/8	Qal	14.8 - 39.6	--	--	<0.63	0.31	0.017	<0.00019	1.8	<0.00072	360	0.0056
SWFTS-MW12	BL02	7/13/2017	N	440-188324-6	Qal	15.8 - 40.6	950	--	--	<0.050	0.033	<0.0010	3.4	<0.0025	530	0.035
	EM04	10/11/2017	N	440-194090-1	Qal	15.8 - 40.6	910	<0.70	<0.25	<0.050	0.028	<0.0010	3.3	<0.0025	530	0.032
	EM06	11/14/2017	N	440-196558-5	Qal	15.8 - 40.6	990	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW12	EM07	12/14/2017	N	440-198571-15	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-4	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-16	Qal	15.8 - 40.6	--	--	--	<0.050	0.030	<0.0010	3.4	<0.0025	510	0.030
	EM15	10/11/2018	N	440-222092-12	Qal	15.8 - 40.6	--	--	--	<0.050	0.024	<0.0010	3.2	<0.0025	460	0.028
	EM19	5/22/2019	N	440-242198-7	Qal	15.8 - 40.6	--	--	--	<0.050	0.028	<0.0010	3.4	<0.0025	560	0.029
	EM22	11/7/2019	N	440-254150-2	Qal	15.8 - 40.6	--	--	<0.25 UJ	<0.25	0.094	<0.0050	3.6	<0.013	510	<0.013
	EM22	11/26/2019	FD	440-255698-2	Qal	15.8 - 40.6	--	--	91.0 J	0.080 J	0.13 J-	<0.0010 UJ	3.2 J-	<0.0025 UJ	390 J-	0.0027 J
	EM22	11/26/2019	N	440-255698-1	Qal	15.8 - 40.6	--	--	84.0 J	0.077 J	0.14 J-	<0.0010 UJ	3.5 J-	<0.0025 UJ	440 J-	0.0030 J
	EM26	4/30/2020	N	440-265383-3	Qal	15.8 - 40.6	--	--	--	<0.050	0.13	<0.0010	2.1	<0.0025	310	0.0096
	EM29	10/16/2020	N	440-273433-6	Qal	15.8 - 40.6	--	--	4,900	0.059 J	0.11	<0.0010	2.8	<0.0025	430	<0.0025
	EM33	6/4/2021	N	550-164930-5/6	Qal	15.8 - 40.6	--	--	--	0.42	0.062	<0.00019	3.0	<0.00072	450	<0.0011
	EM36	12/2/2021	N	550-175153-19/20	Qal	15.8 - 40.6	--	--	1,300	0.38	0.046	<0.00019	3.2	<0.00072	440	<0.0011
SWFTS-MW13	BL02	7/12/2017	N	440-188244-6	Qal	17.8 - 47.6	900	<1.4	5.90	0.072 J	0.029	<0.0010	2.9	<0.0025	580	0.020
	EM04	10/10/2017	N	440-193989-4	Qal	17.8 - 47.6	1,200	--	--	<0.050	0.024	<0.0010	3.4	<0.0025	650	0.056
	EM06	11/15/2017	N	440-196659-1	Qal	17.8 - 47.6	1,100	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-14	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-7	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-15	Qal	17.8 - 47.6	--	--	--	<0.050	0.027	<0.0010	2.9	<0.0025	570	0.055
	EM15	10/11/2018	N	440-222092-14	Qal	17.8 - 47.6	--	--	--	<0.050	0.027	<0.0010	3.4	<0.0025	680	0.062
	EM19	5/22/2019	N	440-242198-5	Qal	17.8 - 47.6	--	--	--	<0.050	0.025	<0.0010	3.0	<0.0025	610	0.056
	EM22	11/6/2019	N	440-254051-6	Qal	17.8 - 47.6	--	--	<0.25	<0.25	0.025 J	<0.0050	3.1	<0.013	590	0.065 J+
	EM26	4/30/2020	N	440-265383-2	Qal	17.8 - 47.6	--	--	--	<0.050	0.024	<0.0010	3.4	<0.0025	570	0.050
	EM29	10/15/2020	N	550-151259-6	Qal	17.8 - 47.6	--	--	<0.078	<0.050	0.021	<0.0010	2.9	<0.0025	530	0.046
	EM33	6/4/2021	N	550-164930-3/4	Qal	17.8 - 47.6	--	--	--	0.51	0.023 J+	<0.00019	3.5	<0.00072	620	0.054
	EM36	12/2/2021	N	550-175153-17/18	Qal	17.8 - 47.6	--	--	<0.63	0.48	0.022 J+	<0.00019	3.5	<0.00072	570	0.046
SWFTS-MW14	BL02	7/12/2017	FD	440-188244-9	Qal	16.8 - 36.6	1,700	<1.4	<0.25	0.061 J	0.022	<0.0010	3.0	<0.0025	510	<0.0025
	BL02	7/12/2017	N	440-188244-8	Qal	16.8 - 36.6	1,700	<1.4	<0.25	0.084 J	0.022	<0.0010	2.9	<0.0025	520	<0.0025
	EM04	10/11/2017	N	440-194242-8	Qal	16.8 - 36.6	1,500	<0.70	13.0	<0.050	0.066	<0.0010	2.8	<0.0025	350	<0.0025
	EM06	11/15/2017	N	440-196659-3	Qal	16.8 - 36.6	1,500	<0.70	49.0	0.25 J+	0.053	<0.0010	2.6	<0.0025	300	<0.0025
	EM07	12/12/2017	N	440-198371-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-11	Qal	16.8 - 36.6	--	<1.4	760 J-	<0.10	0.037	0.0020 J	2.8	<0.0050	490	<0.0050
	EM09	3/26/2018	N	440-207137-9	Qal	16.8 - 36.6	--	<0.35	2,300	<0.25	0.042 J	<0.0050	2.8 J+	<0.013	320	<0.013
	EM10	4/30/2018	N	440-210173-9	Qal	16.8 - 36.6	--	<0.70	7,400	<0.25	0.11	<0.0050	2.8	<0.013	220	<0.013
	EM11	7/10/2018	N	440-215437-8	Qal	16.8 - 36.6	--	<0.70	12,000	<0.050	0.31	<0.0010	2.7	<0.0025	220	<0.0025
	EM13	8/14/2018	N	440-218109-11	Qal	16.8 - 36.6	--	<0.25	9,900	<0.050	0.28	<0.0010	2.5	<0.0025	220	<0.0025
	EM14	9/11/2018	N	440-219886-17	Qal	16.8 - 36.6	--	<0.25	9,000	0.051 J	0.29	<0.0010	2.8	<0.0025	230	<0.0025
	EM15	10/9/2018	N	440-221855-10	Qal	16.8 - 36.6	--	<0.50	12,000	<0.25	0.33	<0.0050	2.9	<0.013	280	<0.013
	EM19	5/21/2019	N	440-242084-1	Qal	16.8 - 36.6	--	--	--	<0.050	0.15	<0.0010	2.5	<0.0025	230	<0.0025
	EM22	11/6/2019	N	440-254051-2	Qal	16.8 - 36.6	--	--	9,300	0.066 J	0.12	<0.0010	2.3	<0.0025	200	0.0058 J+
	EM26	5/1/2020	N	440-265414-2	Qal	16.8 - 36.6	--	--	--	0.050 J	0.089	<0.0010	2.2	<0.0025	280	<0.0025
	EM29	10/14/2020	N	440-273303-5	Qal	16.8 - 36.6	--	--	6,700	0.062 J	0.052	<0.0010	2.1	<0.0025	270	<0.0025
	EM33	6/4/2021	N	550-164930-1/2	Qal	16.8 - 36.6	--	--	--	0.30	0.038	0.0014 J+	2.1	<0.00072	250	<0.0011

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW14	EM36	12/3/2021	N	550-175222-1/2	Qal	16.8 - 36.6	--	--	4,400	0.24	0.039	<0.00019	2.2	<0.00072	250	<0.0011
SWFTS-MW15	BL02	7/13/2017	N	440-188325-3	Qal	14.8 - 34.6	1,300	<0.70	<0.25	1.2	0.040	<0.0010	2.7	<0.0025	410	0.032
	EM04	10/10/2017	N	440-194094-1	Qal	14.8 - 34.6	1,100	<0.70	<0.25	<0.050	0.018	<0.0010	2.5	<0.0025	290	0.031
	EM06	11/14/2017	N	440-196558-4	Qal	14.8 - 34.6	1,200	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-13	Qal	14.8 - 34.6	--	<0.70	--	0.098 J	0.027	<0.0010	2.9	<0.0025	340	0.036
	EM08	2/19/2018	N	440-203775-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-10	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-1	Qal	14.8 - 34.6	--	--	--	<0.050	0.025	<0.0010	2.4	<0.0025	270	0.024
	EM15	10/9/2018	N	440-221855-11	Qal	14.8 - 34.6	--	--	--	<0.25	0.079	<0.0050	2.5	<0.013	270	<0.013
	EM19	5/20/2019	N	440-242014-1	Qal	14.8 - 34.6	--	--	--	0.076 J	0.028	<0.0010	2.0	<0.0025	250	0.028
	EM22	11/6/2019	N	440-254051-3	Qal	14.8 - 34.6	--	--	<0.25	0.15	0.021	<0.0010	1.8	<0.0025	230	0.033 J+
	EM26	4/29/2020	N	440-265342-3	Qal	14.8 - 34.6	--	--	--	<0.050	0.041	<0.0010	2.0	<0.0025	280	0.012
	EM29	10/15/2020	N	550-151259-4	Qal	14.8 - 34.6	--	--	100	<0.050	0.039	<0.0010	1.7	<0.0025	230	0.0076
	EM33	6/3/2021	N	550-164869-13/14	Qal	14.8 - 34.6	--	--	--	0.29	0.043	<0.00019	1.8	<0.00072	290	0.010
	EM36	11/30/2021	N	550-174968-10/9	Qal	14.8 - 34.6	--	--	2.2 J	0.34	0.036	<0.00019	1.7	<0.00072	410	0.023
SWFTS-MW16	BL02	7/13/2017	N	440-188325-2	Qal	21.8 - 41.6	1,100	--	--	1.7	0.052	<0.0010	3.0	<0.0025	510	0.037
	EM04	10/12/2017	N	440-194204-7	Qal	21.8 - 41.6	960	<0.70	0.920 J	<0.050	0.058	<0.0010	2.7	<0.0025	380	<0.0025
	EM06	11/16/2017	N	440-196786-4	Qal	21.8 - 41.6	970	<0.70	670	2.5	0.50	<0.0010	2.5	<0.0025	220	0.0050
	EM07	12/12/2017	N	440-198371-4	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-6	Qal	21.8 - 41.6	--	<1.4	6,900	0.48 J+	0.22	<0.0010	3.0	<0.0025	320	<0.0025
	EM09	3/27/2018	N	440-207268-13	Qal	21.8 - 41.6	--	<0.70	27.0	0.26 J+	0.025	<0.0010	2.3	<0.0025	300	0.025
	EM10	5/2/2018	N	440-210430-13	Qal	21.8 - 41.6	--	<0.070	11,000	<0.10	0.16	<0.0020	2.8	<0.0050	340	<0.0050
	EM11	7/11/2018	N	440-215585-12	Qal	21.8 - 41.6	--	<0.70	10,000	<0.050	0.13	<0.0010	2.8	<0.0025	270	<0.0025
	EM13	8/15/2018	N	440-218208-13	Qal	21.8 - 41.6	--	<0.13	9,200	0.23	0.11	<0.0010	2.5	<0.0025	250	<0.0025
	EM14	9/10/2018	N	440-219797-6	Qal	21.8 - 41.6	--	<0.13	12,000	<0.050	0.10	<0.0010	2.4	<0.0025	260	<0.0025
	EM15	10/11/2018	N	440-222092-3	Qal	21.8 - 41.6	--	<0.25	8,600	0.057 J	0.080	<0.0010	2.8	<0.0025	320	<0.0025
	EM19	5/20/2019	N	440-242014-3	Qal	21.8 - 41.6	--	--	--	0.29	0.091	<0.0010	2.2	<0.0025	270	<0.0025
	EM22	11/6/2019	N	440-254051-5	Qal	21.8 - 41.6	--	--	11,000	0.11	0.13	<0.0010	2.0	<0.0025	220	0.022 J+
	EM26	4/30/2020	N	440-265383-1	Qal	21.8 - 41.6	--	--	--	<0.050	0.082	<0.0010	2.0	<0.0025	290	<0.0025
	EM29	10/15/2020	N	550-151259-1	Qal	21.8 - 41.6	--	--	2,700	<0.050	0.054	<0.0010	1.7	<0.0025	230	<0.0025
	EM33	6/3/2021	N	550-164869-11/12	Qal	21.8 - 41.6	--	--	--	0.31	0.057	<0.00019	1.8	<0.00072	290	<0.0011
	EM36	11/30/2021	N	550-174968-11/12	Qal	21.8 - 41.6	--	--	11,000	0.32	0.058	<0.00019	1.7	<0.00072	360	<0.0011
SWFTS-MW17	BL02	7/12/2017	N	440-188244-1	Qal	22.8 - 52.6	650	--	--	0.063 J	0.027	<0.0010	1.7	<0.0025	610	0.023
	EM04	10/10/2017	N	440-193989-3	Qal	22.8 - 52.6	670	<0.70	<0.25	<0.050	0.024	<0.0010	1.8	<0.0025	580	0.018
	EM06	11/15/2017	FD	440-196659-6	Qal	22.8 - 52.6	570	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-5	Qal	22.8 - 52.6	580	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-7	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-3	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-13	Qal	22.8 - 52.6	--	--	--	<0.050	0.021	<0.0010	1.4	<0.0025	490	0.011
	EM15	10/11/2018	N	440-222092-4	Qal	22.8 - 52.6	--	--	--	<0.050	0.020	<0.0010	1.4	<0.0025	490	0.015
	EM19	5/22/2019	N	440-242198-6	Qal	22.8 - 52.6	--	--	--	<0.050	0.020	<0.0010	1.4	<0.0025	480	0.012
	EM22	11/7/2019	N	440-254150-1	Qal	22.8 - 52.6	--	--	<0.25	0.079 J	0.021	<0.0010	1.4	<0.0025	510	0.018 J+

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW17	EM26	4/30/2020	N	440-265383-6	Qal	22.8 - 52.6	--	--	--	<0.050	0.021	<0.0010	1.6	<0.0025	530	0.020
	EM29	10/15/2020	N	550-151259-5	Qal	22.8 - 52.6	--	--	<0.078	<0.050	0.019	<0.0010	1.3	<0.0025	480	0.014
	EM33	6/3/2021	N	550-164869-10/9	Qal	22.8 - 52.6	--	--	--	0.40	0.021 J+	<0.00019	1.5	<0.00072	520	0.013
	EM36	12/2/2021	N	550-175153-21/22	Qal	22.8 - 52.6	--	--	<0.63	0.33	0.020 J+	<0.00019	1.8	<0.00072	480	0.011
SWFTS-MW18	BL02	7/11/2017	N	440-188133-17	Qal	16.8 - 36.6	1,200	<0.70	<0.25	0.063 J	0.031	<0.0010	2.8	<0.0025	460	0.042
	EM04	10/10/2017	N	440-194094-3	Qal	16.8 - 36.6	1,100	--	--	<0.050	0.022	<0.0010	2.6	<0.0025	350	0.023
	EM06	11/15/2017	N	440-196690-11	Qal	16.8 - 36.6	1,100	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-5	Qal	16.8 - 36.6	--	<0.35	20.0	<0.050	0.024	<0.0010	3.0	<0.0025	380	0.026
	EM08	2/22/2018	N	440-204033-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	FD	440-207268-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-6	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-2	Qal	16.8 - 36.6	--	--	--	<0.050	0.024	<0.0010	2.6	<0.0025	320	0.028
	EM15	10/11/2018	N	440-222092-5	Qal	16.8 - 36.6	--	--	--	0.063 J	0.022	<0.0010	2.5	<0.0025	290	0.027
	EM19	5/21/2019	N	440-242084-15	Qal	16.8 - 36.6	--	--	--	<0.050	0.028	<0.0010	2.4	<0.0025	320	0.014
	EM22	11/6/2019	N	440-254051-4	Qal	16.8 - 36.6	--	--	1,100	0.087 J	0.041	<0.0010	2.6	<0.0025	300	0.0057 J+
	EM26	4/29/2020	N	440-265342-2	Qal	16.8 - 36.6	--	--	--	<0.050	0.033	<0.0010	2.1	<0.0025	310	0.0038 J
	EM29	10/15/2020	N	550-151259-2	Qal	16.8 - 36.6	--	--	120	<0.050	0.031	<0.0010	2.0	<0.0025	270	<0.0025
	EM33	6/3/2021	N	550-164869-7/8	Qal	16.8 - 36.6	--	--	--	0.33	0.049	<0.00019	2.4	<0.00072	330	<0.0011
	EM36	12/1/2021	N	550-175045-5/6	Qal	16.8 - 36.6	--	--	2,200	0.33	0.062	<0.00019	2.8	<0.00072	340	<0.0011
SWFTS-MW19	BL02	7/12/2017	N	440-188244-2	Qal	11.3 - 31.1	440	<0.14	<0.25	0.079 J	0.011	<0.0010	0.94	<0.0025	160	<0.0025
	EM04	10/12/2017	N	440-194204-1	Qal	11.3 - 31.1	480	--	--	<0.050	0.012	<0.0010	0.99	<0.0025	170	<0.0025
	EM06	11/16/2017	N	440-196786-12	Qal	11.3 - 31.1	460	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-8	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-3	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	FD	440-210173-5	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	FD	440-215437-11	Qal	11.3 - 31.1	--	--	--	<0.050	0.013	<0.0010	1.1	<0.0025	180	<0.0025
	EM11	7/10/2018	N	440-215437-10	Qal	11.3 - 31.1	--	--	--	<0.050	0.012	<0.0010	1.0	<0.0025	180	<0.0025
	EM15	10/9/2018	FD	440-221855-5	Qal	11.3 - 31.1	--	--	--	0.070 J	0.013	<0.0010	1.2	<0.0025	190	<0.0025
	EM15	10/9/2018	N	440-221855-4	Qal	11.3 - 31.1	--	--	--	0.078 J	0.012	<0.0010	1.2	<0.0025	180	<0.0025
	EM19	5/21/2019	FD	440-242084-7	Qal	11.3 - 31.1	--	--	--	<0.050	0.011	<0.0010	1.0	<0.0025	170	<0.0025
	EM19	5/21/2019	N	440-242084-6	Qal	11.3 - 31.1	--	--	--	<0.050	0.011	<0.0010	1.0	<0.0025	170	<0.0025
	EM22	11/5/2019	FD	440-253891-7	Qal	11.3 - 31.1	--	--	<0.25	<0.050	0.012	<0.0010	1.0	<0.0025	160	0.0052 J+
	EM22	11/5/2019	N	440-253891-6	Qal	11.3 - 31.1	--	--	<0.25	0.051 J	0.012	<0.0010	1.1	<0.0025	170	0.0056 J+
	EM26	4/28/2020	FD	440-265288-7	Qal	11.3 - 31.1	--	--	--	<0.050	0.018	<0.0010	1.4	<0.0025	280	<0.0025
	EM26	4/28/2020	N	440-265288-4	Qal	11.3 - 31.1	--	--	--	<0.050	0.017	<0.0010	1.4	<0.0025	270	<0.0025
	EM29	10/14/2020	FD	440-273303-3	Qal	11.3 - 31.1	--	--	<0.078	0.083 J	0.014	<0.0010	1.2	<0.0025	200	<0.0025
	EM29	10/14/2020	N	440-273303-2	Qal	11.3 - 31.1	--	--	<0.078	0.10 J+	0.013	<0.0010	1.2	<0.0025	190	<0.0025
	EM33	6/3/2021	FD	550-164869-5/6	Qal	11.3 - 31.1	--	--	--	0.21	0.013 J+	<0.00019	1.3	<0.00072	230	<0.0011
	EM33	6/3/2021	N	550-164869-3/4	Qal	11.3 - 31.1	--	--	--	0.24	0.014 J+	0.00022 J	1.3	<0.00072	230	<0.0011
	EM36	12/1/2021	FD	550-175045-15/16	Qal	11.3 - 31.1	--	--	5.1	0.23	0.013	<0.00019	1.3	<0.00072	220	<0.0011
	EM36	12/1/2021	N	550-175045-13/14	Qal	11.3 - 31.1	--	--	4.9 J	0.23	0.013	<0.00019	1.2	<0.00072	210	<0.0011
SWFTS-MW20	BL02	7/12/2017	N	440-188244-5	Qal	12.8 - 37.6	1,700	--	--	0.083 J	0.018	<0.0010	3.2	<0.0050	600	<0.0025
	EM04	10/12/2017	FD	440-194202-2	Qal	12.8 - 37.6	1,600	<1.4	<0.25	<0.050	0.019	<0.0010	3.4	<0.0025	570	<0.0025 UJ

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW20	EM04	10/12/2017	N	440-194202-1	Qal	12.8 - 37.6	1,500	<1.4	<0.25	<0.050	0.018	<0.0010	3.2	<0.0025	530	0.018 J
	EM06	11/16/2017	N	440-196786-7	Qal	12.8 - 37.6	1,500	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-3	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-9	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-10	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-8	Qal	12.8 - 37.6	--	--	--	<0.050	0.032	<0.0010	3.2	<0.0025	410	<0.0025
	EM15	10/9/2018	N	440-221855-1	Qal	12.8 - 37.6	--	--	--	<0.25	0.039 J	<0.0050	3.5	<0.013	420	<0.013
	EM19	5/21/2019	N	440-242084-3	Qal	12.8 - 37.6	--	--	--	<0.050	0.034	<0.0010	3.3	<0.0025	370	<0.0025
	EM22	11/5/2019	N	440-253918-6	Qal	12.8 - 37.6	--	--	3,600	0.077 J	0.038	<0.0010	3.8	<0.0025	400	0.0051 J+
	EM26	4/29/2020	N	440-265342-5	Qal	12.8 - 37.6	--	--	--	<0.050	0.029	<0.0010	3.1	<0.0025	360	<0.0025
	EM29	10/14/2020	N	440-273303-6	Qal	12.8 - 37.6	--	--	710	<0.050	0.020	<0.0010	4.0	<0.0025	460	<0.0025
	EM33	6/3/2021	N	550-164869-1/2	Qal	12.8 - 37.6	--	--	--	0.36	0.023 J+	<0.00019	3.5	<0.00072	370	<0.0011
	EM36	11/29/2021	N	550-174897-1/2	Qal	12.8 - 37.6	--	--	3,300	0.29	0.030	<0.00019	3.1	<0.00072	300	<0.0011
SWFTS-MW21	BL02	7/13/2017	N	440-188324-5	Qal	14.8 - 39.6	1,000	<1.4	<0.25	0.83	0.048	<0.0020	3.7	<0.0050	670	0.053
	EM04	10/11/2017	N	440-194090-8	Qal	14.8 - 39.6	1,000	<0.70	<0.25	<0.050	0.044	<0.0010	3.0	<0.0025	590	<0.0025
	EM06	11/15/2017	N	440-196665-5	Qal	14.8 - 39.6	1,300	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-10	Qal	14.8 - 39.6	--	1.7	9.40	<0.10	0.040	<0.0020	4.3	<0.0050	680	<0.0050
	EM08	2/20/2018	FD	440-203841-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-14	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-3	Qal	14.8 - 39.6	--	--	--	<0.050	0.033	<0.0010	3.6	<0.0025	540	<0.0025
	EM15	10/9/2018	N	440-221855-3	Qal	14.8 - 39.6	--	--	--	<0.25	0.036 J	<0.0050	3.6	<0.013	550	<0.013
	EM19	5/22/2019	N	440-242198-3	Qal	14.8 - 39.6	--	--	--	<0.050	0.030	<0.0010	3.3	<0.0025	560	0.0073
	EM22	11/4/2019	N	440-253773-3	Qal	14.8 - 39.6	--	--	1,000	0.076 J	0.030	<0.0010	3.4	<0.0025	520	0.0053 J+
	EM26	4/29/2020	N	440-265342-1	Qal	14.8 - 39.6	--	--	--	<0.050	0.022	<0.0010	2.3	<0.0025	380	<0.0025
	EM29	10/14/2020	N	440-273303-7	Qal	14.8 - 39.6	--	--	1,000	0.49 J+	0.040	<0.0010	3.2	<0.0025	500	<0.0025
	EM33	6/2/2021	N	550-164872-15/16	Qal	14.8 - 39.6	--	--	--	0.48	0.029	<0.00019	3.3	<0.00072	470	<0.0011
	EM36	12/1/2021	N	550-175045-3/4	Qal	14.8 - 39.6	--	--	1,900	0.49	0.028	<0.00019	3.2	<0.00072	490	<0.0011
SWFTS-MW22	BL02	7/13/2017	N	440-188324-1	Qal	11.8 - 31.6	690	<0.35	<0.25	15	0.41	<0.0010	1.4	<0.0025	200	0.016
	EM04	10/12/2017	N	440-194242-9	Qal	11.8 - 31.6	740	--	--	<0.050	0.023	<0.0010	1.5	<0.0025	180	<0.0025
	EM06	11/16/2017	N	440-196786-18	Qal	11.8 - 31.6	730	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-17	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-6	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-9	Qal	11.8 - 31.6	--	--	66.0	<0.050	0.023	<0.0010	1.5	<0.0025	200	<0.0025
	EM15	10/9/2018	N	440-221855-2	Qal	11.8 - 31.6	--	--	1.50	<0.25	<0.025	<0.0050	1.5	<0.013	190	<0.013
	EM19	5/21/2019	N	440-242084-4	Qal	11.8 - 31.6	--	--	--	<0.050	0.016	<0.0010	1.4	<0.0025	170	<0.0025
	EM22	11/5/2019	N	440-253891-4	Qal	11.8 - 31.6	--	--	<0.25	0.19	0.020	<0.0010	1.5	<0.0025	160	0.0054 J+
	EM26	4/28/2020	N	440-265288-5	Qal	11.8 - 31.6	--	--	--	<0.050	0.018	<0.0010	1.4	<0.0025	180	<0.0025
	EM29	10/14/2020	N	440-273303-1	Qal	11.8 - 31.6	--	--	<0.078	0.080 J	0.020	<0.0010	1.6	<0.0025	200	<0.0025
	EM33	6/2/2021	N	550-164872-11/12	Qal	11.8 - 31.6	--	--	--	0.26	0.022 J+	0.0010 J+	1.7	0.00099 J	200	<0.0011
	EM36	12/2/2021	N	550-175153-1/2	Qal	11.8 - 31.6	--	--	<0.63	0.20	0.019 J+	<0.00019	1.8	<0.00072	190	<0.0011
SWFTS-MW23	BL02	7/13/2017	N	440-188325-7	Qal	13.8 - 33.6	2,100	--	--	0.052 J	0.015	<0.0010	0.86	<0.0025	190	<0.0025

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Anions by EPA 300.0	Anions by EPA 300.0	Dissolved Gases by RSK-175	Dissolved Metals by SW6010						
							Chloride	Nitrite (as N)	Methane	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW23	EM04	10/11/2017	N	440-194090-7	Qal	13.8 - 33.6	460	<0.14	<0.25	<0.050	0.016	<0.0010	0.94	<0.0025	200	<0.0025
	EM06	11/15/2017	N	440-196665-3	Qal	13.8 - 33.6	540	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-2	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-14	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-9	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-5	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-7	Qal	13.8 - 33.6	--	--	--	0.058 J	0.013	<0.0010	0.97	<0.0025	160	<0.0025
	EM15	10/11/2018	N	440-222092-7	Qal	13.8 - 33.6	--	--	--	0.084 J	0.015	<0.0010	1.1	<0.0025	190	<0.0025
	EM19	5/22/2019	N	440-242201-7	Qal	13.8 - 33.6	--	--	--	<0.050	0.014	<0.0010	0.93	<0.0025	180	<0.0025
	EM22	11/5/2019	N	440-253891-5	Qal	13.8 - 33.6	--	--	<0.25	0.057 J	0.015	<0.0010	1.0	<0.0025	200	0.0052 J+
	EM26	4/28/2020	N	440-265288-3	Qal	13.8 - 33.6	--	--	--	<0.050	0.012	<0.0010	0.96	<0.0025	170	<0.0025
	EM29	10/13/2020	N	440-273236-1	Qal	13.8 - 33.6	--	--	<0.078	<0.050	0.015	<0.0010	0.83	<0.0025	170	<0.0025
	EM33	6/2/2021	N	550-164872-3/4	Qal	13.8 - 33.6	--	--	--	0.16 J	0.014 J+	<0.00019	0.88	<0.00072	180	<0.0011
	EM36	12/2/2021	N	550-175153-15/16	Qal	13.8 - 33.6	--	--	<0.63	0.13 J	0.013 J+	<0.00019	0.96	<0.00072	160	<0.0011
SWFTS-MW24	BL02	7/13/2017	N	440-188324-2	Qal	12.8 - 37.6	1,200	<0.70	<0.25	0.064 J	0.028	<0.0010	2.9	<0.0025	460	0.038
	EM04	10/11/2017	N	440-194242-2	Qal	12.8 - 37.6	1,200	--	--	<0.050	0.022	<0.0010	2.8	<0.0025	410	0.015
	EM06	11/15/2017	N	440-196665-1	Qal	12.8 - 37.6	1,200	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-12	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-5	Qal	12.8 - 37.6	--	--	--	<0.050	0.019	<0.0010	2.7	<0.0025	320	<0.0025
	EM15	10/10/2018	N	440-221975-7	Qal	12.8 - 37.6	--	--	--	0.066 J	0.021	<0.0010	3.2	<0.0025	370	<0.0025
	EM19	5/22/2019	N	440-242198-1	Qal	12.8 - 37.6	--	--	--	<0.050	0.020	<0.0010	2.7	<0.0025	350	<0.0025
	EM22	11/5/2019	N	440-253891-2	Qal	12.8 - 37.6	--	--	<0.25	0.058 J	0.017	<0.0010	2.5	<0.0025	320	0.0061 J+
	EM26	4/28/2020	N	440-265288-1	Qal	12.8 - 37.6	--	--	--	<0.050	0.024	<0.0010	2.2	<0.0025	310	<0.0025
	EM29	10/12/2020	N	440-273153-1	Qal	12.8 - 37.6	--	--	<0.078	<0.050	0.020	<0.0010	2.4	<0.0025	330	0.0027 J
	EM33	6/2/2021	N	550-164872-7/8	Qal	12.8 - 37.6	--	--	--	0.33	0.019 J+	<0.00019	2.3	<0.00072	310	<0.0011
	EM36	12/1/2021	N	550-175045-17/18	Qal	12.8 - 37.6	--	--	<0.63	0.33	0.021	<0.00019	2.2	<0.00072	340	<0.0011
SWFTS-MW25	BL02	7/13/2017	N	440-188324-4	Qal	12.8 - 42.6	1,400	<1.4	<0.25	0.063 J	0.018	<0.0010	2.6	<0.0025	450	0.0050
	EM04	10/11/2017	N	440-194242-1	Qal	12.8 - 42.6	1,300	--	--	0.077 J	0.044	<0.0010	2.6	<0.0025	350	<0.0025
	EM06	11/15/2017	N	440-196665-2	Qal	12.8 - 42.6	1,500	<0.70	--	1.7	0.050	<0.0010	2.3	<0.0025	310	<0.0025
	EM07	12/12/2017	N	440-198371-1	Qal	12.8 - 42.6	--	<0.70	--	0.15	0.042	<0.0010	2.9	<0.0025	340	<0.0025
	EM08	2/21/2018	N	440-203937-7	Qal	12.8 - 42.6	--	<1.4	--	5.9	0.086	<0.0010	2.8	<0.0025	310	0.011
	EM09	3/28/2018	N	440-207497-13	Qal	12.8 - 42.6	--	<0.70	--	0.089 J	0.036	<0.0010	2.7	<0.0025	320	<0.0025
	EM10	5/3/2018	N	440-210534-2	Qal	12.8 - 42.6	--	<3.5	--	0.077 J	0.039	<0.0010	2.7	<0.0025	330	<0.0025
	EM11	7/10/2018	N	440-215437-12	Qal	12.8 - 42.6	--	<0.70	<0.25	0.37	0.037	<0.0010	2.4	<0.0025	280	<0.0025
	EM13	8/15/2018	N	440-218208-10	Qal	12.8 - 42.6	--	<0.25	--	1.1	0.034	<0.0010	2.4	<0.0025	290	<0.0025
	EM14	9/12/2018	N	440-220031-2	Qal	12.8 - 42.6	--	<0.25	--	0.074 J	0.036	<0.0010	2.4 J	<0.0025	270 J	<0.0025
	EM15	10/11/2018	N	440-222092-6	Qal	12.8 - 42.6	--	<0.50	<0.25	0.073 J	0.036	<0.0010	2.7	<0.0025	310	<0.0025
	EM19	5/22/2019	N	440-242201-6	Qal	12.8 - 42.6	--	--	--	0.13	0.029	<0.0010	2.2	<0.0025	250	<0.0025
	EM22	11/5/2019	N	440-253918-4	Qal	12.8 - 42.6	--	--	<0.25	0.35	0.029	<0.0010	2.1	<0.0025	230	0.0046 J
	EM26	4/28/2020	N	440-265288-2	Qal	12.8 - 42.6	--	--	--	<0.050	0.032	<0.0010	2.1	<0.0025	280	<0.0025
	EM29	10/13/2020	N	440-273236-2	Qal	12.8 - 42.6	--	--	0.081 J	0.056 J	0.028	<0.0010	2.1	<0.0025	260	<0.0025
	EM33	6/2/2021	N	550-164872-5/6	Qal	12.8 - 42.6	--	--	--	0.29	0.025	<0.00019	1.9	<0.00072	250	<0.0011
	EM36	12/1/2021	N	550-175045-19/20	Qal	12.8 - 42.6	--	--	9.8	0.40	0.036	<0.00019	1.7	<0.00072	320	<0.0011

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COH-2B1	BL02	8/9/2017	N	440-189933-1	Alluvium/UMCf	36.0 - 66.0	<0.0050	0.0054 J	<0.050	<0.0038	85	0.089	0.21	0.017	<0.10	23
	EM04	10/12/2017	N	440-194204-2	Alluvium/UMCf	36.0 - 66.0	<0.0050	<0.0050	<0.050	<0.0038	86	0.12	0.21	0.016	<0.10	24
	EM07	12/14/2017	N	440-198571-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-2	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-11	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-6	Alluvium/UMCf	36.0 - 66.0	<0.0050	<0.0050	<0.050	<0.0038	120	0.12	0.18	0.014	<0.10	30
	EM15	10/11/2018	N	440-222092-1	Alluvium/UMCf	36.0 - 66.0	<0.025	<0.025	<0.25	<0.019	95	0.16	0.21	<0.025	<0.50	22
	EM19	5/22/2019	N	440-242201-5	Alluvium/UMCf	36.0 - 66.0	<0.0050	0.024	<0.050	<0.0038	81	0.14	0.16	0.026	<0.10	24
	EM22	11/4/2019	N	440-253773-1	Alluvium/UMCf	36.0 - 66.0	<0.0050	<0.0050	0.32	<0.0038	130	0.36	0.21	0.013	<0.10	32
	EM26	4/27/2020	N	440-265243-1	Alluvium/UMCf	36.0 - 66.0	<0.0050	<0.0050	<0.050	<0.0038	79	0.12	0.15	0.0088 J	<0.10	21
	EM29	10/13/2020	N	440-273236-9	Alluvium/UMCf	36.0 - 66.0	<0.0050	<0.0050	<0.050	<0.0038	170	0.091	0.21	0.0067 J	<0.10	43
PC-58	BL01	3/28/2017	N	440-180820-1	Qal	7.8 - 32.8	<0.0050	<0.0050	<0.050	<0.0035	160	0.014 J	0.18	<0.0050	<0.10	48
	BL02	7/13/2017	N	440-188324-3	Qal	7.8 - 32.8	<0.0050	<0.0050	<0.050	<0.0038	170	<0.015	0.18	<0.0050	<0.10	43
	EM04	10/11/2017	N	440-194094-6	Qal	7.8 - 32.8	<0.0050	<0.0050	<0.050	<0.0038	120	<0.015	0.15	<0.0050	<0.10	39
	EM06	11/16/2017	N	440-196786-11	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-9	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-13	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-6	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-10	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-7	Qal	7.8 - 32.8	<0.0050	<0.0050	<0.050	<0.0038	140	<0.015	0.14	<0.0050	<0.10	39
	EM15	10/11/2018	N	440-222092-19	Qal	7.8 - 32.8	<0.0050	<0.0050	<0.050	<0.0038	110	<0.015	0.14	<0.0050	<0.10	35
	EM19	5/22/2019	N	440-242200-7	Qal	7.8 - 32.8	<0.0050	0.026	<0.050	<0.0038	140	<0.015	0.16	0.017	<0.10	42
	EM22	11/7/2019	N	440-254148-1	Qal	7.8 - 32.8	<0.0050	<0.0050	<0.050	<0.0038	110	<0.015	0.14 J+	<0.0050	<0.10	33
	EM26	5/1/2020	N	440-265414-3	Qal	7.8 - 32.8	<0.0050	<0.0050	<0.050	<0.0038	130	<0.015	0.17	<0.0050	<0.10	36
	EM29	10/16/2020	N	440-273433-5	Qal	7.8 - 32.8	<0.0050	0.0068 J	<0.050	<0.0038	71	<0.015	0.16	<0.0050	<0.10	31
	EM33	6/2/2021	N	550-164872-23/24	Qal	7.8 - 32.8	<0.00054	<0.0012	0.025 J	<0.0025	91	<0.0083	0.13	<0.0028	<0.011	31
	EM36	12/3/2021	N	550-175222-11/12	Qal	7.8 - 32.8	<0.00054	<0.0012	0.021 J	<0.0025	96	<0.0083	0.13	<0.0028	<0.011	35
PC-88	EM04	10/11/2017	FD	440-194090-3	Qal	40.0 - 50.0	<0.0050	0.0072 J	<0.050	<0.0038	76	0.62	0.043	0.0085 J	<0.10	21
	EM04	10/11/2017	N	440-194090-2	Qal	40.0 - 50.0	<0.0050	<0.0050	<0.050	<0.0038	75	0.61	0.041	0.0079 J	<0.10	21
	EM06	11/15/2017	FD	440-196690-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196690-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	FD	440-210430-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-8	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-12	Qal	40.0 - 50.0	<0.0050	<0.0050	<0.050	<0.0038	62	0.59	0.024	0.0069 J	<0.10	18
	EM11	7/12/2018	N	440-215717-11	Qal	40.0 - 50.0	<0.0050	<0.0050	<0.050	<0.0038	63	0.58	0.025	0.0077 J	<0.10	18
	EM15	10/11/2018	FD	440-222092-16	Qal	40.0 - 50.0	<0.0050	<0.0050	<0.050	<0.0038	73	0.59	0.035	<0.025	<0.10	19
	EM15	10/11/2018	N	440-222092-15	Qal	40.0 - 50.0	<0.0050	<0.0050	<0.050	<0.0038	71	0.60	0.036	<0.025	<0.10	19
	EM19	5/22/2019	FD	440-242201-3	Qal	40.0 - 50.0	<0.0050	0.021	<0.050	<0.0038	49	0.42	0.029	0.019	<0.10	17
	EM19	5/22/2019	N	440-242201-2	Qal	40.0 - 50.0	<0.0050	0.022	<0.050	<0.0038	52	0.45	0.032	0.021	<0.10	18
	EM22	11/7/2019	FD	440-254148-3	Qal	40.0 - 50.0	<0.0050	<0.0050	<0.050	<0.0038	57	0.46	0.024 J+	0.0071 J	<0.10	15
	EM22	11/7/2019	N	440-254148-2	Qal	40.0 - 50.0	<0.0050	<0.0050	<0.050	0.0056	55	0.44	0.026 J+	0.0081 J	<0.10	15
	EM26	5/1/2020	FD	440-265412-3	Qal	40.0 - 50.0	<0.0050	<0.0050	<0.050	<0.0038	57	0.49	0.028	0.0059 J	<0.10	16

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-88	EM26	5/1/2020	N	440-265412-2	Qal	40.0 - 50.0	<0.0050	<0.0050	<0.050	<0.0038	60	0.50	0.029	0.0068 J	<0.10	16
	EM29	10/15/2020	FD	550-151259-11	Qal	40.0 - 50.0	<0.0050	0.0087 J	<0.050	<0.0038	68	0.53	0.024	0.010	<0.10	15
	EM29	10/15/2020	N	550-151259-10	Qal	40.0 - 50.0	<0.0050	0.0085 J	<0.050	<0.0038	68	0.53	0.024	0.0094 J	<0.10	15
	EM33	6/3/2021	FD	550-164869-27/28	Qal	40.0 - 50.0	0.0049 J	0.0030 J	<0.019	<0.0025	34	0.29	0.011	0.014	0.047 J	11
	EM33	6/3/2021	N	550-164869-25/26	Qal	40.0 - 50.0	0.0053	0.0033 J	<0.019	<0.0025	34	0.29	0.011	0.014	0.042 J	11
	EM36	12/2/2021	FD	550-175153-7/8	Qal	40.0 - 50.0	0.0048 J	0.0030 J	<0.019	<0.0025	42	0.32	0.011	0.012	0.054 J	12
	EM36	12/2/2021	N	550-175153-5/6	Qal	40.0 - 50.0	0.0052 J+	0.0031 J	<0.019	<0.0025	41	0.32	0.011	0.012	0.049 J	12
PC-91	BL01	3/29/2017	N	440-180937-1	Qal	11.5 - 21.5	0.0063 J	0.0080 J	<0.050	<0.0035	86	0.040	0.090	0.015	<0.10	25
	BL02	7/12/2017	FD	440-188244-4	Qal	11.5 - 21.5	0.0062 J	<0.0050	<0.050	<0.0038	84	0.047	0.085	0.015	<0.10	25
	BL02	7/12/2017	N	440-188247-5	Qal	11.5 - 21.5	0.0063 J	<0.0050	<0.050	<0.0038	84	0.047	0.089	0.019	<0.10	26
	EM04	10/12/2017	N	440-194204-3	Qal	11.5 - 21.5	0.0060 J	<0.0050	<0.050	<0.0038	73	0.045	0.087	0.016	<0.10	25
	EM06	11/16/2017	N	440-196786-8	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-9	Qal	11.5 - 21.5	0.0050 J	0.0071 J	<0.050	<0.0038	79	0.041	0.092	0.028	<0.10	27
	EM08	2/20/2018	N	440-203841-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-6	Qal	11.5 - 21.5	<0.0050	<0.0050	<0.050	<0.0038	95	0.54	0.053	0.025	<0.10	28
	EM15	10/10/2018	N	440-221975-16	Qal	11.5 - 21.5	<0.025	<0.025	<0.25	<0.019	120	0.51	0.066 J	<0.025	<0.50	30
	EM19	5/21/2019	N	440-242084-9	Qal	11.5 - 21.5	<0.0050	0.025	<0.050	<0.0038	110	1.3	0.082	0.035	<0.10	29
	EM22	11/6/2019	N	440-254027-3	Qal	11.5 - 21.5	<0.0050	<0.0050	<0.050	<0.0038	110	1.1	0.11	0.017	<0.10	32
	EM26	4/30/2020	N	440-265382-2	Qal	11.5 - 21.5	0.0051 J	<0.0050	<0.050	<0.0038	80	1.1	0.085	0.015	<0.10	24
	EM29	10/14/2020	N	440-273303-11	Qal	11.5 - 21.5	<0.0050	<0.0050	1.7	<0.0038	92	2.8	0.074	0.014	<0.10	25
	EM33	6/2/2021	N	550-164872-17/18	Qal	11.5 - 21.5	<0.00054	<0.0012	5.1	<0.0025	110	3.5	<0.00052	0.014	0.11 J	24
	EM36	11/30/2021	N	550-174968-1/2	Qal	11.5 - 21.5	<0.00054	<0.0012	3.9	<0.0025	82	2.6	<0.00052	0.027	0.60	20
PC-92	BL01	3/29/2017	N	440-180937-2	Qal	26.5 - 36.5	<0.0050	<0.0050	0.053 J	<0.0035	110	0.82	0.049	0.0096 J	<0.10	31
	BL02	7/12/2017	N	440-188247-6	Qal	26.5 - 36.5	<0.0050	<0.0050	<0.050	<0.0038	87	0.53	0.046	0.010	<0.10	23
	EM04	10/12/2017	FD	440-194204-5	Qal	26.5 - 36.5	<0.0050	<0.0050	<0.050	<0.0038	92	0.54	0.037	0.014	<0.10	26
	EM04	10/12/2017	N	440-194204-4	Qal	26.5 - 36.5	<0.0050	0.0055 J	<0.050	<0.0038	89	0.52	0.036	0.015	<0.10	25
	EM06	11/16/2017	FD	440-196786-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-9	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	FD	440-198571-8	Qal	26.5 - 36.5	<0.0050	0.0078 J	<0.050	<0.0038	98	1.1	0.038	0.033	<0.10	26
	EM07	12/14/2017	N	440-198571-7	Qal	26.5 - 36.5	<0.0050	0.0085 J	<0.050	<0.0038	100	1.2	0.041	0.036	<0.10	28
	EM08	2/20/2018	FD	440-203841-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	FD	440-207137-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-5	Qal	26.5 - 36.5	<0.0050	<0.0050	<0.050	<0.0038	96	0.80	0.058	0.015	<0.10	26
	EM15	10/11/2018	N	440-222092-17	Qal	26.5 - 36.5	<0.0050	<0.0050	<0.050	<0.0038	96	0.52	0.052	<0.025	<0.10	27
	EM19	5/21/2019	N	440-242084-10	Qal	26.5 - 36.5	<0.0050	0.022	<0.050	<0.0038	60	0.68	0.042	0.028	<0.10	18
	EM22	11/6/2019	N	440-254027-2	Qal	26.5 - 36.5	<0.0050	<0.0050	<0.050	<0.0038	100	0.72	0.050 J+	0.014	<0.10	24
	EM26	4/30/2020	N	440-265382-1	Qal	26.5 - 36.5	<0.0050	<0.0050	<0.050	<0.0038	76	0.062	0.043	0.012	<0.10	21
	EM29	10/14/2020	N	440-273303-10	Qal	26.5 - 36.5	<0.0050	<0.0050	<0.050	<0.0038	91	0.66	0.056	0.010	<0.10	26
	EM33	6/2/2021	N	550-164872-19/20	Qal	26.5 - 36.5	0.0014 J	<0.0012	0.042 J	<0.0025	110	0.69	0.043	0.013	<0.011	26
	EM36	11/30/2021	N	550-174968-3/4	Qal	26.5 - 36.5	0.0022 J	<0.0012	0.23 J	<0.0025	130	1.3	0.038	0.017	<0.011	27
PC-94	BL01	3/28/2017	N	440-180820-2	Qal	9.5 - 19.5	<0.0050	<0.0050	<0.050	<0.0035	180	<0.010	0.16	<0.0050	<0.10	60

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-94	BL02	7/13/2017	N	440-188325-1	Qal	9.5 - 19.5	<0.0050	<0.0050	0.37	<0.0038	190	<0.015	0.16	<0.0050	<0.10	62
	EM04	10/11/2017	N	440-194090-6	Qal	9.5 - 19.5	0.018	<0.0050	0.55	<0.0038	190	3.0	0.83	0.0097 J	<0.10	61
	EM06	11/16/2017	N	440-196786-17	Qal	9.5 - 19.5	0.012	0.0052 J	0.085 J	<0.0038	160	2.8	0.57	0.025	0.13 J	58
	EM07	12/12/2017	N	440-198371-14	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-12	Qal	9.5 - 19.5	0.0073 J	<0.0050	<0.050	<0.0038	170	2.6	0.37	0.026	<0.10	57
	EM09	3/27/2018	N	440-207268-8	Qal	9.5 - 19.5	0.0097 J	0.0065 J	4.0	<0.0038	150	3.0	0.27	0.0085 J	0.21	52
	EM10	5/1/2018	N	440-210284-14	Qal	9.5 - 19.5	0.0066 J	<0.0050	<0.050	<0.0038	160	2.2	0.26	0.0076 J	<0.10	57
	EM11	7/10/2018	N	440-215437-1	Qal	9.5 - 19.5	0.013	<0.0050	<0.050	<0.0038	160	5.2	0.19	0.0087 J	<0.10	53
	EM13	8/15/2018	N	440-218208-2	Qal	9.5 - 19.5	0.010	<0.0050	0.33	<0.0038	160	4.4	0.20	0.010	<0.10	55
	EM14	9/11/2018	N	440-219886-9	Qal	9.5 - 19.5	0.0082 J	<0.0050	<0.050	<0.0038	160	3.6	0.19	0.0086 J	<0.10	53
	EM15	10/11/2018	N	440-222092-18	Qal	9.5 - 19.5	0.013	<0.0050	<0.050	<0.0038	160	4.7	0.21	<0.025	<0.10	57
	EM19	5/22/2019	N	440-242201-4	Qal	9.5 - 19.5	0.0067 J	0.033	0.079 J	<0.0038	140	3.5	0.18	0.028	<0.10	52
	EM22	11/6/2019	N	440-254027-1	Qal	9.5 - 19.5	0.0068 J	<0.0050	<0.050	<0.0038	120	2.7	0.20	<0.0050	<0.10	46
	EM26	4/28/2020	N	440-265289-2	Qal	9.5 - 19.5	0.0076 J	<0.0050	<0.050	<0.0038	150	3.2	0.15	<0.0050	<0.10	57
	EM29	10/15/2020	N	550-151259-7	Qal	9.5 - 19.5	0.0057 J	0.0073 J	<0.050	<0.0038	120	2.5	0.14	0.0094 J	<0.10	43
	EM33	6/2/2021	N	550-164872-21/22	Qal	9.5 - 19.5	0.0040 J	<0.0012	0.031 J	<0.0025	140	2.7	0.12	0.0061	<0.011	51
	EM36	11/30/2021	N	550-174968-5/6	Qal	9.5 - 19.5	0.0052	<0.0012	0.15 J	<0.0025	180	3.2	0.11	0.016	<0.011	55
PC-97	BL02	7/13/2017	N	440-188325-8	Qal	23.0 - 33.0	0.0062 J	0.0053 J	0.058 J	<0.0038	72	0.98	0.023	0.021	<0.10	24
	EM04	10/11/2017	FD	440-194242-6	Qal	23.0 - 33.0	0.0054 J	<0.0050	<0.050	<0.0038	98	1.3	0.024	0.017	<0.10	26
	EM04	10/11/2017	N	440-194242-5	Qal	23.0 - 33.0	<0.0050	<0.0050	<0.050	<0.0038	89	1.1	0.022	0.014	<0.10	23
	EM06	11/16/2017	N	440-196786-13	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-12	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-11	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-3	Qal	23.0 - 33.0	0.0060 J	<0.0050	<0.050	<0.0038	70	0.86	0.025	0.020	<0.10	20
	EM15	10/11/2018	N	440-222092-13	Qal	23.0 - 33.0	0.0065 J	<0.0050	<0.050	<0.0038	71	0.86	0.025	0.019	<0.10	21
	EM19	5/22/2019	N	440-242201-1	Qal	23.0 - 33.0	<0.0050	0.028	<0.050	<0.0038	77	1.0	0.022	0.031	<0.10	22
	EM22	11/6/2019	N	440-254027-7	Qal	23.0 - 33.0	0.0060 J	<0.0050	<0.050	<0.0038	71	0.91	0.025 J+	0.015	<0.10	19
	EM26	4/30/2020	N	440-265383-7	Qal	23.0 - 33.0	0.0065 J	<0.0050	<0.050	<0.0038	55	0.70	0.023	0.017	<0.10	18
	EM29	10/15/2020	N	550-151259-9	Qal	23.0 - 33.0	0.0052 J	0.0080 J	<0.050	<0.0038	61	0.82	0.020	0.016	<0.10	17
SWFTS-IW01A	BL02	7/11/2017	N	440-188133-3	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW01B	BL02	7/11/2017	N	440-188133-13	Qal	26.9 - 36.7	--	--	--	--	--	--	--	--	--	--
SWFTS-IW02A	BL02	7/11/2017	N	440-188133-14	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW02B	BL02	7/11/2017	N	440-188133-2	Qal	26.3 - 36.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW03	BL02	7/11/2017	FD	440-188133-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW04	BL02	7/11/2017	FD	440-188133-12	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-11	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW05	BL02	7/11/2017	N	440-188133-16	Qal	14.6 - 34.4	--	--	--	--	--	--	--	--	--	--
SWFTS-IW06A	BL02	7/11/2017	N	440-188133-10	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW06B	BL02	7/11/2017	N	440-188133-6	Qal	28.8 - 33.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW07	BL02	7/11/2017	N	440-188133-7	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW08	BL02	7/12/2017	N	440-188247-7	Qal	17.5 - 37.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW09	BL02	7/12/2017	FD	440-188244-3	Qal	26.6 - 46.4	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-IW09	BL02	7/12/2017	N	440-188247-8	Qal	26.6 - 46.4	--	--	--	--	--	--	--	--	--	--
SWFTS-IW10	BL02	7/12/2017	N	440-188247-9	Qal	26.8 - 46.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW11	BL02	7/12/2017	N	440-188247-3	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW12	BL02	7/12/2017	N	440-188247-4	Qal	14.3 - 39.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13A	BL02	7/11/2017	N	440-188133-1	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13B	BL02	7/11/2017	N	440-188133-15	Qal	27.8 - 37.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW14	BL02	7/12/2017	N	440-188247-1	Qal	16.2 - 36.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW15	BL02	7/12/2017	N	440-188247-2	Qal	16.4 - 36.2	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16A	BL02	7/11/2017	N	440-188133-9	Qal	17.3 - 27.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16B	BL02	7/11/2017	N	440-188133-8	Qal	26.5 - 36.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW17	BL02	7/13/2017	N	440-188325-6	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW18	BL02	7/13/2017	N	440-188325-4	Qal	18.1 - 38.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW19	BL02	7/13/2017	N	440-188325-5	Qal	24.3 - 44.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW20	BL02	7/12/2017	N	440-188247-10	Qal	30.8 - 50.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW01	BL01	3/29/2017	N	440-180937-6	Qal	24.2 - 38.9	<0.0050	<0.0050	<0.050	<0.0035	190	<0.010	0.16	<0.0050	<0.10	57
	EM04	10/10/2017	N	440-194094-2	Qal	24.2 - 38.9	0.0090 J	0.0052 J	<0.050	<0.0038	170	3.7	0.44	0.011	<0.10	54
	EM06	11/15/2017	N	440-196665-4	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-12	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-2	Qal	24.2 - 38.9	<0.0050	<0.0050	0.055 J	<0.0038	150	4.6	0.41	0.0096 J	<0.10	51
	EM14	9/10/2018	N	440-219797-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-12	Qal	24.2 - 38.9	<0.025	<0.025	<0.25	<0.019	160	4.0	0.18	<0.025	<0.50	52
	EM19	5/21/2019	N	440-242084-14	Qal	24.2 - 38.9	<0.0050	0.026	<0.050	<0.0038	120	5.5	0.15	0.026	<0.10	46
	EM22	11/5/2019	N	440-253918-3	Qal	24.2 - 38.9	<0.0050	<0.0050	<0.050	<0.0038	110	4.3	0.20	0.0065 J	<0.10	43
	EM26	4/28/2020	N	440-265289-5	Qal	24.2 - 38.9	<0.0050	<0.0050	<0.050	<0.0038	140	5.3	0.12	<0.0050	<0.10	52
	EM29	10/13/2020	N	440-273236-11	Qal	24.2 - 38.9	<0.0050	<0.0050	<0.050	<0.0038	130	4.5	0.12	<0.0050	<0.10	50
	EM33	6/4/2021	N	550-164930-17/18	Qal	24.2 - 38.9	0.0018 J	<0.0012	<0.019	<0.0025	140	3.6	0.091	0.0084	<0.011	48
	EM36	11/30/2021	N	550-174968-19/20	Qal	24.2 - 38.9	0.0016 J	<0.0012	0.022 J	<0.0025	170	2.8	0.068	0.0075	<0.011	53
SWFTS-MW02	BL01	3/29/2017	N	440-180937-7	Qal	18.4 - 33.1	<0.0050	0.0061 J	<0.050	<0.0035	240	1.7	0.17	<0.0050	<0.10	48
	EM04	10/12/2017	N	440-194204-6	Qal	18.4 - 33.1	<0.0050	<0.0050	<0.050	<0.0038	220	1.6	0.16	0.0073 J	<0.10	46
	EM06	11/14/2017	N	440-196558-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-13	Qal	18.4 - 33.1	<0.0050	<0.0050	<0.050	<0.0038	170	1.6	0.17	0.0099 J	<0.10	40
	EM14	9/10/2018	N	440-219797-2	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-15	Qal	18.4 - 33.1	<0.025	<0.025	0.42 J	<0.019	190	1.9	0.21	<0.025	<0.50	38
	EM19	5/21/2019	N	440-242084-8	Qal	18.4 - 33.1	<0.0050	0.037	<0.050	<0.0038	170	2.2	0.21	0.035	<0.10	40
	EM22	11/7/2019	N	440-254148-7	Qal	18.4 - 33.1	0.0055 J	<0.0050	0.080 J	<0.0038	140	2.5	0.14 J+	0.0096 J	<0.10	37
	EM26	4/30/2020	N	440-265382-3	Qal	18.4 - 33.1	<0.0050	<0.0050	<0.050	<0.0038	140	1.9	0.17	0.0060 J	<0.10	39
	EM29	10/15/2020	N	550-151259-8	Qal	18.4 - 33.1	<0.0050	0.0076 J	<0.050	<0.0038	130	2.1	0.13	0.0093 J	<0.10	32
	EM33	6/3/2021	N	550-164869-21/22	Qal	18.4 - 33.1	0.0020 J	<0.0012	0.034 J	<0.0025	150	2.2	0.11	0.010	<0.011	37
	EM36	11/30/2021	N	550-174968-7/8	Qal	18.4 - 33.1	0.0025 J	<0.0012	0.098 J	<0.0025	140	2.2	0.10	0.0065	<0.011	36

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW03	BL01	3/30/2017	FD	440-181045-6	Qal	27.2 - 42.1	<0.0050	<0.0050	0.32 J	<0.0035	210	<0.010	0.27	<0.0050	<0.10	63
	BL01	3/30/2017	N	440-181045-5	Qal	27.2 - 42.1	<0.0050	<0.0050	<0.050 UJ	<0.0035	210	<0.010	0.29	<0.0050	<0.10	63
	EM04	10/12/2017	N	440-194204-8	Qal	27.2 - 42.1	<0.0050	<0.0050	<0.050	<0.0038	230	6.6	0.51	0.15	<0.10	69
	EM06	11/16/2017	N	440-196786-16	Qal	27.2 - 42.1	<0.0050	<0.0050	<0.050	<0.0038	200	3.8	0.33	0.095	<0.10	62
	EM07	12/12/2017	N	440-198371-13	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-5	Qal	27.2 - 42.1	<0.0050	0.0051 J	0.34 J+	<0.0038	200	2.7	0.28	0.066	<0.10	64
	EM09	3/27/2018	N	440-207268-15	Qal	27.2 - 42.1	<0.0050	<0.0050	0.058 J	<0.0038	170	2.3	0.28	0.031	<0.10	57
	EM10	5/2/2018	N	440-210430-6	Qal	27.2 - 42.1	<0.0050	<0.0050	<0.50	<0.0038	220	2.6	0.30	0.036	<0.10	72
	EM11	7/10/2018	N	440-215437-5	Qal	27.2 - 42.1	<0.0050	<0.0050	<0.050	<0.0038	180	2.6	0.26	0.036	<0.10	60
	EM13	8/15/2018	N	440-218208-4	Qal	27.2 - 42.1	<0.0050	<0.0050	0.17	<0.0038	190	2.5	0.27	0.035	<0.10	60
	EM14	9/11/2018	N	440-219886-11	Qal	27.2 - 42.1	<0.0050	<0.0050	<0.050	<0.0038	200	2.5	0.27	0.033	<0.10	60
	EM15	10/9/2018	N	440-221855-13	Qal	27.2 - 42.1	<0.025	<0.025	0.36 J	<0.019	220	2.8	0.29	0.037 J	<0.50	62
	EM19	5/21/2019	N	440-242084-12	Qal	27.2 - 42.1	<0.0050	0.043	0.054 J	<0.0038	220	2.6	0.34	0.056	<0.10	60
	EM22	11/4/2019	N	440-253773-2	Qal	27.2 - 42.1	<0.0050	<0.0050	0.061 J	<0.0038	180	2.1	0.29	0.018	<0.10	54
	EM26	4/28/2020	N	440-265289-1	Qal	27.2 - 42.1	<0.0050	<0.0050	<0.050	<0.0038	160	1.9	0.23	0.014	<0.10	56
	EM29	10/13/2020	N	440-273236-10	Qal	27.2 - 42.1	<0.0050	<0.0050	<0.050	<0.0038	190	2.0	0.27	0.011	<0.10	59
	EM33	6/3/2021	N	550-164869-15/16	Qal	27.2 - 42.1	<0.00054	0.0012 J	0.041 J	<0.0025	210	1.9	0.23	0.013	<0.011	59
	EM36	12/1/2021	N	550-175045-1/2	Qal	27.2 - 42.1	<0.00054	<0.0012	0.071 J	<0.0025	210	1.8	0.21	0.0099	<0.011	60
SWFTS-MW04	BL01	3/31/2017	N	440-181122-1	Qal	25.8 - 40.4	<0.0050	<0.0050	<0.050	<0.0035	110	1.2	0.056	0.012	<0.10	29
	EM04	10/11/2017	N	440-194242-7	Qal	25.8 - 40.4	<0.0050	0.0050 J	<0.050	<0.0038	54	0.63	0.035	0.015	<0.10	19
	EM06	11/15/2017	N	440-196659-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-12	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-4	Qal	25.8 - 40.4	<0.0050	<0.0050	0.17	<0.0038	65	0.77	0.051	0.017	<0.10	20
	EM15	10/11/2018	N	440-222092-9	Qal	25.8 - 40.4	<0.0050	<0.0050	<0.050	<0.0038	61	0.72	0.052	<0.025	<0.10	21
	EM19	5/21/2019	N	440-242084-11	Qal	25.8 - 40.4	<0.0050	0.023	<0.050	<0.0038	56	0.70	0.045	0.030	<0.10	18
	EM22	11/7/2019	N	440-254150-6	Qal	25.8 - 40.4	<0.0050	<0.0050	<0.050	<0.0038	59	0.71	0.042	0.014	<0.10	18
	EM26	5/1/2020	N	440-265412-1	Qal	25.8 - 40.4	<0.0050	<0.0050	<0.050	<0.0038	94	1.2	0.070	0.012	<0.10	24
	EM29	10/14/2020	N	440-273303-12	Qal	25.8 - 40.4	<0.0050	<0.0050	<0.050	<0.0038	67	0.83	0.048	0.014	<0.10	20
	EM33	6/3/2021	N	550-164869-23/24	Qal	25.8 - 40.4	0.0025 J	0.0024 J	<0.019	<0.0025	70	0.84	0.036	0.018	<0.011	19
	EM36	12/2/2021	N	550-175153-3/4	Qal	25.8 - 40.4	0.0028 J	0.0021 J	0.044 J	<0.0025	78	0.93	0.039	0.017	<0.011	21
SWFTS-MW05A	BL01	3/30/2017	N	440-181045-7	Qal	19.3 - 29.3	<0.025	<0.025	0.28 J	<0.018	290	0.13	0.38	<0.025	<0.50	87
	EM04	10/10/2017	N	440-193989-2	Qal	19.3 - 29.3	<0.0050	<0.0050	<0.050	<0.0038	210	<0.015	0.37	<0.0050	<0.10	80
	EM06	11/14/2017	N	440-196558-1	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-3	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-5	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-8	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-14	Qal	19.3 - 29.3	<0.0050	<0.0050	<0.050	<0.0038	190	<0.015	0.36	<0.0050	<0.10	75
	EM15	10/10/2018	N	440-221975-14	Qal	19.3 - 29.3	<0.025	<0.025	<0.25	<0.019	230	<0.075	0.38	<0.025	<0.50	76
	EM19	5/21/2019	N	440-242084-17	Qal	19.3 - 29.3	<0.0050	0.054	<0.050	<0.0038	210	<0.015	0.31	0.042	<0.10	73
	EM22	11/5/2019	N	440-253918-1	Qal	19.3 - 29.3	<0.0050	<0.0050	<0.050	<0.0038	210	<0.015	0.25	<0.0050	<0.10	66
	EM26	4/29/2020	N	440-265346-2	Qal	19.3 - 29.3	<0.0050	<0.0050	<0.050	<0.0038	210	<0.015	0.26	<0.0050	<0.10	76
	EM29	10/14/2020	N	440-273303-9	Qal	19.3 - 29.3	<0.0050	0.0061 J	<0.050	<0.0038	240	<0.015	0.36	<0.0050	<0.10	83

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW05A	EM33	6/3/2021	N	550-164869-17/18	Qal	19.3 - 29.3	<0.00054	0.0026 J	0.064 J	<0.0025 UJ	240	0.011 J	0.31	<0.0028	<0.011	71 J+
	EM36	11/29/2021	N	550-174897-3/4	Qal	19.3 - 29.3	<0.00054	0.0015 J	0.083 J	<0.0025	260	0.016 J	0.30	<0.0028	<0.011	78 J+
SWFTS-MW05B	BL01	3/30/2017	N	440-181045-8	Qal	32.3 - 42.0	<0.0050	<0.0050	0.16	<0.0035	220	<0.010	0.30	<0.0050	<0.10	78
	EM04	10/10/2017	N	440-193989-1	Qal	32.3 - 42.0	<0.0050	<0.0050	0.68	<0.0038	210	11	0.10	0.044	<0.10	70
	EM06	11/14/2017	N	440-196558-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-4	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-6	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215585-10	Qal	32.3 - 42.0	<0.0050	<0.0050	2.6	<0.0038	200	2.1	0.22	0.0050 J	<0.10	64
	EM15	10/9/2018	N	440-221855-14	Qal	32.3 - 42.0	<0.025	<0.025	<0.25	<0.019	210	2.4	0.27	<0.025	<0.50	64
	EM19	5/21/2019	N	440-242084-18	Qal	32.3 - 42.0	<0.0050	0.038	<0.050	<0.0038	190	2.1	0.27	0.048	<0.10	63
	EM22	11/5/2019	N	440-253918-2	Qal	32.3 - 42.0	<0.0050	<0.0050	<0.050	<0.0038	200	1.9	0.20	0.015	<0.10	60
	EM26	4/29/2020	N	440-265346-1	Qal	32.3 - 42.0	<0.0050	<0.0050	<0.050	<0.0038	210	2.0	0.25	0.011	<0.10	68
	EM29	10/14/2020	N	440-273303-8	Qal	32.3 - 42.0	<0.0050	<0.0050	0.050 J	<0.0038	190	2.1	0.21	0.036	<0.10	62
	EM33	6/3/2021	N	550-164869-19/20	Qal	32.3 - 42.0	<0.00054	<0.0012	1.1	<0.0025	220	2.3	0.11	0.0044 J	<0.011	65
	EM36	11/30/2021	N	550-174968-15/16	Qal	32.3 - 42.0	<0.00054	<0.0012	0.038 J	<0.0025	230	1.6	0.14	0.0087	<0.011	66
SWFTS-MW06A	BL01	3/30/2017	N	440-181045-1	Qal	11.8 - 21.4	0.0050 J	<0.0050	<0.050	<0.0035	58	0.62	0.026	0.014	<0.10	21
	EM04	10/11/2017	N	440-194090-4	Qal	11.8 - 21.4	<0.0050	<0.0050	<0.050	<0.0038	90	1.0	0.025	0.015	<0.10	24
	EM06	11/16/2017	N	440-196786-19	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-3	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210284-10	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-9	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	FD	440-215585-3	Qal	11.8 - 21.4	0.0051 J	<0.0050	<0.050	<0.0038	65	0.76	0.025	0.020	<0.10	20
	EM11	7/11/2018	N	440-215585-2	Qal	11.8 - 21.4	<0.0050	<0.0050	<0.050	<0.0038	60	0.68	0.021	0.018	<0.10	18
	EM15	10/10/2018	FD	440-221975-10	Qal	11.8 - 21.4	<0.0050	<0.0050	0.051 J	<0.0038	66	0.79	0.018 J	0.016	<0.10	19 J+
	EM15	10/10/2018	N	440-221975-8	Qal	11.8 - 21.4	<0.0050	<0.0050	<0.050	<0.0038	73	0.86	0.023	0.019	<0.10	21 J+
	EM19	5/20/2019	FD	440-242015-2	Qal	11.8 - 21.4	0.0055 J	<0.0050	<0.050	<0.0038	73	0.79	0.021	0.016	<0.10	19
	EM19	5/20/2019	N	440-242015-1	Qal	11.8 - 21.4	0.0052 J	<0.0050	<0.050	<0.0038	67	0.76	0.019 J	0.015	<0.10	19
	EM22	11/6/2019	FD	440-254027-5	Qal	11.8 - 21.4	0.0054 J	<0.0050	0.10	<0.0038	86	0.97	0.027 J+	0.014	<0.10	22
	EM22	11/6/2019	N	440-254027-4	Qal	11.8 - 21.4	0.0050 J	<0.0050	0.083 J	<0.0038	83	0.94	0.026 J+	0.014	<0.10	21
	EM26	4/29/2020	FD	440-265346-6	Qal	11.8 - 21.4	<0.0050	<0.0050	<0.050	<0.0038	53	0.57	0.023	0.014	<0.10	17
	EM26	4/29/2020	N	440-265346-5	Qal	11.8 - 21.4	0.0055 J	<0.0050	<0.050	<0.0038	54	0.60	0.025	0.015	<0.10	18
	EM29	10/13/2020	FD	440-273236-8	Qal	11.8 - 21.4	<0.0050	<0.0050	<0.050	<0.0038	70	0.87	0.023	0.014	<0.10	21
	EM29	10/13/2020	N	440-273236-7	Qal	11.8 - 21.4	<0.0050	<0.0050	<0.050	<0.0038	70	0.85	0.024	0.015	<0.10	21
	EM33	6/4/2021	FD	550-164930-21/22	Qal	11.8 - 21.4	0.0038 J	0.0017 J	<0.019	<0.0025	79	0.85	0.014	0.020	<0.011	20
	EM33	6/4/2021	N	550-164930-19/20	Qal	11.8 - 21.4	0.0037 J	0.0015 J	<0.019	<0.0025	78	0.85	0.014	0.019	<0.011	20
	EM36	12/1/2021	FD	550-175045-10/9	Qal	11.8 - 21.4	0.0035 J	0.0023 J	0.030 J	<0.0025	63	0.69	0.013	0.018	<0.011	18
	EM36	12/1/2021	N	550-175045-7/8	Qal	11.8 - 21.4	0.0040 J	0.0021 J	0.029 J	<0.0025	64	0.69	0.013	0.017	<0.011	18
SWFTS-MW06B	BL01	3/30/2017	N	440-181045-2	Qal	25.9 - 35.5	0.0061 J	<0.0050	0.090 J	<0.0035	65	0.78	0.029	0.015	<0.10	17
	EM04	10/11/2017	N	440-194090-5	Qal	25.9 - 35.5	0.0056 J	<0.0050	<0.050	<0.0038	75	0.97	0.027	0.017	<0.10	20
	EM06	11/16/2017	N	440-196786-20	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW06B	EM09	3/28/2018	N	440-207497-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-8	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-4	Qal	25.9 - 35.5	0.0057 J	<0.0050	<0.050	<0.0038	61	0.80	0.026	0.019	<0.10	18
	EM15	10/10/2018	N	440-221975-9	Qal	25.9 - 35.5	0.0063 J	<0.0050	<0.050	<0.0038	69	0.86	0.026	0.021	<0.10	20
	EM19	5/21/2019	N	440-242084-5	Qal	25.9 - 35.5	<0.0050	0.025	<0.050	<0.0038	67	0.88	0.028	0.031	<0.10	19
	EM22	11/6/2019	N	440-254027-6	Qal	25.9 - 35.5	0.0056 J	<0.0050	0.080 J	<0.0038	84	1.1	0.026 J+	0.014	<0.10	20
	EM26	4/29/2020	N	440-265346-4	Qal	25.9 - 35.5	0.0064 J	<0.0050	<0.050	<0.0038	56	0.74	0.027	0.016	<0.10	18
	EM29	10/13/2020	N	440-273236-6	Qal	25.9 - 35.5	<0.0050	<0.0050	<0.050	<0.0038	65	0.88	0.025	0.016	<0.10	19
	EM33	6/4/2021	N	550-164930-23/24	Qal	25.9 - 35.5	0.0041 J	0.0015 J	<0.019	<0.0025	72	0.93	0.015	0.020	<0.011	19
	EM36	12/1/2021	N	550-175045-11/12	Qal	25.9 - 35.5	0.0042 J	0.0026 J	0.023 J	<0.0025	63	0.78	0.014	0.018	<0.011	18
SWFTS-MW07A	BL01	3/30/2017	N	440-181045-3	Qal	15.0 - 29.5	<0.0050	<0.0050	<0.050	<0.0035	180	1.1	0.12	<0.0050	<0.10	42
	EM04	10/11/2017	N	440-194242-3	Qal	15.0 - 29.5	<0.0050	<0.0050	<0.050	<0.0038	180	1.1	0.11	<0.0050	<0.10	43
	EM06	11/15/2017	N	440-196659-7	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-2	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-7	Qal	15.0 - 29.5	<0.0050	<0.0050	<0.050	<0.0038	140	0.81	0.11	<0.0050	<0.10	39
	EM15	10/10/2018	N	440-221975-11	Qal	15.0 - 29.5	<0.025	<0.025	<0.25	<0.019	130	0.80	0.11	<0.025	<0.50	34
	EM19	5/22/2019	N	440-242200-5	Qal	15.0 - 29.5	<0.0050	0.028	<0.050	<0.0038	85	0.63	0.085	0.020	<0.10	34
	EM22	11/7/2019	N	440-254148-4	Qal	15.0 - 29.5	<0.0050	<0.0050	<0.050	<0.0038	94	0.55	0.11 J+	<0.0050	<0.10	29
	EM26	4/30/2020	N	440-265382-5	Qal	15.0 - 29.5	<0.0050	0.0064 J	0.061 J	<0.0038	120	0.63	0.093	<0.0050	<0.10	34
	EM29	10/16/2020	N	440-273433-1	Qal	15.0 - 29.5	<0.0050	0.0072 J	<0.050	<0.0038	110	0.68	0.084	<0.0050	<0.10	33
	EM33	6/4/2021	N	550-164930-25/26	Qal	15.0 - 29.5	<0.00054	<0.0012	<0.019	<0.0025	110	0.58	0.071	0.0040 J	<0.011	32
	EM36	12/3/2021	N	550-175222-3/4	Qal	15.0 - 29.5	<0.00054	<0.0012	0.036 J	<0.0025	130	0.73	0.051	<0.0028	<0.011	34
SWFTS-MW07B	BL01	3/30/2017	N	440-181045-4	Qal	33.8 - 38.3	<0.0050	<0.0050	<0.050	<0.0035	160	1.1	0.12	<0.0050	<0.10	45
	EM04	10/11/2017	N	440-194242-4	Qal	33.8 - 38.3	<0.0050	<0.0050	<0.050	<0.0038	120	0.94	0.098	<0.0050	<0.10	39
	EM06	11/15/2017	N	440-196659-8	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-2	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-10	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-1	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-8	Qal	33.8 - 38.3	<0.0050	<0.0050	0.053 J	<0.0038	100	0.75	0.075	0.0059 J	<0.10	36
	EM15	10/10/2018	N	440-221975-12	Qal	33.8 - 38.3	<0.025	<0.025	<0.25	<0.019	95	0.66	0.091 J	<0.025	<0.50	31
	EM19	5/22/2019	N	440-242200-6	Qal	33.8 - 38.3	<0.0050	0.029	<0.050	<0.0038	100	0.57	0.11	0.020	<0.10	35
	EM22	11/7/2019	N	440-254148-5	Qal	33.8 - 38.3	<0.0050	<0.0050	<0.050	<0.0038	71	0.51	0.081 J+	0.0050 J	<0.10	27
	EM26	4/30/2020	N	440-265382-4	Qal	33.8 - 38.3	<0.0050	<0.0050	<0.050	<0.0038	120	0.87	0.060	<0.0050	<0.10	35
	EM29	10/16/2020	N	440-273433-2	Qal	33.8 - 38.3	<0.0050	0.0060 J	<0.050	<0.0038	84	0.60	0.075	<0.0050	<0.10	30
	EM33	6/4/2021	N	550-164930-27/28	Qal	33.8 - 38.3	<0.00054	<0.0012	0.021 J	<0.0025	120	0.86	0.050	0.0042 J	<0.011	33
	EM36	12/3/2021	N	550-175222-5/6	Qal	33.8 - 38.3	<0.00054	0.0016 J	0.042 J	<0.0025	180	1.2	0.019	0.0056	<0.011	39
SWFTS-MW08A	BL01	3/30/2017	N	440-181045-9	Qal	20.2 - 34.8	<0.0050	<0.0050	<0.050	<0.0035	170	<0.010	0.15	<0.0050	<0.10	83
	EM04	10/10/2017	N	440-194094-4	Qal	20.2 - 34.8	<0.0050	0.0051 J	<0.050	<0.0038	140	<0.015	0.14	<0.0050	<0.10	74
	EM06	11/15/2017	N	440-196659-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-8	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--

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Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW08A	EM10	5/3/2018	N	440-210534-5	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-14	Qal	20.2 - 34.8	<0.0050	<0.0050	<0.050	<0.0038	130	<0.015	0.14	<0.0050	<0.10	67
	EM15	10/10/2018	N	440-221975-13	Qal	20.2 - 34.8	<0.025	<0.025	<0.25	<0.019	130	<0.075	0.16	<0.025	<0.50	61
	EM19	5/22/2019	N	440-242198-4	Qal	20.2 - 34.8	<0.0050	0.031	<0.050	<0.0038	110	<0.015	0.14	0.021	<0.10	59
	EM22	11/7/2019	N	440-254148-6	Qal	20.2 - 34.8	<0.0050	<0.0050	<0.050	<0.0038	110	<0.015	0.13 J+	<0.0050	<0.10	52
	EM26	4/29/2020	N	440-265346-3	Qal	20.2 - 34.8	<0.0050	<0.0050	<0.050	<0.0038	140	<0.015	0.11	<0.0050	<0.10	65
	EM29	10/16/2020	N	440-273433-4	Qal	20.2 - 34.8	<0.0050	0.0059 J	<0.050	<0.0038	110	<0.015	0.12	<0.0050	<0.10	57
	EM33	6/4/2021	N	550-164930-29/30	Qal	20.2 - 34.8	<0.00054	<0.0012	0.021 J	<0.0025	160	<0.0083	0.090	<0.0028	<0.011	64
	EM36	12/2/2021	N	550-175153-23/24	Qal	20.2 - 34.8	<0.00054	<0.0012	0.029 J	<0.0025	200	<0.0083	0.071	<0.0028	<0.011	69
SWFTS-MW08C	BL01	3/28/2017	N	440-180820-3	UMCf	49.9 - 69.5	<0.0050	0.0068 J	<0.050	<0.0035	370	<0.010	0.22	<0.0050	<0.10	64
SWFTS-MW09A	BL01	3/29/2017	N	440-180937-3	Qal	19.3 - 28.9	<0.0050	<0.0050	<0.050	<0.0035	180	<0.010	0.16	<0.0050	<0.10	54
	EM04	10/11/2017	N	440-194094-7	Qal	19.3 - 28.9	0.0071 J	<0.0050	0.29	<0.0038	180	9.4	1.0	0.014	<0.10	61
	EM06	11/16/2017	N	440-196786-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-6	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-13	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-10	Qal	19.3 - 28.9	0.0056 J	<0.0050	<0.050	<0.0038	150	3.8	0.17	0.016	<0.10	54
	EM15	10/9/2018	N	440-221855-7	Qal	19.3 - 28.9	<0.025	<0.025	<0.25	<0.019	180	4.4	0.22	<0.025	<0.50	54
	EM19	5/22/2019	N	440-242200-1	Qal	19.3 - 28.9	0.0059 J	0.032	<0.050	<0.0038	140	3.4	0.16	0.029	<0.10	52
	EM22	11/5/2019	N	440-253891-1	Qal	19.3 - 28.9	<0.0050	<0.0050	<0.050	<0.0038	120	2.7	0.18	0.0096 J	<0.10	47
	EM26	4/28/2020	N	440-265289-4	Qal	19.3 - 28.9	<0.0050	<0.0050	<0.050	<0.0038	140	3.5	0.14	0.0086 J	<0.10	59
	EM29	10/13/2020	N	440-273236-3	Qal	19.3 - 28.9	<0.0050	<0.0050	<0.050	<0.0038	130	3.3	0.15	0.0069 J	<0.10	55
	EM33	6/1/2021	N	550-164699-1/2	Qal	19.3 - 28.9	0.0030 J	<0.0012	0.028 J	<0.0025	150	3.1	0.12	0.0081	<0.011	55
	EM36	12/2/2021	N	550-175153-10/9	Qal	19.3 - 28.9	0.0032 J	<0.0012	0.037 J	<0.0025	180	3.9	0.099	0.011	<0.011	59
SWFTS-MW09B	BL01	3/29/2017	FD	440-180937-5	Qal	34.4 - 39.0	<0.0050	0.0061 J	<0.050	<0.0035	170	0.73	0.096	<0.0050	<0.10	52
	BL01	3/29/2017	N	440-180937-4	Qal	34.4 - 39.0	<0.0050	<0.0050	0.068 J	<0.0035	180	0.68	0.10	<0.0050	<0.10	51
	EM04	10/11/2017	N	440-194094-5	Qal	34.4 - 39.0	0.0061 J	<0.0050	0.35	<0.0038	160	6.8	0.17	0.011	<0.10	56
	EM06	11/16/2017	N	440-196786-15	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-7	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-13	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-6	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-11	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-9	Qal	34.4 - 39.0	<0.0050	<0.0050	<0.050	<0.0038	140	2.5	0.13	0.013	<0.10	53
	EM15	10/9/2018	N	440-221855-8	Qal	34.4 - 39.0	<0.025	<0.025	<0.25	<0.019	150	2.4	0.15	<0.025	<0.50	54
	EM19	5/22/2019	N	440-242200-2	Qal	34.4 - 39.0	<0.0050	0.033	<0.050	<0.0038	120	1.8	0.14	0.028	<0.10	53
	EM22	11/5/2019	N	440-253891-3	Qal	34.4 - 39.0	<0.0050	<0.0050	<0.050	<0.0038	100	1.7	0.12	0.0088 J	<0.10	39
	EM26	4/28/2020	N	440-265289-3	Qal	34.4 - 39.0	<0.0050	<0.0050	<0.050	<0.0038	130	1.8	0.097	0.0050 J	<0.10	50
	EM29	10/13/2020	N	440-273236-4	Qal	34.4 - 39.0	<0.0050	<0.0050	0.14	<0.0038	120	1.6	0.11	0.0056 J	<0.10	49
	EM33	6/2/2021	N	550-164872-1/2	Qal	34.4 - 39.0	0.0014 J	<0.0012	0.026 J	<0.0025	130	1.4	0.084	0.0079	<0.011	48
	EM36	12/2/2021	N	550-175153-11/12	Qal	34.4 - 39.0	0.0017 J	0.0016 J	0.059 J	<0.0025	170	1.6	0.069	0.010	<0.011	57
SWFTS-MW10A	BL01	3/31/2017	N	440-181122-2	Qal	20.4 - 35.0	<0.0050	<0.0050	0.13	<0.0035	150	1.1	0.11	0.013	<0.10	35
	EM04	10/12/2017	N	440-194242-10	Qal	20.4 - 35.0	<0.0050	<0.0050	0.37	<0.0038	99	4.3	0.014 J	0.013	<0.10	24
	EM06	11/16/2017	FD	440-196786-6	Qal	20.4 - 35.0	<0.0050	<0.0050	0.21	<0.0038	90	2.2	<0.010	0.024	<0.10	23
	EM06	11/16/2017	N	440-196786-5	Qal	20.4 - 35.0	<0.0050	<0.0050	0.21	<0.0038	89	2.2	0.010 J	0.025	<0.10	23
	EM07	12/12/2017	FD	440-198371-11	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW10A	EM07	12/12/2017	N	440-198371-10	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-5	Qal	20.4 - 35.0	<0.0050	<0.0050	0.36	<0.0038	150	2.2	0.043	0.026	<0.10	32
	EM08	2/20/2018	N	440-203841-4	Qal	20.4 - 35.0	<0.0050	<0.0050	0.36	<0.0038	150	2.2	0.044	0.025	<0.10	32
	EM09	3/26/2018	FD	440-207137-8	Qal	20.4 - 35.0	<0.0050	<0.0050	0.13	<0.0038	150	2.2	0.082	0.027 J	<0.10	34
	EM09	3/26/2018	N	440-207137-7	Qal	20.4 - 35.0	<0.0050	<0.0050	0.15	<0.0038	170	2.4	0.085	0.011 J	<0.10	35
	EM10	5/1/2018	N	440-210284-1	Qal	20.4 - 35.0	<0.0050	<0.0050	0.11	<0.0038	190	2.5	0.096	0.016	<0.10	45
	EM11	7/11/2018	N	440-215585-9	Qal	20.4 - 35.0	<0.0050	<0.0050	<0.050	<0.0038	160	2.1	0.080	0.012	<0.10	37
	EM13	8/14/2018	N	440-218109-10	Qal	20.4 - 35.0	<0.0050	<0.0050	<0.050	<0.0038	140	1.8	0.067	0.014	<0.10	34
	EM14	9/10/2018	N	440-219797-4	Qal	20.4 - 35.0	<0.0050	<0.0050	<0.050	<0.0038	140	1.7	0.068	0.019	<0.10	33
	EM15	10/9/2018	N	440-221855-9	Qal	20.4 - 35.0	<0.025	<0.025	<0.25	<0.019	160	1.9	0.076 J	<0.025	<0.50	34 J+
	EM19	5/21/2019	N	440-242084-2	Qal	20.4 - 35.0	<0.0050	0.031	0.071 J	<0.0038	130	1.5	0.083	0.031	<0.10	32
	EM22	11/6/2019	N	440-254051-1	Qal	20.4 - 35.0	<0.0050	<0.0050	0.073 J	<0.0038	130	1.5	0.086 J+	0.0096 J	<0.10	32
	EM26	4/29/2020	N	440-265342-6	Qal	20.4 - 35.0	<0.0050	<0.0050	<0.050	<0.0038	150	1.9	0.16	0.0071 J	<0.10	41
	EM29	10/14/2020	N	440-273303-4	Qal	20.4 - 35.0	<0.0050	<0.0050	<0.050	<0.0038	140	1.7	0.14	0.0086 J	<0.10	39
	EM33	6/4/2021	N	550-164930-13/14	Qal	20.4 - 35.0	0.0027 J	<0.0012	0.030 J	<0.0025	150	1.7	0.13	0.014	<0.011	38
	EM36	11/30/2021	N	550-174968-17/18	Qal	20.4 - 35.0	0.0024 J	0.0014 J	0.039 J	<0.0025	150	1.6	0.12	0.010	<0.011	37
SWFTS-MW10C	BL01	3/28/2017	N	440-180820-4	UMCf	43.5 - 63.1	<0.0050	<0.0050	<0.050	<0.0035	330	0.024	0.017 J	<0.0050	<0.10	60
SWFTS-MW11	BL02	7/12/2017	N	440-188244-7	Qal	14.8 - 39.6	<0.0050	<0.0050	<0.050	<0.0076	240	0.17	0.19	<0.0050	<0.10	59
	EM04	10/11/2017	N	440-194094-8	Qal	14.8 - 39.6	<0.0050	<0.0050	<0.050	<0.0038	200	0.21	0.14	<0.0050	<0.10	52
	EM06	11/16/2017	N	440-196786-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-13	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	FD	440-203937-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	FD	440-207497-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210367-1	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-18	Qal	14.8 - 39.6	<0.0050	<0.0050	<0.050	<0.0038	190	<0.015	0.17	<0.0050	<0.10	48
	EM11	7/12/2018	N	440-215717-17	Qal	14.8 - 39.6	<0.0050	<0.0050	<0.050	<0.0038	190	<0.015	0.17	<0.0050	<0.10	48
	EM15	10/11/2018	FD	440-222092-11	Qal	14.8 - 39.6	<0.0050	<0.0050	<0.050	<0.0038	210	<0.015	0.20	<0.0050	<0.10	49
	EM15	10/11/2018	N	440-222092-10	Qal	14.8 - 39.6	<0.0050	<0.0050	<0.050	<0.0038	210	<0.015	0.23	<0.0050	<0.10	57
	EM19	5/22/2019	FD	440-242200-4	Qal	14.8 - 39.6	<0.0050	0.032	<0.050	<0.0038	140	<0.015	0.19	0.021	<0.10	44
	EM19	5/22/2019	N	440-242200-3	Qal	14.8 - 39.6	<0.0050	0.033	<0.050	<0.0038	140	<0.015	0.20	0.022	<0.10	45
	EM22	11/7/2019	FD	440-254150-4	Qal	14.8 - 39.6	<0.0050	<0.0050	<0.050	0.0042 J	120	<0.015	0.19	<0.0050	<0.10	37
	EM22	11/7/2019	N	440-254150-3	Qal	14.8 - 39.6	<0.0050	<0.0050	<0.050	<0.0038	120	<0.015	0.19	<0.0050	<0.10	37
	EM26	4/30/2020	FD	440-265383-5	Qal	14.8 - 39.6	<0.0050	<0.0050	<0.050	<0.0038	180	<0.015	0.15	<0.0050	<0.10	45
	EM26	4/30/2020	N	440-265383-4	Qal	14.8 - 39.6	<0.0050	<0.0050	0.15	<0.0038	170	<0.015	0.15	<0.0050	<0.10	45
	EM29	10/16/2020	FD	440-273433-8	Qal	14.8 - 39.6	<0.0050	0.0057 J	<0.050	<0.0038	160	<0.015	0.16	<0.0050	<0.10	46
	EM29	10/16/2020	N	440-273433-7	Qal	14.8 - 39.6	<0.0050	0.0066 J	<0.050	<0.0038	160	<0.015	0.16	<0.0050	<0.10	45
	EM33	6/4/2021	FD	550-164930-10/9	Qal	14.8 - 39.6	<0.00054	<0.0012	<0.019	<0.0025	150	<0.0083	0.13	<0.0028	<0.011	42
	EM33	6/4/2021	N	550-164930-7/8	Qal	14.8 - 39.6	<0.00054	<0.0012	0.020 J	<0.0025	150	<0.0083	0.13	<0.0028	<0.011	41
	EM36	12/3/2021	FD	550-175222-10/9	Qal	14.8 - 39.6	<0.00054	<0.0012	0.030 J	<0.0025	190	<0.0083	0.10	<0.0028	<0.011	49
	EM36	12/3/2021	N	550-175222-7/8	Qal	14.8 - 39.6	<0.00054	<0.0012	0.024 J	<0.0025	170	<0.0083	0.097	<0.0028	<0.011	45
SWFTS-MW12	BL02	7/13/2017	N	440-188324-6	Qal	15.8 - 40.6	<0.0050	<0.0050	<0.050	<0.0038	280	<0.015	0.46	<0.0050	<0.10	50
	EM04	10/11/2017	N	440-194090-1	Qal	15.8 - 40.6	<0.0050	<0.0050	<0.050	<0.0038	250	<0.015	0.47	<0.0050	<0.10	56
	EM06	11/14/2017	N	440-196558-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW12	EM07	12/14/2017	N	440-198571-15	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-4	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-16	Qal	15.8 - 40.6	<0.0050	<0.0050	<0.050	<0.0038	260	<0.015	0.48	<0.0050	<0.10	56
	EM15	10/11/2018	N	440-222092-12	Qal	15.8 - 40.6	<0.0050	<0.0050	<0.050	<0.0038	210	<0.015	0.42	<0.0050	<0.10	54
	EM19	5/22/2019	N	440-242198-7	Qal	15.8 - 40.6	<0.0050	0.052	<0.050	<0.0038	250	<0.015	0.49	0.040	<0.10	59
	EM22	11/7/2019	N	440-254150-2	Qal	15.8 - 40.6	<0.025	<0.025	1.3	<0.019	260	44	<0.050	<0.025	1.9	53
	EM22	11/26/2019	FD	440-255698-2	Qal	15.8 - 40.6	<0.0050 UJ	<0.0050 UJ	0.074 J	<0.0038 UJ	220 J-	32 J-	<0.010 UJ	<0.0050 UJ	1.4 J-	46 J-
	EM22	11/26/2019	N	440-255698-1	Qal	15.8 - 40.6	<0.0050 UJ	<0.0050 UJ	0.088 J	<0.0038 UJ	240 J-	36 J-	<0.010 UJ	<0.0050 UJ	1.6 J-	51 J-
	EM26	4/30/2020	N	440-265383-3	Qal	15.8 - 40.6	<0.0050	<0.0050	1.0	<0.0038	150	1.8	<0.010	<0.0050	0.73	51
	EM29	10/16/2020	N	440-273433-6	Qal	15.8 - 40.6	<0.0050	<0.0050	0.48	<0.0038	200	2.2	<0.010	<0.0050	0.37	50
	EM33	6/4/2021	N	550-164930-5/6	Qal	15.8 - 40.6	<0.00054	<0.0012	0.18 J	<0.0025	220	2.0	0.20	<0.0028	<0.011	51
	EM36	12/2/2021	N	550-175153-19/20	Qal	15.8 - 40.6	<0.00054	<0.0012	1.1	<0.0025	230	0.53	0.38	<0.0028	<0.011	53
SWFTS-MW13	BL02	7/12/2017	N	440-188244-6	Qal	17.8 - 47.6	<0.0050	<0.0050	<0.050	<0.0038	250	0.19	0.39	<0.0050	<0.10	70
	EM04	10/10/2017	N	440-193989-4	Qal	17.8 - 47.6	<0.0050	<0.0050	<0.050	<0.0038	250	<0.015	0.47	<0.0050	<0.10	72
	EM06	11/15/2017	N	440-196659-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-14	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-7	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-15	Qal	17.8 - 47.6	<0.0050	<0.0050	<0.050	<0.0038	220	<0.015	0.42	<0.0050	<0.10	70
	EM15	10/11/2018	N	440-222092-14	Qal	17.8 - 47.6	<0.0050	<0.0050	<0.050	<0.0038	250	<0.015	0.47	<0.025	<0.10	75
	EM19	5/22/2019	N	440-242198-5	Qal	17.8 - 47.6	<0.0050	0.056	<0.050	<0.0038	220	<0.015	0.45	0.045	<0.10	71
	EM22	11/6/2019	N	440-254051-6	Qal	17.8 - 47.6	<0.025	<0.025	<0.25	<0.019	260	<0.075	0.48	<0.025	<0.50	62
	EM26	4/30/2020	N	440-265383-2	Qal	17.8 - 47.6	<0.0050	<0.0050	<0.050	<0.0038	270	<0.015	0.57	<0.0050	<0.10	68
	EM29	10/15/2020	N	550-151259-6	Qal	17.8 - 47.6	<0.0050	0.0057 J	<0.050	<0.0038	240	<0.015	0.49	<0.0050	<0.10	57
	EM33	6/4/2021	N	550-164930-3/4	Qal	17.8 - 47.6	<0.00054	<0.0012	0.046 J	<0.0025	300	<0.0083	0.51	<0.0028	<0.011	71
	EM36	12/2/2021	N	550-175153-17/18	Qal	17.8 - 47.6	<0.00054	<0.0012	0.049 J	<0.0025	280	<0.0083	0.49	<0.0028	<0.011	69
SWFTS-MW14	BL02	7/12/2017	FD	440-188244-9	Qal	16.8 - 36.6	<0.0050	<0.0050	<0.050	<0.0038	260	1.4	0.13	0.0053 J	<0.10	50
	BL02	7/12/2017	N	440-188244-8	Qal	16.8 - 36.6	<0.0050	<0.0050	<0.050	<0.0038	250	1.4	0.13	<0.0050	<0.10	50
	EM04	10/11/2017	N	440-194242-8	Qal	16.8 - 36.6	<0.0050	<0.0050	1.2	<0.0038	190	4.9	<0.010	<0.0050	<0.10	39
	EM06	11/15/2017	N	440-196659-3	Qal	16.8 - 36.6	<0.0050	<0.0050	1.1	<0.0038	180	3.3	0.033	0.0052 J	<0.10	36
	EM07	12/12/2017	N	440-198371-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-11	Qal	16.8 - 36.6	<0.010	<0.010	1.6	<0.0076	200	6.7	<0.020	0.039	2.7	41
	EM09	3/26/2018	N	440-207137-9	Qal	16.8 - 36.6	<0.025	<0.025	<0.25	<0.019	180	1.6	<0.050	0.026 J	<0.50	35 J+
	EM10	4/30/2018	N	440-210173-9	Qal	16.8 - 36.6	<0.025	<0.025	<0.25	<0.019	170	0.64	<0.050	<0.025	<0.50	37 J+
	EM11	7/10/2018	N	440-215437-8	Qal	16.8 - 36.6	<0.0050	<0.0050	0.062 J	<0.0038	170	0.76	<0.010	<0.0050	0.47	36
	EM13	8/14/2018	N	440-218109-11	Qal	16.8 - 36.6	<0.0050	<0.0050	0.087 J	<0.0038	160	0.48	<0.010	<0.0050	0.30	34
	EM14	9/11/2018	N	440-219886-17	Qal	16.8 - 36.6	<0.0050	<0.0050	<0.050	<0.0038	190	0.43	<0.010	0.0060 J	0.29	38
	EM15	10/9/2018	N	440-221855-10	Qal	16.8 - 36.6	<0.025	<0.025	<0.25	<0.019	200	0.43	<0.050	<0.025	<0.50	37
	EM19	5/21/2019	N	440-242084-1	Qal	16.8 - 36.6	<0.0050	0.026	0.085 J	<0.0038	150	0.33	<0.010	0.019	0.20	37
	EM22	11/6/2019	N	440-254051-2	Qal	16.8 - 36.6	<0.0050	<0.0050	<0.050	<0.0038	140	0.43	0.012 J	<0.0050	0.16 J	34
	EM26	5/1/2020	N	440-265414-2	Qal	16.8 - 36.6	<0.0050	<0.0050	0.18	<0.0038	140	1.4	0.036	<0.0050	<0.10	38
	EM29	10/14/2020	N	440-273303-5	Qal	16.8 - 36.6	<0.0050	<0.0050	0.32	<0.0038	130	1.7	0.048	<0.0050	<0.10	38
	EM33	6/4/2021	N	550-164930-1/2	Qal	16.8 - 36.6	<0.00054	<0.0012	0.069 J	<0.0025	130	1.7	0.11	0.0031 J	<0.011	35

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW14	EM36	12/3/2021	N	550-175222-1/2	Qal	16.8 - 36.6	<0.00054	<0.0012	4.6	<0.0025	140	1.7	0.066	<0.0028	0.064 J	35
SWFTS-MW15	BL02	7/13/2017	N	440-188325-3	Qal	14.8 - 34.6	<0.0050	<0.0050	0.95	<0.0038	160	0.079	0.12	<0.0050	<0.10	69
	EM04	10/10/2017	N	440-194094-1	Qal	14.8 - 34.6	<0.0050	<0.0050	<0.050	<0.0038	130	0.038	0.12	<0.0050	<0.10	61
	EM06	11/14/2017	N	440-196558-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-13	Qal	14.8 - 34.6	<0.0050	0.0082 J	0.12	<0.0038	160	<0.015	0.18	0.026	<0.10	62
	EM08	2/19/2018	N	440-203775-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-10	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-1	Qal	14.8 - 34.6	<0.0050	<0.0050	0.17	<0.0038	130	0.64	0.27	<0.0050	<0.10	53
	EM15	10/9/2018	N	440-221855-11	Qal	14.8 - 34.6	<0.025	<0.025	0.30 J	<0.019	140	5.9	0.16	<0.025	<0.50	50
	EM19	5/20/2019	N	440-242014-1	Qal	14.8 - 34.6	<0.0050	<0.0050	0.13	<0.0038	110	0.57	0.12	<0.0050	<0.10	50
	EM22	11/6/2019	N	440-254051-3	Qal	14.8 - 34.6	<0.0050	<0.0050	0.14	0.0060	100	0.13	0.12 J+	<0.0050	<0.10	46
	EM26	4/29/2020	N	440-265342-3	Qal	14.8 - 34.6	<0.0050	<0.0050	<0.050	<0.0038	130	0.49	0.12	<0.0050	<0.10	48
	EM29	10/15/2020	N	550-151259-4	Qal	14.8 - 34.6	<0.0050	0.0067 J	0.71	<0.0038	110	1.6	0.075	<0.0050	<0.10	42
	EM33	6/3/2021	N	550-164869-13/14	Qal	14.8 - 34.6	<0.00054	<0.0012	0.14 J	<0.0025	130	0.44	0.089	<0.0028	<0.011	52
	EM36	11/30/2021	N	550-174968-10/9	Qal	14.8 - 34.6	0.0010 J	<0.0012	0.34 J	<0.0025	190	0.13	0.071	0.043	<0.011	60
SWFTS-MW16	BL02	7/13/2017	N	440-188325-2	Qal	21.8 - 41.6	<0.0050	<0.0050	1.5	<0.0038	230	0.055	0.28	<0.0050	<0.10	72
	EM04	10/12/2017	N	440-194204-7	Qal	21.8 - 41.6	<0.0050	<0.0050	2.3	<0.0038	200	7.9	0.17	0.013	<0.10	65
	EM06	11/16/2017	N	440-196786-4	Qal	21.8 - 41.6	<0.0050	0.0065 J	3.6	<0.0038	130	1.8	0.055 J+	0.025	0.24	53
	EM07	12/12/2017	N	440-198371-4	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-6	Qal	21.8 - 41.6	<0.0050	<0.0050	3.0	<0.0038	190	7.6	0.077	0.025	0.12 J	55
	EM09	3/27/2018	N	440-207268-13	Qal	21.8 - 41.6	<0.0050	<0.0050	0.18	<0.0038	150	0.27	0.15	<0.0050	<0.10	52
	EM10	5/2/2018	N	440-210430-13	Qal	21.8 - 41.6	<0.010	<0.010	1.1	<0.0076	210	3.1	0.13	<0.010	<0.20	61
	EM11	7/11/2018	N	440-215585-12	Qal	21.8 - 41.6	<0.0050	<0.0050	0.85	<0.0038	190	4.5	<0.010	<0.0050	<0.10	53
	EM13	8/15/2018	N	440-218208-13	Qal	21.8 - 41.6	<0.0050	<0.0050	3.3	<0.0038	160	1.7	0.014 J	<0.0050	<0.10	55
	EM14	9/10/2018	N	440-219797-6	Qal	21.8 - 41.6	<0.0050	<0.0050	2.9	<0.0038	170	2.5	0.044	<0.0050	<0.10	52
	EM15	10/11/2018	N	440-222092-3	Qal	21.8 - 41.6	<0.0050	<0.0050	4.5	<0.0038	190	3.2	0.057	0.0064 J	<0.10	60
	EM19	5/20/2019	N	440-242014-3	Qal	21.8 - 41.6	<0.0050	<0.0050	4.3	<0.0038	170	2.0	0.013 J	<0.0050	<0.10	51
	EM22	11/6/2019	N	440-254051-5	Qal	21.8 - 41.6	<0.0050	<0.0050	2.8	<0.0038	130	1.3	<0.010	0.016	<0.10	48
	EM26	4/30/2020	N	440-265383-1	Qal	21.8 - 41.6	<0.0050	<0.0050	4.4	<0.0038	180	2.3	0.040	<0.0050	<0.10	52
	EM29	10/15/2020	N	550-151259-1	Qal	21.8 - 41.6	<0.0050	0.0058 J	3.6	<0.0038	130	1.2	0.037	<0.0050	<0.10	45
	EM33	6/3/2021	N	550-164869-11/12	Qal	21.8 - 41.6	<0.00054	<0.0012	0.87	<0.0025	150	1.6	0.090	<0.0028	<0.011	55
	EM36	11/30/2021	N	550-174968-11/12	Qal	21.8 - 41.6	<0.00054	<0.0012	0.64	<0.0025	180	1.7	0.054	<0.0028	<0.011	63
SWFTS-MW17	BL02	7/12/2017	N	440-188244-1	Qal	22.8 - 52.6	<0.0050	<0.0050	<0.050	<0.0038	210	<0.015	0.23	<0.0050	<0.10	85
	EM04	10/10/2017	N	440-193989-3	Qal	22.8 - 52.6	<0.0050	0.0051 J	<0.050	<0.0038	180	<0.015	0.28	<0.0050	<0.10	89
	EM06	11/15/2017	FD	440-196659-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-5	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-7	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-3	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-13	Qal	22.8 - 52.6	<0.0050	<0.0050	<0.050	<0.0038	150	<0.015	0.22	<0.0050	<0.10	79
	EM15	10/11/2018	N	440-222092-4	Qal	22.8 - 52.6	<0.0050	<0.0050	<0.050	<0.0038	160	<0.015	0.21	<0.0050	<0.10	76
	EM19	5/22/2019	N	440-242198-6	Qal	22.8 - 52.6	<0.0050	0.049	<0.050	<0.0038	150	<0.015	0.22	0.036	<0.10	78
	EM22	11/7/2019	N	440-254150-1	Qal	22.8 - 52.6	<0.0050	<0.0050	<0.050	<0.0038	160	<0.015	0.23	<0.0050	<0.10	77

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW17	EM26	4/30/2020	N	440-265383-6	Qal	22.8 - 52.6	<0.0050	<0.0050	<0.050	<0.0038	150	<0.015	0.25	<0.0050	<0.10	81
	EM29	10/15/2020	N	550-151259-5	Qal	22.8 - 52.6	<0.0050	0.0083 J	<0.050	<0.0038	140	<0.015	0.19	<0.0050	<0.10	71
	EM33	6/3/2021	N	550-164869-10/9	Qal	22.8 - 52.6	<0.00054	0.0042 J	0.044 J	<0.0025	160	<0.0083	0.20	<0.0028	<0.011	80
	EM36	12/2/2021	N	550-175153-21/22	Qal	22.8 - 52.6	<0.00054	0.0039 J	0.039 J	<0.0025	170	<0.0083	0.26	<0.0028	<0.011	89
SWFTS-MW18	BL02	7/11/2017	N	440-188133-17	Qal	16.8 - 36.6	<0.0050	0.0064 J	<0.050	<0.0038	210	<0.015	0.17	0.0050 J	<0.10	76
	EM04	10/10/2017	N	440-194094-3	Qal	16.8 - 36.6	<0.0050	<0.0050	<0.050	<0.0038	170	0.81	0.20	0.0060 J	<0.10	59
	EM06	11/15/2017	N	440-196690-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-5	Qal	16.8 - 36.6	<0.0050	0.0090 J	<0.050	<0.0038	190	0.44	0.23	0.032	<0.10	60
	EM08	2/22/2018	N	440-204033-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	FD	440-207268-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-6	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-2	Qal	16.8 - 36.6	<0.0050	<0.0050	<0.050	<0.0038	160	0.16	0.22	0.0053 J	<0.10	53
	EM15	10/11/2018	N	440-222092-5	Qal	16.8 - 36.6	<0.0050	<0.0050	<0.050	<0.0038	140	0.096	0.20	<0.025	<0.10	51
	EM19	5/21/2019	N	440-242084-15	Qal	16.8 - 36.6	<0.0050	0.031	<0.050	<0.0038	150	0.95	0.24	0.028	<0.10	48
	EM22	11/6/2019	N	440-254051-4	Qal	16.8 - 36.6	0.0098 J	<0.0050	0.052 J	<0.0038	160	2.8	0.29	0.013	<0.10	42
	EM26	4/29/2020	N	440-265342-2	Qal	16.8 - 36.6	0.0059 J	<0.0050	<0.050	<0.0038	150	1.6	0.15	0.0068 J	<0.10	51
	EM29	10/15/2020	N	550-151259-2	Qal	16.8 - 36.6	0.0054 J	0.0074 J	<0.050	<0.0038	140	1.3	0.16	0.011	<0.10	41
	EM33	6/3/2021	N	550-164869-7/8	Qal	16.8 - 36.6	0.0035 J	<0.0012	0.037 J	<0.0025	180	1.8	0.18	0.0083	<0.011	49
	EM36	12/1/2021	N	550-175045-5/6	Qal	16.8 - 36.6	0.0017 J	<0.0012	0.31 J	<0.0025	180	3.2	0.058	0.0038 J	<0.011	42
SWFTS-MW19	BL02	7/12/2017	N	440-188244-2	Qal	11.3 - 31.1	0.0054 J	<0.0050	<0.050	<0.0038	65	<0.015	0.051	0.014	<0.10	19
	EM04	10/12/2017	N	440-194204-1	Qal	11.3 - 31.1	<0.0050	<0.0050	<0.050	<0.0038	68	<0.015	0.050	0.012	<0.10	23
	EM06	11/16/2017	N	440-196786-12	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-8	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-3	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	FD	440-210173-5	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	FD	440-215437-11	Qal	11.3 - 31.1	0.0052 J	<0.0050	<0.050	<0.0038	74	<0.015	0.050	0.014	<0.10	21
	EM11	7/10/2018	N	440-215437-10	Qal	11.3 - 31.1	<0.0050	<0.0050	<0.050	<0.0038	70	<0.015	0.049	0.014	<0.10	21
	EM15	10/9/2018	FD	440-221855-5	Qal	11.3 - 31.1	0.0052 J	<0.0050	<0.050	<0.0038	73	<0.015	0.061	0.015	<0.10	23
	EM15	10/9/2018	N	440-221855-4	Qal	11.3 - 31.1	0.0052 J	<0.0050	<0.050	<0.0038	70	<0.015	0.061	0.016	<0.10	22
	EM19	5/21/2019	FD	440-242084-7	Qal	11.3 - 31.1	<0.0050	0.022	0.058 J	<0.0038	69	<0.015	0.063	0.027	<0.10	19
	EM19	5/21/2019	N	440-242084-6	Qal	11.3 - 31.1	<0.0050	0.023	<0.050	<0.0038	67	<0.015	0.064	0.026	<0.10	19
	EM22	11/5/2019	FD	440-253891-7	Qal	11.3 - 31.1	0.0055 J	<0.0050	<0.050	0.0040 J	65	<0.015	0.062 J+	0.012	<0.10	20
	EM22	11/5/2019	N	440-253891-6	Qal	11.3 - 31.1	0.0053 J	<0.0050	<0.050	<0.0038	68	<0.015	0.066 J+	0.012	<0.10	21
	EM26	4/28/2020	FD	440-265288-7	Qal	11.3 - 31.1	<0.0050	<0.0050	<0.050	<0.0038	120	<0.015	0.044	0.0088 J	<0.10	27
	EM26	4/28/2020	N	440-265288-4	Qal	11.3 - 31.1	<0.0050	<0.0050	<0.050	<0.0038	110	<0.015	0.043	0.010	<0.10	26
	EM29	10/14/2020	FD	440-273303-3	Qal	11.3 - 31.1	<0.0050	<0.0050	<0.050	<0.0038	80	<0.015	0.068	0.010	<0.10	23
	EM29	10/14/2020	N	440-273303-2	Qal	11.3 - 31.1	<0.0050	<0.0050	<0.050	<0.0038	71	<0.015	0.070	0.011	<0.10	23
	EM33	6/3/2021	FD	550-164869-5/6	Qal	11.3 - 31.1	0.0030 J	<0.0012	0.025 J	<0.0025	90	<0.0083	0.050	0.016	<0.011	22
	EM33	6/3/2021	N	550-164869-3/4	Qal	11.3 - 31.1	0.0030 J	0.0017 J	0.023 J	<0.0025	90	<0.0083	0.049	0.015	<0.011	22
	EM36	12/1/2021	FD	550-175045-15/16	Qal	11.3 - 31.1	0.0026 J	<0.0012	0.027 J	<0.0025	84	<0.0083	0.061	0.012	<0.011	24
	EM36	12/1/2021	N	550-175045-13/14	Qal	11.3 - 31.1	0.0031 J	0.0014 J	0.019 J	<0.0025	81	<0.0083	0.059	0.012	<0.011	23
SWFTS-MW20	BL02	7/12/2017	N	440-188244-5	Qal	12.8 - 37.6	<0.0050	0.0074 J	<0.050	<0.0038	290	0.27	0.22	<0.0050	<0.10	41
	EM04	10/12/2017	FD	440-194202-2	Qal	12.8 - 37.6	<0.0050	<0.0050	<0.050	<0.0038	270	1.7	0.28	0.0072 J	<0.10	50

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Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW20	EM04	10/12/2017	N	440-194202-1	Qal	12.8 - 37.6	<0.0050	<0.0050	0.057 J	<0.0038	260	2.0	0.27	0.015	<0.10	47
	EM06	11/16/2017	N	440-196786-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-3	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-9	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-10	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-8	Qal	12.8 - 37.6	<0.0050	<0.0050	<0.050	<0.0038	210	2.1	0.16	0.013	<0.10	40
	EM15	10/9/2018	N	440-221855-1	Qal	12.8 - 37.6	<0.025	<0.025	<0.25	<0.019	240	2.7	0.16	<0.025	<0.50	41
	EM19	5/21/2019	N	440-242084-3	Qal	12.8 - 37.6	<0.0050	0.041	0.060 J	<0.0038	200	5.6	0.19	0.057	<0.10	37
	EM22	11/5/2019	N	440-253918-6	Qal	12.8 - 37.6	0.0054 J	<0.0050	0.068 J	<0.0038	210	3.7	0.14	0.036	<0.10	38
	EM26	4/29/2020	N	440-265342-5	Qal	12.8 - 37.6	0.0063 J	<0.0050	<0.050	<0.0038	190	3.8	0.16	0.036	<0.10	36
	EM29	10/14/2020	N	440-273303-6	Qal	12.8 - 37.6	<0.0050	<0.0050	0.070 J	<0.0038	230	2.4	0.29	0.013	<0.10	41
	EM33	6/3/2021	N	550-164869-1/2	Qal	12.8 - 37.6	0.0071	<0.0012	0.13 J	<0.0025	210	3.5	0.20	0.025	<0.011	35
	EM36	11/29/2021	N	550-174897-1/2	Qal	12.8 - 37.6	0.014	<0.0012	0.51	<0.0025	180	4.4	0.14	0.024	<0.011	34
SWFTS-MW21	BL02	7/13/2017	N	440-188324-5	Qal	14.8 - 39.6	<0.010	<0.010	0.64	<0.0038	300	0.060	0.43	<0.010	<0.20	65
	EM04	10/11/2017	N	440-194090-8	Qal	14.8 - 39.6	0.015	<0.0050	0.12	<0.0038	240	2.2	0.64	0.0078 J	<0.10	62
	EM06	11/15/2017	N	440-196665-5	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-10	Qal	14.8 - 39.6	<0.010	0.014 J	<0.10	<0.0076	290	1.5	0.47	0.050	<0.20	70
	EM08	2/20/2018	FD	440-203841-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-14	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-3	Qal	14.8 - 39.6	0.0054 J	<0.0050	<0.050	<0.0038	260	2.3	0.26	0.0055 J	<0.10	59
	EM15	10/9/2018	N	440-221855-3	Qal	14.8 - 39.6	<0.025	<0.025	<0.25	<0.019	260	3.3	0.33	<0.025	<0.50	57
	EM19	5/22/2019	N	440-242198-3	Qal	14.8 - 39.6	<0.0050	0.052	<0.050	<0.0038	240	5.8	0.38	0.045	<0.10	57
	EM22	11/4/2019	N	440-253773-3	Qal	14.8 - 39.6	0.0067 J	<0.0050	0.059 J	<0.0038	230	5.3	0.24	<0.0050	<0.10	53
	EM26	4/29/2020	N	440-265342-1	Qal	14.8 - 39.6	<0.0050	<0.0050	<0.050	<0.0038	170	1.5	0.26	<0.0050	<0.10	56
	EM29	10/14/2020	N	440-273303-7	Qal	14.8 - 39.6	0.0051 J	<0.0050	0.63	<0.0038	230	5.6	0.37	<0.0050	<0.10	55
	EM33	6/2/2021	N	550-164872-15/16	Qal	14.8 - 39.6	0.0029 J	0.0021 J	0.046 J	<0.0025	230	4.5	0.19	<0.0028	<0.011	53
	EM36	12/1/2021	N	550-175045-3/4	Qal	14.8 - 39.6	0.0034 J	<0.0012	0.072 J	<0.0025	240	4.4	0.31	<0.0028	<0.011	54
SWFTS-MW22	BL02	7/13/2017	N	440-188324-1	Qal	11.8 - 31.6	0.013	0.016	15	<0.0038	110	0.79	0.15	0.027	0.77	29 J+
	EM04	10/12/2017	N	440-194242-9	Qal	11.8 - 31.6	0.0057 J	<0.0050	<0.050	<0.0038	98	0.96	0.13	0.014	<0.10	27
	EM06	11/16/2017	N	440-196786-18	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-17	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-6	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-9	Qal	11.8 - 31.6	<0.0050	<0.0050	<0.050	<0.0038	110	0.69	0.10	0.016	<0.10	28
	EM15	10/9/2018	N	440-221855-2	Qal	11.8 - 31.6	<0.025	<0.025	<0.25	<0.019	110	0.29	0.12	<0.025	<0.50	26
	EM19	5/21/2019	N	440-242084-4	Qal	11.8 - 31.6	<0.0050	0.026	<0.050	<0.0038	90	0.14	0.13	0.025	<0.10	24
	EM22	11/5/2019	N	440-253891-4	Qal	11.8 - 31.6	0.0051 J	<0.0050	0.15	<0.0038	88	0.20	0.12	0.014	<0.10	24
	EM26	4/28/2020	N	440-265288-5	Qal	11.8 - 31.6	<0.0050	<0.0050	<0.050	<0.0038	95	0.29	0.097	0.0090 J	<0.10	27
	EM29	10/14/2020	N	440-273303-1	Qal	11.8 - 31.6	<0.0050	<0.0050	0.15	<0.0038	110	0.24	0.12	0.0086 J	<0.10	28
	EM33	6/2/2021	N	550-164872-11/12	Qal	11.8 - 31.6	0.0035 J	0.0028 J	0.029 J	<0.0025	110	0.29	0.074	0.012	<0.011	27
	EM36	12/2/2021	N	550-175153-1/2	Qal	11.8 - 31.6	0.0035 J	<0.0012	0.045 J	<0.0025	110	0.22	0.085	0.010	<0.011	28
SWFTS-MW23	BL02	7/13/2017	N	440-188325-7	Qal	13.8 - 33.6	<0.0050	<0.0050	<0.050	<0.0038	63	0.083	0.025	0.013	<0.10	19

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW23	EM04	10/11/2017	N	440-194090-7	Qal	13.8 - 33.6	<0.0050	0.0055 J	<0.050	<0.0038	72	0.10	0.028	0.015	<0.10	21
	EM06	11/15/2017	N	440-196665-3	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-2	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-14	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-9	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-5	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-7	Qal	13.8 - 33.6	<0.0050	<0.0050	<0.050	<0.0038	60	0.088	0.027	0.015	<0.10	18
	EM15	10/11/2018	N	440-222092-7	Qal	13.8 - 33.6	0.0051 J	<0.0050	<0.050	<0.0038	66	0.10	0.030	0.018	<0.10	20
	EM19	5/22/2019	N	440-242201-7	Qal	13.8 - 33.6	<0.0050	0.024	<0.050	<0.0038	63	0.11	0.030	0.030	<0.10	18
	EM22	11/5/2019	N	440-253891-5	Qal	13.8 - 33.6	<0.0050	<0.0050	<0.050	<0.0038	74	0.13	0.026 J+	0.012	<0.10	19
	EM26	4/28/2020	N	440-265288-3	Qal	13.8 - 33.6	<0.0050	<0.0050	<0.050	<0.0038	61	0.12	0.027	0.012	<0.10	18
	EM29	10/13/2020	N	440-273236-1	Qal	13.8 - 33.6	<0.0050	<0.0050	<0.050	<0.0038	62	0.14	0.025	0.011	<0.10	19
	EM33	6/2/2021	N	550-164872-3/4	Qal	13.8 - 33.6	0.0030 J	0.0024 J	0.027 J	<0.0025	68	0.16	0.015	0.014	<0.011	18
	EM36	12/2/2021	N	550-175153-15/16	Qal	13.8 - 33.6	0.0032 J	0.0030 J	<0.019	<0.0025	63	0.15	0.016	0.015	<0.011	18
SWFTS-MW24	BL02	7/13/2017	N	440-188324-2	Qal	12.8 - 37.6	<0.0050	<0.0050	<0.050	<0.0038	210	<0.015	0.22	<0.0050	<0.10	55
	EM04	10/11/2017	N	440-194242-2	Qal	12.8 - 37.6	<0.0050	0.013 J+	<0.050	<0.0038	190	<0.015	0.60	<0.0050	<0.10	57
	EM06	11/15/2017	N	440-196665-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-12	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-5	Qal	12.8 - 37.6	<0.0050	<0.0050	<0.050	<0.0038	170	0.65	0.24	0.0088 J	<0.10	48
	EM15	10/10/2018	N	440-221975-7	Qal	12.8 - 37.6	<0.0050	<0.0050	<0.050	<0.0038	180	0.68	0.27	0.010	<0.10	57
	EM19	5/22/2019	N	440-242198-1	Qal	12.8 - 37.6	<0.0050	0.040	<0.050	<0.0038	160	0.27	0.24	0.030	<0.10	49
	EM22	11/5/2019	N	440-253891-2	Qal	12.8 - 37.6	<0.0050	<0.0050	<0.050	<0.0038	150	<0.015	0.25	<0.0050	<0.10	44
	EM26	4/28/2020	N	440-265288-1	Qal	12.8 - 37.6	<0.0050	<0.0050	<0.050	<0.0038	160	1.5	0.20	0.0099 J	<0.10	54
	EM29	10/12/2020	N	440-273153-1	Qal	12.8 - 37.6	<0.0050	<0.0050	<0.050	<0.0038	150	<0.015	0.22	<0.0050	<0.10	49
	EM33	6/2/2021	N	550-164872-7/8	Qal	12.8 - 37.6	<0.00054	<0.0012	0.041 J	<0.0025	160	0.081	0.18	<0.0028	<0.011	45
	EM36	12/1/2021	N	550-175045-17/18	Qal	12.8 - 37.6	<0.00054	<0.0012	0.033 J	<0.0025	180	0.11	0.17	<0.0028	<0.011	50
SWFTS-MW25	BL02	7/13/2017	N	440-188324-4	Qal	12.8 - 42.6	<0.0050	<0.0050	<0.050	<0.0038	210	0.96	0.11	<0.0050	<0.10	46
	EM04	10/11/2017	N	440-194242-1	Qal	12.8 - 42.6	0.0060 J	<0.0050	<0.050	<0.0038	180	4.2	0.13	0.011	<0.10	43
	EM06	11/15/2017	N	440-196665-2	Qal	12.8 - 42.6	0.0055 J	<0.0050	1.6	<0.0038	160	5.5	0.080	0.014	0.10 J	40
	EM07	12/12/2017	N	440-198371-1	Qal	12.8 - 42.6	0.0066 J	0.0082 J	0.19	<0.0038	190	7.3	0.11	0.038	<0.10	47
	EM08	2/21/2018	N	440-203937-7	Qal	12.8 - 42.6	0.010	0.016	4.3	0.0055	170	6.7	0.074	0.041	1.5	40
	EM09	3/28/2018	N	440-207497-13	Qal	12.8 - 42.6	<0.0050	<0.0050	0.10	<0.0038	170	5.7	0.11	0.031	<0.10	43
	EM10	5/3/2018	N	440-210534-2	Qal	12.8 - 42.6	0.0051 J	<0.0050	0.057 J	<0.0038	180	5.2	0.11	0.013	<0.10	48
	EM11	7/10/2018	N	440-215437-12	Qal	12.8 - 42.6	<0.0050	<0.0050	0.29	<0.0038	160	4.3	0.090	0.012	<0.10	39
	EM13	8/15/2018	N	440-218208-10	Qal	12.8 - 42.6	<0.0050	<0.0050	0.25	<0.0038	150	3.9	0.086	0.012	<0.10	39
	EM14	9/12/2018	N	440-220031-2	Qal	12.8 - 42.6	<0.0050	<0.0050	<0.050	<0.0038	150 J	3.7 J	0.093	0.012	<0.10	38
	EM15	10/11/2018	N	440-222092-6	Qal	12.8 - 42.6	<0.0050	<0.0050	<0.050	<0.0038	160	3.5	0.11	<0.025	<0.10	42
	EM19	5/22/2019	N	440-242201-6	Qal	12.8 - 42.6	<0.0050	0.032	0.19	<0.0038	120	2.4	0.11	0.027	<0.10	38
	EM22	11/5/2019	N	440-253918-4	Qal	12.8 - 42.6	<0.0050	<0.0050	0.25	<0.0038	120	2.2	0.13	0.0072 J	<0.10	34
	EM26	4/28/2020	N	440-265288-2	Qal	12.8 - 42.6	<0.0050	<0.0050	<0.050	<0.0038	140	2.4	0.11	0.0051 J	<0.10	40
	EM29	10/13/2020	N	440-273236-2	Qal	12.8 - 42.6	<0.0050	<0.0050	<0.050	<0.0038	120	2.2	0.11	<0.0050	<0.10	37
	EM33	6/2/2021	N	550-164872-5/6	Qal	12.8 - 42.6	0.0012 J	<0.0012	0.057 J	<0.0025	130	1.9	0.075	0.0071	<0.011	36
	EM36	12/1/2021	N	550-175045-19/20	Qal	12.8 - 42.6	0.0020 J	<0.0012	0.094 J	<0.0025	150	2.1	0.061	0.0060	<0.011	39

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
COH-2B1	BL02	8/9/2017	N	440-189933-1	Alluvium/UMCf	36.0 - 66.0	28	<0.0050	600	4.0 J+	<0.050	<0.0025	<0.050	0.035	<0.012	<0.50
	EM04	10/12/2017	N	440-194204-2	Alluvium/UMCf	36.0 - 66.0	32	<0.0050	550	3.9	<0.050	<0.0025	<0.050	0.029	<0.012	<0.50
	EM07	12/14/2017	N	440-198571-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-2	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-11	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-6	Alluvium/UMCf	36.0 - 66.0	33	<0.0050	530	4.8	<0.050	<0.0025	<0.050	0.025	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-1	Alluvium/UMCf	36.0 - 66.0	36	<0.025	590	4.0	<0.25	<0.013	<0.25	0.035 J	<0.060	<2.5
	EM19	5/22/2019	N	440-242201-5	Alluvium/UMCf	36.0 - 66.0	35	<0.0050	530	3.6	<0.050	<0.0025	<0.050	0.036	<0.012	<5.0
	EM22	11/4/2019	N	440-253773-1	Alluvium/UMCf	36.0 - 66.0	35	<0.0050	600	5.2	<0.050	0.014 J+	<0.050	0.032	<0.012	<0.50
	EM26	4/27/2020	N	440-265243-1	Alluvium/UMCf	36.0 - 66.0	32	<0.0050	500	3.4	<0.050	<0.0025	<0.050	0.028	<0.012	<0.50
	EM29	10/13/2020	N	440-273236-9	Alluvium/UMCf	36.0 - 66.0	35	<0.0050	610	6.5	<0.050	<0.0025	<0.050	0.028	<0.012	<2.5
PC-58	BL01	3/28/2017	N	440-180820-1	Qal	7.8 - 32.8	36	<0.0050	590	6.5	<0.050	<0.0025	<0.050	0.066	<0.012	<0.50
	BL02	7/13/2017	N	440-188324-3	Qal	7.8 - 32.8	35	<0.0050	600	6.4	<0.050	<0.0025	<0.050	0.064	<0.012	<1.0
	EM04	10/11/2017	N	440-194094-6	Qal	7.8 - 32.8	35	<0.0050	450	4.6	<0.050	<0.0025	<0.050	0.058	<0.012	<2.5
	EM06	11/16/2017	N	440-196786-11	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-9	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-13	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-6	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-10	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-7	Qal	7.8 - 32.8	35	<0.0050	490	5.6	<0.050	<0.0025	<0.050	0.053	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-19	Qal	7.8 - 32.8	38	<0.0050	410	4.3	<0.050	<0.0025	<0.050	0.059	<0.012	<2.5
	EM19	5/22/2019	N	440-242200-7	Qal	7.8 - 32.8	37	<0.0050	550	5.4	<0.050	<0.0025	<0.050	0.069	<0.012	<5.0
	EM22	11/7/2019	N	440-254148-1	Qal	7.8 - 32.8	36	<0.0050	410	4.1	<0.050	<0.0025	<0.050	0.061	0.013 J	<0.50
	EM26	5/1/2020	N	440-265414-3	Qal	7.8 - 32.8	38	<0.0050	480	4.7	<0.050	<0.0025	<0.050	0.064	<0.012	<2.5
	EM29	10/16/2020	N	440-273433-5	Qal	7.8 - 32.8	38	<0.0050	400	2.8	<0.050	<0.0025	<0.050	0.080	<0.012	<0.50
	EM33	6/2/2021	N	550-164872-23/24	Qal	7.8 - 32.8	38	<0.00049	410	3.6	<0.0034	<0.00028	<0.0021	0.074	0.0085 J	0.19 J
	EM36	12/3/2021	N	550-175222-11/12	Qal	7.8 - 32.8	40	<0.00049	460	3.8	<0.0034	<0.00028	0.0027 J	0.078	0.0069 J	0.17 J
PC-88	EM04	10/11/2017	FD	440-194090-3	Qal	40.0 - 50.0	35	<0.0050	760	4.4	<0.050	<0.0025	<0.050	0.084	<0.012	<0.50
	EM04	10/11/2017	N	440-194090-2	Qal	40.0 - 50.0	35	<0.0050	760	4.3	<0.050	<0.0025	<0.050	0.082	<0.012	<0.50
	EM06	11/15/2017	FD	440-196690-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196690-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	FD	440-210430-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-8	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-12	Qal	40.0 - 50.0	34	<0.0050	650	3.7	<0.050	<0.0025	<0.050	0.078	<0.012	<5.0
	EM11	7/12/2018	N	440-215717-11	Qal	40.0 - 50.0	34	<0.0050	650	3.7	<0.050	<0.0025	<0.050	0.078	<0.012	<5.0
	EM15	10/11/2018	FD	440-222092-16	Qal	40.0 - 50.0	36	<0.0050	740	4.3	<0.050	<0.0025	<0.050	0.079	<0.012	<2.5
	EM15	10/11/2018	N	440-222092-15	Qal	40.0 - 50.0	37	<0.0050	770	4.3	<0.050	<0.0025	<0.050	0.081	<0.012	<2.5
	EM19	5/22/2019	FD	440-242201-3	Qal	40.0 - 50.0	35	<0.0050	600	2.8	<0.050	<0.0025	<0.050	0.099	<0.012	<5.0
	EM19	5/22/2019	N	440-242201-2	Qal	40.0 - 50.0	39	<0.0050	650	3.1	<0.050	<0.0025	<0.050	0.11	<0.012	<5.0
	EM22	11/7/2019	FD	440-254148-3	Qal	40.0 - 50.0	33	<0.0050	630	2.9	<0.050	<0.0025	<0.050	0.089	<0.012	<0.50
	EM22	11/7/2019	N	440-254148-2	Qal	40.0 - 50.0	31	<0.0050	600	3.2	<0.050	<0.0025	<0.050	0.084	<0.012	<0.50
	EM26	5/1/2020	FD	440-265412-3	Qal	40.0 - 50.0	36	<0.0050	620	3.3	<0.050	<0.0025	<0.050	0.088	<0.012	<2.5

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
PC-88	EM26	5/1/2020	N	440-265412-2	Qal	40.0 - 50.0	37	<0.0050	650	3.4	<0.050	<0.0025	<0.050	0.092	<0.012	<2.5
	EM29	10/15/2020	FD	550-151259-11	Qal	40.0 - 50.0	31	<0.0050	590	3.7	<0.050	<0.0025	<0.050	0.070	<0.012	<2.5
	EM29	10/15/2020	N	550-151259-10	Qal	40.0 - 50.0	31	<0.0050	590	3.7	<0.050	<0.0025	<0.050	0.069	<0.012	<2.5
	EM33	6/3/2021	FD	550-164869-27/28	Qal	40.0 - 50.0	36	<0.00049	430	1.8	<0.0034	<0.00028	0.0030 J	0.11	0.0057 J	0.43 J
	EM33	6/3/2021	N	550-164869-25/26	Qal	40.0 - 50.0	36	<0.00049	430	1.8	<0.0034	<0.00028	0.0035 J	0.11	0.0055 J	0.25 J
	EM36	12/2/2021	FD	550-175153-7/8	Qal	40.0 - 50.0	36	<0.00049	450	2.2	<0.0034	<0.00028	0.0043 J	0.10	0.0079 J	0.18 J
	EM36	12/2/2021	N	550-175153-5/6	Qal	40.0 - 50.0	35	<0.00049	450	2.2	<0.0034	<0.00028	0.0033 J	0.10	0.0036 J	0.19 J
PC-91	BL01	3/29/2017	N	440-180937-1	Qal	11.5 - 21.5	35	<0.0050	550	3.8	<0.050	<0.0025	<0.050	0.055	<0.012	<0.50
	BL02	7/12/2017	FD	440-188244-4	Qal	11.5 - 21.5	36	<0.0050	570	3.6	<0.050	<0.0025	<0.050	0.053	<0.012	<0.50
	BL02	7/12/2017	N	440-188247-5	Qal	11.5 - 21.5	36	<0.0050	600	3.8	<0.050	<0.0025	<0.050	0.052	<0.012	<1.0
	EM04	10/12/2017	N	440-194204-3	Qal	11.5 - 21.5	35	<0.0050	470	3.1	<0.050	<0.0025	<0.050	0.049	<0.012	<0.50
	EM06	11/16/2017	N	440-196786-8	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-9	Qal	11.5 - 21.5	40	<0.0050	540	3.6	<0.050	<0.0025	<0.050	0.059	<0.012	<0.50
	EM08	2/20/2018	N	440-203841-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-6	Qal	11.5 - 21.5	38	<0.0050	530	4.1	<0.050	<0.0025	<0.050	0.022	<0.012	<5.0
	EM15	10/10/2018	N	440-221975-16	Qal	11.5 - 21.5	45	<0.025	610	4.8	<0.25	<0.013	<0.25	0.031 J	<0.060	<2.5
	EM19	5/21/2019	N	440-242084-9	Qal	11.5 - 21.5	45	<0.0050	600	4.7	<0.050	<0.0025	<0.050	0.017	<0.012	<0.50
	EM22	11/6/2019	N	440-254027-3	Qal	11.5 - 21.5	43	<0.0050	680	6.0	<0.050	<0.0025	<0.050	0.022	<0.012	0.75 J
	EM26	4/30/2020	N	440-265382-2	Qal	11.5 - 21.5	38	<0.0050	520	3.4	<0.050	<0.0025	<0.050	0.0074 J	<0.012	<2.5
	EM29	10/14/2020	N	440-273303-11	Qal	11.5 - 21.5	48	<0.0050	600	4.1	<0.050	<0.0025	<0.050	<0.0050	<0.012	<1.0
	EM33	6/2/2021	N	550-164872-17/18	Qal	11.5 - 21.5	55	<0.00049	650	5.2	<0.0034	<0.00028	<0.0021	0.0030 J	0.0089 J	0.12 J
	EM36	11/30/2021	N	550-174968-1/2	Qal	11.5 - 21.5	67	<0.00049	520	3.0	<0.0034	<0.00028	<0.0021	0.0015 J	0.0082 J	0.16 J
PC-92	BL01	3/29/2017	N	440-180937-2	Qal	26.5 - 36.5	34	<0.0050	840	7.1	<0.050	0.0028 J	<0.050	0.050	<0.012	<0.50
	BL02	7/12/2017	N	440-188247-6	Qal	26.5 - 36.5	32	<0.0050	610	4.9	<0.050	<0.0025	<0.050	0.048	<0.012	<5.0
	EM04	10/12/2017	FD	440-194204-5	Qal	26.5 - 36.5	34	<0.0050	530	5.0	<0.050	<0.0025	<0.050	0.039	<0.012	<0.50
	EM04	10/12/2017	N	440-194204-4	Qal	26.5 - 36.5	32	<0.0050	510	4.9	<0.050	<0.0025	<0.050	0.038	<0.012	<0.50
	EM06	11/16/2017	FD	440-196786-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-9	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	FD	440-198571-8	Qal	26.5 - 36.5	37	<0.0050	560	5.5	<0.050	<0.0025	<0.050	0.044	<0.012	<0.50
	EM07	12/14/2017	N	440-198571-7	Qal	26.5 - 36.5	40	<0.0050	600	6.0	<0.050	<0.0025	<0.050	0.047	<0.012	<0.50
	EM08	2/20/2018	FD	440-203841-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	FD	440-207137-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-5	Qal	26.5 - 36.5	35	<0.0050	620	5.9	<0.050	<0.0025	<0.050	0.036	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-17	Qal	26.5 - 36.5	37	<0.0050	600	5.4	<0.050	<0.0025	<0.050	0.039	0.16	<2.5
	EM19	5/21/2019	N	440-242084-10	Qal	26.5 - 36.5	35	<0.0050	450	3.8	<0.050	<0.0025	<0.050	0.048	<0.012	<0.50
	EM22	11/6/2019	N	440-254027-2	Qal	26.5 - 36.5	34	<0.0050	510	5.4	<0.050	<0.0025	<0.050	0.026	<0.012	<0.50
	EM26	4/30/2020	N	440-265382-1	Qal	26.5 - 36.5	34	<0.0050	470	4.5	<0.050	<0.0025	<0.050	0.035	<0.012	<2.5
	EM29	10/14/2020	N	440-273303-10	Qal	26.5 - 36.5	34	<0.0050	590	5.4	<0.050	<0.0025	<0.050	0.036	<0.012	<1.0
	EM33	6/2/2021	N	550-164872-19/20	Qal	26.5 - 36.5	35	<0.00049	620	6.2	<0.0034	<0.00028	0.0073 J	0.042	0.0040 J	0.25 J
	EM36	11/30/2021	N	550-174968-3/4	Qal	26.5 - 36.5	38	<0.00049	630	7.0	<0.0034	<0.00028	0.0072 J	0.011	0.0023 J	0.32 J
PC-94	BL01	3/28/2017	N	440-180820-2	Qal	9.5 - 19.5	34	<0.0050	1,000	10	<0.050	<0.0025	<0.050	0.034	<0.012	<0.50

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
PC-94	BL02	7/13/2017	N	440-188325-1	Qal	9.5 - 19.5	35	<0.0050	1,100	11	<0.050	0.018	<0.050	0.035	<0.012	<0.50
	EM04	10/11/2017	N	440-194090-6	Qal	9.5 - 19.5	34	<0.0050	890	9.7	<0.050	0.0092	<0.050	<0.0050	<0.012	<0.50
	EM06	11/16/2017	N	440-196786-17	Qal	9.5 - 19.5	28	<0.0050	860	8.6	<0.050	<0.0025	<0.050	0.0077 J	<0.012	<2.5
	EM07	12/12/2017	N	440-198371-14	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-12	Qal	9.5 - 19.5	35	<0.0050	850	8.8	<0.050	<0.0025	<0.050	0.029	<0.012	<1.0
	EM09	3/27/2018	N	440-207268-8	Qal	9.5 - 19.5	42	<0.0050	790	7.5	<0.050	0.21	<0.050	0.029	<0.012	<0.50
	EM10	5/1/2018	N	440-210284-14	Qal	9.5 - 19.5	33	<0.0050	940	8.1	<0.050	0.0031 J	<0.050	0.030	<0.012	<5.0
	EM11	7/10/2018	N	440-215437-1	Qal	9.5 - 19.5	31	<0.0050	750	8.0	<0.050	<0.0025	<0.050	0.016	0.034	<5.0
	EM13	8/15/2018	N	440-218208-2	Qal	9.5 - 19.5	36	<0.0050	810	8.5	<0.050	0.013	<0.050	0.021	<0.012	<0.50
	EM14	9/11/2018	N	440-219886-9	Qal	9.5 - 19.5	34	<0.0050	740	8.0	<0.050	<0.0025	<0.050	0.019	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-18	Qal	9.5 - 19.5	35	<0.0050	850	8.4	<0.050	<0.0025	<0.050	0.020	<0.012	<2.5
	EM19	5/22/2019	N	440-242201-4	Qal	9.5 - 19.5	33	<0.0050	720	7.2	<0.050	0.0041 J	<0.050	0.032	<0.012	<5.0
	EM22	11/6/2019	N	440-254027-1	Qal	9.5 - 19.5	32	<0.0050	650	6.4	<0.050	<0.0025	<0.050	0.024	<0.012	<0.50
	EM26	4/28/2020	N	440-265289-2	Qal	9.5 - 19.5	34	<0.0050	770	7.9	<0.050	<0.0025	<0.050	0.021	<0.012	<0.50
	EM29	10/15/2020	N	550-151259-7	Qal	9.5 - 19.5	29	<0.0050	620	6.3	<0.050	<0.0025	<0.050	0.021	<0.012	<2.5
	EM33	6/2/2021	N	550-164872-21/22	Qal	9.5 - 19.5	35	<0.00049	680	7.5	<0.0034	<0.00028	0.0042 J	0.031	0.0058 J	0.20 J
	EM36	11/30/2021	N	550-174968-5/6	Qal	9.5 - 19.5	35	<0.00049	670	9.3	<0.0034	<0.00028	0.0035 J	0.026	<0.0023	0.24 J
PC-97	BL02	7/13/2017	N	440-188325-8	Qal	23.0 - 33.0	34	<0.0050	410	4.8	<0.050	0.0031 J	<0.050	0.048	<0.012	<0.50
	EM04	10/11/2017	FD	440-194242-6	Qal	23.0 - 33.0	37	<0.0050	460	5.9	<0.050	<0.0025	<0.050	0.037	<0.012	<0.50
	EM04	10/11/2017	N	440-194242-5	Qal	23.0 - 33.0	33	<0.0050	410	5.2	<0.050	<0.0025	<0.050	0.034	<0.012	<0.50
	EM06	11/16/2017	N	440-196786-13	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-12	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-11	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-3	Qal	23.0 - 33.0	37	<0.0050	370	3.8	<0.050	<0.0025	<0.050	0.040	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-13	Qal	23.0 - 33.0	39	<0.0050	380	4.1	<0.050	<0.0025	<0.050	0.040	<0.012	<2.5
	EM19	5/22/2019	N	440-242201-1	Qal	23.0 - 33.0	35	<0.0050	390	4.4	<0.050	<0.0025	<0.050	0.045	<0.012	<5.0
	EM22	11/6/2019	N	440-254027-7	Qal	23.0 - 33.0	37	<0.0050	360	3.7	<0.050	<0.0025	<0.050	0.040	<0.012	<0.50
	EM26	4/30/2020	N	440-265383-7	Qal	23.0 - 33.0	37	<0.0050	350	3.1	<0.050	<0.0025	<0.050	0.044	<0.012	<2.5
	EM29	10/15/2020	N	550-151259-9	Qal	23.0 - 33.0	32	<0.0050	340	3.4	<0.050	<0.0025	<0.050	0.036	<0.012	<2.5
SWFTS-IW01A	BL02	7/11/2017	N	440-188133-3	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW01B	BL02	7/11/2017	N	440-188133-13	Qal	26.9 - 36.7	--	--	--	--	--	--	--	--	--	--
SWFTS-IW02A	BL02	7/11/2017	N	440-188133-14	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW02B	BL02	7/11/2017	N	440-188133-2	Qal	26.3 - 36.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW03	BL02	7/11/2017	FD	440-188133-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW04	BL02	7/11/2017	FD	440-188133-12	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-11	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW05	BL02	7/11/2017	N	440-188133-16	Qal	14.6 - 34.4	--	--	--	--	--	--	--	--	--	--
SWFTS-IW06A	BL02	7/11/2017	N	440-188133-10	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW06B	BL02	7/11/2017	N	440-188133-6	Qal	28.8 - 33.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW07	BL02	7/11/2017	N	440-188133-7	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW08	BL02	7/12/2017	N	440-188247-7	Qal	17.5 - 37.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW09	BL02	7/12/2017	FD	440-188244-3	Qal	26.6 - 46.4	--	--	--	--	--	--	--	--	--	--

Table E.2
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Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-IW09	BL02	7/12/2017	N	440-188247-8	Qal	26.6 - 46.4	--	--	--	--	--	--	--	--	--	--
SWFTS-IW10	BL02	7/12/2017	N	440-188247-9	Qal	26.8 - 46.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW11	BL02	7/12/2017	N	440-188247-3	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW12	BL02	7/12/2017	N	440-188247-4	Qal	14.3 - 39.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13A	BL02	7/11/2017	N	440-188133-1	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13B	BL02	7/11/2017	N	440-188133-15	Qal	27.8 - 37.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW14	BL02	7/12/2017	N	440-188247-1	Qal	16.2 - 36.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW15	BL02	7/12/2017	N	440-188247-2	Qal	16.4 - 36.2	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16A	BL02	7/11/2017	N	440-188133-9	Qal	17.3 - 27.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16B	BL02	7/11/2017	N	440-188133-8	Qal	26.5 - 36.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW17	BL02	7/13/2017	N	440-188325-6	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW18	BL02	7/13/2017	N	440-188325-4	Qal	18.1 - 38.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW19	BL02	7/13/2017	N	440-188325-5	Qal	24.3 - 44.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW20	BL02	7/12/2017	N	440-188247-10	Qal	30.8 - 50.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW01	BL01	3/29/2017	N	440-180937-6	Qal	24.2 - 38.9	35	<0.0050	1,100	10	<0.050	<0.0025	<0.050	0.038	<0.012	<0.50
	EM04	10/10/2017	N	440-194094-2	Qal	24.2 - 38.9	32	<0.0050	890	9.0	<0.050	<0.0025	<0.050	0.0098 J	<0.012	<0.50
	EM06	11/15/2017	N	440-196665-4	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-12	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-2	Qal	24.2 - 38.9	33	<0.0050	820	7.9	<0.050	<0.0025	<0.050	0.011	<0.012	<5.0
	EM14	9/10/2018	N	440-219797-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-12	Qal	24.2 - 38.9	37	<0.025	970	8.1	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/21/2019	N	440-242084-14	Qal	24.2 - 38.9	35	<0.0050	810	6.9	<0.050	<0.0025	<0.050	0.016	<0.012	<0.50
	EM22	11/5/2019	N	440-253918-3	Qal	24.2 - 38.9	34	<0.0050	760	5.6	<0.050	<0.0025	<0.050	0.010	<0.012	<0.50
	EM26	4/28/2020	N	440-265289-5	Qal	24.2 - 38.9	30	<0.0050	830	7.4	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM29	10/13/2020	N	440-273236-11	Qal	24.2 - 38.9	35	<0.0050	830	7.2	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM33	6/4/2021	N	550-164930-17/18	Qal	24.2 - 38.9	34	<0.00049	750	7.0	<0.0034	<0.00028	0.0032 J	0.014	0.0033 J	0.25 J
	EM36	11/30/2021	N	550-174968-19/20	Qal	24.2 - 38.9	38	<0.00049	760	9.4	<0.0034	<0.00028	0.0026 J	0.017	<0.0023	0.24 J
SWFTS-MW02	BL01	3/29/2017	N	440-180937-7	Qal	18.4 - 33.1	35	<0.0050	1,300	12	<0.050	<0.0025	<0.050	0.043	<0.012	<0.50
	EM04	10/12/2017	N	440-194204-6	Qal	18.4 - 33.1	34	<0.0050	1,000	11	<0.050	<0.0025	<0.050	0.021	<0.012	0.51 J
	EM06	11/14/2017	N	440-196558-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-13	Qal	18.4 - 33.1	36	<0.0050	900	8.7	<0.050	<0.0025	<0.050	0.025	<0.012	<5.0
	EM14	9/10/2018	N	440-219797-2	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-15	Qal	18.4 - 33.1	41	<0.025	1,100	9.3	<0.25	0.015 J	<0.25	0.031 J	<0.060	<2.5
	EM19	5/21/2019	N	440-242084-8	Qal	18.4 - 33.1	37	<0.0050	1,100	9.2	<0.050	<0.0025	<0.050	0.033	<0.012	<0.50
	EM22	11/7/2019	N	440-254148-7	Qal	18.4 - 33.1	29	<0.0050	940	7.9	<0.050	<0.0025	<0.050	0.011	<0.012	<0.50
	EM26	4/30/2020	N	440-265382-3	Qal	18.4 - 33.1	28	<0.0050	910	7.4	<0.050	<0.0025	<0.050	0.017	<0.012	<2.5
	EM29	10/15/2020	N	550-151259-8	Qal	18.4 - 33.1	28	<0.0050	860	6.9	<0.050	<0.0025	<0.050	0.022	<0.012	<2.5
	EM33	6/3/2021	N	550-164869-21/22	Qal	18.4 - 33.1	35	<0.00049	1,000	8.0	<0.0034	0.00049 J	0.0061 J	0.032	0.0068 J	0.57 J
	EM36	11/30/2021	N	550-174968-7/8	Qal	18.4 - 33.1	37	<0.00049	980	7.8	<0.0034	<0.00028	0.0045 J	0.030	<0.0023	0.26 J

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW03	BL01	3/30/2017	FD	440-181045-6	Qal	27.2 - 42.1	36	<0.0050	840	11	<0.050	0.015 J	<0.050	0.033	<0.012	<0.50
	BL01	3/30/2017	N	440-181045-5	Qal	27.2 - 42.1	35	<0.0050	900	11	<0.050	<0.0025 UJ	<0.050	0.035	<0.012	<0.50
	EM04	10/12/2017	N	440-194204-8	Qal	27.2 - 42.1	33	<0.0050	760	11	<0.050	<0.0025	<0.050	<0.0050	<0.012	0.70 J
	EM06	11/16/2017	N	440-196786-16	Qal	27.2 - 42.1	29	<0.0050	730	9.9	<0.050	<0.0025	<0.050	0.021	<0.012	<2.5
	EM07	12/12/2017	N	440-198371-13	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-5	Qal	27.2 - 42.1	36 J+	<0.0050	780	9.7	<0.050	0.014 J+	<0.050	0.029	<0.012	<1.0
	EM09	3/27/2018	N	440-207268-15	Qal	27.2 - 42.1	31	<0.0050	670	8.5	<0.050	<0.0025	<0.050	0.012	<0.012	0.58 J
	EM10	5/2/2018	N	440-210430-6	Qal	27.2 - 42.1	36	<0.0050	880	11	<0.050	0.0046 J	<0.050	0.028	<0.012	<0.50
	EM11	7/10/2018	N	440-215437-5	Qal	27.2 - 42.1	33	<0.0050	670	9.6	<0.050	<0.0025	<0.050	0.0089 J	<0.012	6.1 J
	EM13	8/15/2018	N	440-218208-4	Qal	27.2 - 42.1	35	<0.0050	730	9.8	<0.050	0.0068	<0.050	0.0074 J	<0.012	<0.50
	EM14	9/11/2018	N	440-219886-11	Qal	27.2 - 42.1	35	<0.0050	680	9.8	<0.050	<0.0025	<0.050	0.0056 J	<0.012	<5.0
	EM15	10/9/2018	N	440-221855-13	Qal	27.2 - 42.1	37	<0.025	790	10	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/21/2019	N	440-242084-12	Qal	27.2 - 42.1	37	<0.0050	740	10	<0.050	<0.0025	<0.050	0.030	<0.012	<0.50
	EM22	11/4/2019	N	440-253773-2	Qal	27.2 - 42.1	34	<0.0050	700	8.7	<0.050	<0.0025	<0.050	0.015	<0.012	<0.50
	EM26	4/28/2020	N	440-265289-1	Qal	27.2 - 42.1	32	<0.0050	650	8.3	<0.050	<0.0025	<0.050	0.014	<0.012	<0.50
	EM29	10/13/2020	N	440-273236-10	Qal	27.2 - 42.1	36	<0.0050	690	9.4	<0.050	<0.0025	<0.050	0.012	<0.012	<2.5
	EM33	6/3/2021	N	550-164869-15/16	Qal	27.2 - 42.1	38	<0.00049	700	9.9	<0.0034	<0.00028	0.0071 J	0.029	0.0034 J	0.55 J
	EM36	12/1/2021	N	550-175045-1/2	Qal	27.2 - 42.1	38	<0.00049	670	9.9	<0.0034	<0.00028	0.0070 J	0.026	<0.0023	0.23 J
SWFTS-MW04	BL01	3/31/2017	N	440-181122-1	Qal	25.8 - 40.4	35	<0.0050	1,100	8.1	<0.050	<0.0025	<0.050	0.050	<0.012	<2.5
	EM04	10/11/2017	N	440-194242-7	Qal	25.8 - 40.4	34	<0.0050	520	3.7	<0.050	<0.0025	<0.050	0.050	<0.012	<0.50
	EM06	11/15/2017	N	440-196659-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-12	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-4	Qal	25.8 - 40.4	33	<0.0050	580	4.3	<0.050	<0.0025	<0.050	0.041	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-9	Qal	25.8 - 40.4	39	<0.0050	620	4.3	<0.050	<0.0025	<0.050	0.045	<0.012	<2.5
	EM19	5/21/2019	N	440-242084-11	Qal	25.8 - 40.4	38	<0.0050	490	3.8	<0.050	<0.0025	<0.050	0.054	<0.012	<0.50
	EM22	11/7/2019	N	440-254150-6	Qal	25.8 - 40.4	32	<0.0050	410	3.8	<0.050	<0.0025	<0.050	0.040	0.016 J	<0.50
	EM26	5/1/2020	N	440-265412-1	Qal	25.8 - 40.4	37	<0.0050	680	6.2	<0.050	<0.0025	<0.050	0.035	<0.012	<2.5
	EM29	10/14/2020	N	440-273303-12	Qal	25.8 - 40.4	35	<0.0050	570	4.4	<0.050	<0.0025	<0.050	0.038	<0.012	<1.0
	EM33	6/3/2021	N	550-164869-23/24	Qal	25.8 - 40.4	36	<0.00049	560	4.7	<0.0034	<0.00028	0.0058 J	0.045	0.0037 J	0.41 J
	EM36	12/2/2021	N	550-175153-3/4	Qal	25.8 - 40.4	36	<0.00049	590	5.0	<0.0034	<0.00028	0.0089 J	0.046	0.0045 J	0.20 J
SWFTS-MW05A	BL01	3/30/2017	N	440-181045-7	Qal	19.3 - 29.3	35	<0.025	840	18	<0.25	<0.013	<0.25	0.030 J	<0.060	<0.50
	EM04	10/10/2017	N	440-193989-2	Qal	19.3 - 29.3	33	<0.0050	730	15	<0.050	<0.0025	<0.050	<0.0050	0.017 J	<2.5
	EM06	11/14/2017	N	440-196558-1	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-3	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-5	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-8	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-14	Qal	19.3 - 29.3	33	<0.0050	700	14	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM15	10/10/2018	N	440-221975-14	Qal	19.3 - 29.3	40	<0.025	790	15	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/21/2019	N	440-242084-17	Qal	19.3 - 29.3	38	0.0050 J	740	14	<0.050	<0.0025	<0.050	0.022	<0.012	<0.50
	EM22	11/5/2019	N	440-253918-1	Qal	19.3 - 29.3	35	<0.0050	650	13	<0.050	<0.0025	<0.050	<0.0050	<0.012	2.4 J+
	EM26	4/29/2020	N	440-265346-2	Qal	19.3 - 29.3	34	<0.0050	730	15	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM29	10/14/2020	N	440-273303-9	Qal	19.3 - 29.3	40	<0.0050	830	15	<0.050	<0.0025	<0.050	0.016	0.019 J	<1.0

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW05A	EM33	6/3/2021	N	550-164869-17/18	Qal	19.3 - 29.3	38	<0.00049	750	14	<0.0034	0.0042 J	0.0067 J	0.025	0.0072 J	0.70 J
	EM36	11/29/2021	N	550-174897-3/4	Qal	19.3 - 29.3	41	<0.00049	790	15	<0.0034	<0.00028	0.0078 J	0.022	0.010 J	0.31 J
SWFTS-MW05B	BL01	3/30/2017	N	440-181045-8	Qal	32.3 - 42.0	37	<0.0050	870	12	<0.050	0.0067	<0.050	0.037	<0.012	<0.50
	EM04	10/10/2017	N	440-193989-1	Qal	32.3 - 42.0	38	<0.0050	700	11	<0.050	<0.0025	<0.050	<0.0050	0.043	<2.5
	EM06	11/14/2017	N	440-196558-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-4	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-6	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215585-10	Qal	32.3 - 42.0	47	<0.0050	690	10	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM15	10/9/2018	N	440-221855-14	Qal	32.3 - 42.0	38	<0.025	700	11	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/21/2019	N	440-242084-18	Qal	32.3 - 42.0	37	<0.0050	680	9.9	<0.050	0.0063	<0.050	0.015	<0.012	<0.50
	EM22	11/5/2019	N	440-253918-2	Qal	32.3 - 42.0	38	<0.0050	640	10	<0.050	0.0030 J	<0.050	<0.0050	<0.012	<0.50
	EM26	4/29/2020	N	440-265346-1	Qal	32.3 - 42.0	33	<0.0050	720	12	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM29	10/14/2020	N	440-273303-8	Qal	32.3 - 42.0	36	<0.0050	660	9.7	<0.050	<0.0025	<0.050	<0.0050	<0.012	<1.0
	EM33	6/3/2021	N	550-164869-19/20	Qal	32.3 - 42.0	45	<0.00049	730	11	<0.0034	<0.00028	0.014 J	0.0028 J	0.0028 J	0.71 J
	EM36	11/30/2021	N	550-174968-15/16	Qal	32.3 - 42.0	40	<0.00049	660	12	<0.0034	<0.00028	0.0084 J	0.0064	<0.0023	0.24 J
SWFTS-MW06A	BL01	3/30/2017	N	440-181045-1	Qal	11.8 - 21.4	36	<0.0050	410	3.4	<0.050	<0.0025	<0.050	0.044	<0.012	<0.50
	EM04	10/11/2017	N	440-194090-4	Qal	11.8 - 21.4	37	<0.0050	430	5.3	<0.050	<0.0025	<0.050	0.045	<0.012	<0.50
	EM06	11/16/2017	N	440-196786-19	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-3	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210284-10	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-9	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	FD	440-215585-3	Qal	11.8 - 21.4	38	<0.0050	390	3.9	<0.050	<0.0025	<0.050	0.050	<0.012	<5.0
	EM11	7/11/2018	N	440-215585-2	Qal	11.8 - 21.4	33	<0.0050	350	3.5	<0.050	<0.0025	<0.050	0.045	<0.012	<5.0
	EM15	10/10/2018	FD	440-221975-10	Qal	11.8 - 21.4	36	<0.0050	350	3.9 J+	<0.050	<0.0025	<0.050	0.030	<0.012	<2.5
	EM15	10/10/2018	N	440-221975-8	Qal	11.8 - 21.4	40	<0.0050	390	4.4 J+	<0.050	<0.0025	<0.050	0.037	<0.012	<2.5
	EM19	5/20/2019	FD	440-242015-2	Qal	11.8 - 21.4	35	<0.0050	360	3.6	<0.050	<0.0025	<0.050	0.045	<0.012	<0.50
	EM19	5/20/2019	N	440-242015-1	Qal	11.8 - 21.4	34	<0.0050	380	4.0	<0.050	<0.0025	<0.050	0.042	<0.012	<0.50
	EM22	11/6/2019	FD	440-254027-5	Qal	11.8 - 21.4	39	<0.0050	410	4.7	<0.050	0.0067	<0.050	0.047	<0.012	<0.50
	EM22	11/6/2019	N	440-254027-4	Qal	11.8 - 21.4	27	<0.0050	400	4.7	<0.050	<0.0025	<0.050	0.045	<0.012	<0.50
	EM26	4/29/2020	FD	440-265346-6	Qal	11.8 - 21.4	33	<0.0050	320	2.9	<0.050	<0.0025	<0.050	0.046	<0.012	<0.50
	EM26	4/29/2020	N	440-265346-5	Qal	11.8 - 21.4	35	<0.0050	340	3.1	<0.050	<0.0025	<0.050	0.048	<0.012	<0.50
	EM29	10/13/2020	FD	440-273236-8	Qal	11.8 - 21.4	41	<0.0050	410	4.3	<0.050	<0.0025	<0.050	0.048	<0.012	<1.0
	EM29	10/13/2020	N	440-273236-7	Qal	11.8 - 21.4	40	<0.0050	400	4.2	<0.050	<0.0025	<0.050	0.047	<0.012	<1.0
	EM33	6/4/2021	FD	550-164930-21/22	Qal	11.8 - 21.4	40	<0.00049	430	4.4	<0.0034	0.00043 J	0.0089 J	0.052	0.0091 J	0.15 J
	EM33	6/4/2021	N	550-164930-19/20	Qal	11.8 - 21.4	38	<0.00049	420	4.3	<0.0034	<0.00028	0.0064 J	0.051	0.010 J	0.15 J
	EM36	12/1/2021	FD	550-175045-10/9	Qal	11.8 - 21.4	38	<0.00049	350	3.5	<0.0034	<0.00028	0.0086 J	0.051	<0.0023	0.19 J
	EM36	12/1/2021	N	550-175045-7/8	Qal	11.8 - 21.4	39	<0.00049	360	3.6	<0.0034	<0.00028	0.0071 J	0.051	0.0042 J	0.21 J
SWFTS-MW06B	BL01	3/30/2017	N	440-181045-2	Qal	25.9 - 35.5	37	<0.0050	390	4.1	<0.050	<0.0025	<0.050	0.047	<0.012	<0.50
	EM04	10/11/2017	N	440-194090-5	Qal	25.9 - 35.5	35	<0.0050	400	4.5	<0.050	<0.0025	<0.050	0.043	<0.012	<0.50
	EM06	11/16/2017	N	440-196786-20	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW06B	EM09	3/28/2018	N	440-207497-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-8	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-4	Qal	25.9 - 35.5	36	<0.0050	370	3.7	<0.050	<0.0025	<0.050	0.048	<0.012	<5.0
	EM15	10/10/2018	N	440-221975-9	Qal	25.9 - 35.5	39	<0.0050	390	4.3	<0.050	<0.0025	<0.050	0.046	<0.012	<2.5
	EM19	5/21/2019	N	440-242084-5	Qal	25.9 - 35.5	39	<0.0050	390	4.2	<0.050	<0.0025	<0.050	0.057	<0.012	<0.50
	EM22	11/6/2019	N	440-254027-6	Qal	25.9 - 35.5	36	<0.0050	410	5.0	<0.050	<0.0025	<0.050	0.041	<0.012	<0.50
	EM26	4/29/2020	N	440-265346-4	Qal	25.9 - 35.5	36	<0.0050	360	3.4	<0.050	<0.0025	<0.050	0.051	<0.012	<0.50
	EM29	10/13/2020	N	440-273236-6	Qal	25.9 - 35.5	38	<0.0050	390	4.0	<0.050	<0.0025	<0.050	0.047	<0.012	<1.0
	EM33	6/4/2021	N	550-164930-23/24	Qal	25.9 - 35.5	38	<0.00049	410	4.2	<0.0034	<0.00028	0.0073 J	0.054	0.0049 J	0.17 J
	EM36	12/1/2021	N	550-175045-11/12	Qal	25.9 - 35.5	38	<0.00049	360	3.7	<0.0034	<0.00028	0.0083 J	0.051	0.0050 J	0.20 J
SWFTS-MW07A	BL01	3/30/2017	N	440-181045-3	Qal	15.0 - 29.5	36	<0.0050	1,000	9.3	<0.050	<0.0025	<0.050	0.027	<0.012	<0.50
	EM04	10/11/2017	N	440-194242-3	Qal	15.0 - 29.5	36	<0.0050	870	9.4	<0.050	<0.0025	<0.050	0.015	<0.012	<0.50
	EM06	11/15/2017	N	440-196659-7	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-2	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-7	Qal	15.0 - 29.5	36	<0.0050	820	7.5	<0.050	<0.0025	<0.050	0.020	<0.012	<5.0
	EM15	10/10/2018	N	440-221975-11	Qal	15.0 - 29.5	37	<0.025	840	7.0	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/22/2019	N	440-242200-5	Qal	15.0 - 29.5	40	<0.0050	670	5.6	<0.050	<0.0025	<0.050	0.044	<0.012	<5.0
	EM22	11/7/2019	N	440-254148-4	Qal	15.0 - 29.5	34	<0.0050	680	5.1	<0.050	<0.0025	<0.050	0.027	<0.012	<0.50
	EM26	4/30/2020	N	440-265382-5	Qal	15.0 - 29.5	35	<0.0050	740	6.2	<0.050	<0.0025	<0.050	0.024	<0.012	<2.5
	EM29	10/16/2020	N	440-273433-1	Qal	15.0 - 29.5	36	<0.0050	730	6.1	<0.050	<0.0025	<0.050	0.030	<0.012	0.52 J
	EM33	6/4/2021	N	550-164930-25/26	Qal	15.0 - 29.5	40	<0.00049	710	5.9	<0.0034	<0.00028	0.0022 J	0.035	0.010 J	0.15 J
	EM36	12/3/2021	N	550-175222-3/4	Qal	15.0 - 29.5	39	<0.00049	700	7.4	<0.0034	<0.00028	0.0030 J	0.032	0.020 J	0.14 J
SWFTS-MW07B	BL01	3/30/2017	N	440-181045-4	Qal	33.8 - 38.3	38	<0.0050	1,000	9.0	<0.050	<0.0025	<0.050	0.041	<0.012	<0.50
	EM04	10/11/2017	N	440-194242-4	Qal	33.8 - 38.3	38	<0.0050	810	7.4	<0.050	<0.0025	<0.050	0.030	<0.012	<0.50
	EM06	11/15/2017	N	440-196659-8	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-2	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-10	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-1	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-8	Qal	33.8 - 38.3	35	<0.0050	750	6.7	<0.050	<0.0025	<0.050	0.031	<0.012	<5.0
	EM15	10/10/2018	N	440-221975-12	Qal	33.8 - 38.3	40	<0.025	740	5.7	<0.25	<0.013	<0.25	0.040 J	<0.060	<2.5
	EM19	5/22/2019	N	440-242200-6	Qal	33.8 - 38.3	36	<0.0050	760	5.7	<0.050	<0.0025	<0.050	0.034	<0.012	<5.0
	EM22	11/7/2019	N	440-254148-5	Qal	33.8 - 38.3	35	<0.0050	580	4.7	<0.050	<0.0025	<0.050	0.035	0.013 J	<0.50
	EM26	4/30/2020	N	440-265382-4	Qal	33.8 - 38.3	37	<0.0050	710	7.8	<0.050	<0.0025	<0.050	0.028	<0.012	<2.5
	EM29	10/16/2020	N	440-273433-2	Qal	33.8 - 38.3	39	<0.0050	580	5.2	<0.050	<0.0050	<0.050	0.040	<0.012	<0.50
	EM33	6/4/2021	N	550-164930-27/28	Qal	33.8 - 38.3	41	<0.00049	650	7.3	<0.0034	<0.00028	0.0032 J	0.039	0.0072 J	0.17 J
	EM36	12/3/2021	N	550-175222-5/6	Qal	33.8 - 38.3	43	<0.00049	700	11	<0.0034	<0.00028	0.0051 J	0.035	0.0071 J	0.15 J
SWFTS-MW08A	BL01	3/30/2017	N	440-181045-9	Qal	20.2 - 34.8	36	<0.0050	1,000	9.6	<0.050	<0.0025	<0.050	0.040	<0.012	<0.50
	EM04	10/10/2017	N	440-194094-4	Qal	20.2 - 34.8	36	<0.0050	800	8.1	<0.050	<0.0025	<0.050	0.023	<0.012	<2.5
	EM06	11/15/2017	N	440-196659-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-8	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW08A	EM10	5/3/2018	N	440-210534-5	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-14	Qal	20.2 - 34.8	35	<0.0050	700	7.2	<0.050	<0.0025	<0.050	0.024	<0.012	<5.0
	EM15	10/10/2018	N	440-221975-13	Qal	20.2 - 34.8	37	<0.025	730	6.8	<0.25	<0.013	<0.25	0.032 J	<0.060	<2.5
	EM19	5/22/2019	N	440-242198-4	Qal	20.2 - 34.8	35	<0.0050	630	6.5	<0.050	<0.0025	<0.050	0.038	<0.012	<5.0
	EM22	11/7/2019	N	440-254148-6	Qal	20.2 - 34.8	32	<0.0050	580	6.0	<0.050	<0.0025	<0.050	0.026	<0.012	<0.50
	EM26	4/29/2020	N	440-265346-3	Qal	20.2 - 34.8	34	<0.0050	700	8.2	<0.050	<0.0025	<0.050	0.022	<0.012	<2.5
	EM29	10/16/2020	N	440-273433-4	Qal	20.2 - 34.8	37	<0.0050	600	6.4	<0.050	<0.0025	<0.050	0.034	<0.012	<0.50
	EM33	6/4/2021	N	550-164930-29/30	Qal	20.2 - 34.8	39	<0.00049	650	8.4	<0.0034	<0.00028	<0.0021	0.035	0.0033 J	0.096 J
	EM36	12/2/2021	N	550-175153-23/24	Qal	20.2 - 34.8	38	<0.00049	670	10	<0.0034	<0.00028	0.0033 J	0.033	0.0084 J	0.13 J
SWFTS-MW08C	BL01	3/28/2017	N	440-180820-3	UMCf	49.9 - 69.5	31	<0.0050	920	15	<0.050	<0.0025	<0.050	0.028	<0.012	0.56 J
SWFTS-MW09A	BL01	3/29/2017	N	440-180937-3	Qal	19.3 - 28.9	34	<0.0050	890	8.7	<0.050	<0.0025	<0.050	0.036	<0.012	<0.50
	EM04	10/11/2017	N	440-194094-7	Qal	19.3 - 28.9	28	<0.0050	870	9.2	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM06	11/16/2017	N	440-196786-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-6	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-13	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-10	Qal	19.3 - 28.9	30	<0.0050	720	7.6	<0.050	<0.0025	<0.050	0.014	<0.012	<5.0
	EM15	10/9/2018	N	440-221855-7	Qal	19.3 - 28.9	38	<0.025	830	8.0	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/22/2019	N	440-242200-1	Qal	19.3 - 28.9	30	<0.0050	680	7.1	<0.050	<0.0025	<0.050	0.019	<0.012	<5.0
	EM22	11/5/2019	N	440-253891-1	Qal	19.3 - 28.9	32	<0.0050	700	6.4	<0.050	<0.0025	<0.050	0.019	<0.012	1.1 J
	EM26	4/28/2020	N	440-265289-4	Qal	19.3 - 28.9	32	<0.0050	770	8.1	<0.050	<0.0025	<0.050	0.015	<0.012	<0.50
	EM29	10/13/2020	N	440-273236-3	Qal	19.3 - 28.9	33	<0.0050	700	7.4	<0.050	<0.0025	<0.050	0.014	<0.012	<2.5
	EM33	6/1/2021	N	550-164699-1/2	Qal	19.3 - 28.9	34	<0.00049	640	7.7	<0.0034	<0.00028	0.0032 J	0.026	0.0079 J	0.22 J
	EM36	12/2/2021	N	550-175153-10/9	Qal	19.3 - 28.9	36	<0.00049	680	9.2	<0.0034	<0.00028	0.0047 J	0.026	0.0075 J	0.23 J
SWFTS-MW09B	BL01	3/29/2017	FD	440-180937-5	Qal	34.4 - 39.0	35	<0.0050	960	9.9	<0.050	<0.0025	<0.050	0.034	<0.012	<0.50
	BL01	3/29/2017	N	440-180937-4	Qal	34.4 - 39.0	36	<0.0050	1,100	9.6	<0.050	0.0034 J	<0.050	0.035	<0.012	<0.50
	EM04	10/11/2017	N	440-194094-5	Qal	34.4 - 39.0	30	<0.0050	860	8.8	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM06	11/16/2017	N	440-196786-15	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-7	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-13	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-6	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-11	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-9	Qal	34.4 - 39.0	33	<0.0050	780	7.7	<0.050	<0.0025	<0.050	0.012	<0.012	<5.0
	EM15	10/9/2018	N	440-221855-8	Qal	34.4 - 39.0	37	<0.025	910	8.0	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/22/2019	N	440-242200-2	Qal	34.4 - 39.0	35	<0.0050	760	6.8	<0.050	<0.0025	<0.050	0.030	<0.012	<5.0
	EM22	11/5/2019	N	440-253891-3	Qal	34.4 - 39.0	33	<0.0050	740	5.8	<0.050	<0.0025	<0.050	0.021	<0.012	<0.50
	EM26	4/28/2020	N	440-265289-3	Qal	34.4 - 39.0	34	<0.0050	770	7.6	<0.050	<0.0025	<0.050	0.019	<0.012	<0.50
	EM29	10/13/2020	N	440-273236-4	Qal	34.4 - 39.0	37	<0.0050	750	7.2	<0.050	<0.0025	<0.050	0.024	<0.012	<2.5
	EM33	6/2/2021	N	550-164872-1/2	Qal	34.4 - 39.0	37	<0.00049	700	7.6	<0.0034	0.00051 J	0.0060 J	0.038	0.0055 J	0.33 J
	EM36	12/2/2021	N	550-175153-11/12	Qal	34.4 - 39.0	39	<0.00049	730	9.8	<0.0034	<0.00028	0.0058 J	0.035	0.0073 J	0.23 J
SWFTS-MW10A	BL01	3/31/2017	N	440-181122-2	Qal	20.4 - 35.0	35	<0.0050	950	8.4	<0.050	0.0077	<0.050	0.044	<0.012	<2.5
	EM04	10/12/2017	N	440-194242-10	Qal	20.4 - 35.0	37	<0.0050	590	5.1	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM06	11/16/2017	FD	440-196786-6	Qal	20.4 - 35.0	37	<0.0050	700	4.7	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM06	11/16/2017	N	440-196786-5	Qal	20.4 - 35.0	36	<0.0050	660	4.7	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM07	12/12/2017	FD	440-198371-11	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW10A	EM07	12/12/2017	N	440-198371-10	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-5	Qal	20.4 - 35.0	41	<0.0050	790	7.2	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM08	2/20/2018	N	440-203841-4	Qal	20.4 - 35.0	41	<0.0050	800	7.3	<0.050	<0.0025	<0.050	<0.0050	<0.012	1.0 J
	EM09	3/26/2018	FD	440-207137-8	Qal	20.4 - 35.0	35	<0.0050	820	7.7	<0.050	<0.0025	<0.050	<0.0050	<0.012	0.50 J
	EM09	3/26/2018	N	440-207137-7	Qal	20.4 - 35.0	37	<0.0050	850	8.3	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM10	5/1/2018	N	440-210284-1	Qal	20.4 - 35.0	40	<0.0050	1,100	9.1	<0.050	<0.0025	<0.050	0.0050 J	<0.012	<5.0
	EM11	7/11/2018	N	440-215585-9	Qal	20.4 - 35.0	32	<0.0050	820	7.9	<0.050	<0.0025	<0.050	<0.0050	<0.012	6.9 J
	EM13	8/14/2018	N	440-218109-10	Qal	20.4 - 35.0	37	<0.0050	790	7.2	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM14	9/10/2018	N	440-219797-4	Qal	20.4 - 35.0	37 J+	<0.0050	710	6.9	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM15	10/9/2018	N	440-221855-9	Qal	20.4 - 35.0	38	<0.025	860	7.6	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/21/2019	N	440-242084-2	Qal	20.4 - 35.0	37	0.0060 J	760	6.3	<0.050	<0.0025	<0.050	0.013	<0.012	0.61 J
	EM22	11/6/2019	N	440-254051-1	Qal	20.4 - 35.0	35	<0.0050	740	6.7	<0.050	<0.0025	<0.050	<0.0050	<0.012	1.1 J
	EM26	4/29/2020	N	440-265342-6	Qal	20.4 - 35.0	34	<0.0050	930	7.8	<0.050	<0.0025	<0.050	0.012	<0.012	1.3 J
	EM29	10/14/2020	N	440-273303-4	Qal	20.4 - 35.0	36	<0.0050	950	7.4	<0.050	<0.0025	<0.050	0.020	<0.012	2.6 J+
	EM33	6/4/2021	N	550-164930-13/14	Qal	20.4 - 35.0	35	<0.00049	880	7.3	<0.0034	0.0040 J	0.0058 J	0.043	0.0069 J	0.40 J
	EM36	11/30/2021	N	550-174968-17/18	Qal	20.4 - 35.0	40	<0.00049	820	7.6	<0.0034	<0.00028	0.010 J	0.029	0.0036 J	0.36 J
SWFTS-MW10C	BL01	3/28/2017	N	440-180820-4	UMCf	43.5 - 63.1	27	<0.0050	950	13	<0.050	<0.0025	<0.050	0.018	<0.012	<0.50
SWFTS-MW11	BL02	7/12/2017	N	440-188244-7	Qal	14.8 - 39.6	35	<0.0050	1,000 J	9.4 J	<0.050	<0.0025	<0.050	0.025	<0.012	<0.50
	EM04	10/11/2017	N	440-194094-8	Qal	14.8 - 39.6	37	<0.0050	880	9.5	<0.050	<0.0025	<0.050	0.016	<0.012	<2.5
	EM06	11/16/2017	N	440-196786-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-13	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	FD	440-203937-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	FD	440-207497-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210367-1	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-18	Qal	14.8 - 39.6	38	<0.0050	790	8.3	<0.050	<0.0025	<0.050	0.023	<0.012	<5.0
	EM11	7/12/2018	N	440-215717-17	Qal	14.8 - 39.6	38	<0.0050	790	8.3	<0.050	<0.0025	<0.050	0.024	<0.012	<5.0
	EM15	10/11/2018	FD	440-222092-11	Qal	14.8 - 39.6	41	<0.0050	920	8.8	<0.050	<0.0025	<0.050	0.026	<0.012	<2.5
	EM15	10/11/2018	N	440-222092-10	Qal	14.8 - 39.6	46	<0.0050	920	8.8	<0.050	<0.0025	<0.050	0.030	<0.012	<2.5
	EM19	5/22/2019	FD	440-242200-4	Qal	14.8 - 39.6	39	<0.0050	750	6.4	<0.050	<0.0025	<0.050	0.045	<0.012	<5.0
	EM19	5/22/2019	N	440-242200-3	Qal	14.8 - 39.6	39	<0.0050	780	6.5	<0.050	<0.0025	<0.050	0.046	<0.012	<5.0
	EM22	11/7/2019	FD	440-254150-4	Qal	14.8 - 39.6	35	<0.0050	700	5.6	<0.050	<0.0025	<0.050	0.036	<0.012	<0.50
	EM22	11/7/2019	N	440-254150-3	Qal	14.8 - 39.6	35	<0.0050	690	5.7	<0.050	<0.0025	<0.050	0.036	<0.012	<0.50
	EM26	4/30/2020	FD	440-265383-5	Qal	14.8 - 39.6	35	<0.0050	790	8.6	<0.050	<0.0025	<0.050	0.031	<0.012	<2.5
	EM26	4/30/2020	N	440-265383-4	Qal	14.8 - 39.6	35	<0.0050	800	8.7	<0.050	<0.0025	<0.050	0.031	<0.012	<2.5
	EM29	10/16/2020	FD	440-273433-8	Qal	14.8 - 39.6	38	<0.0050	780	7.9	<0.050	<0.0025	<0.050	0.043	0.014 J	<0.50
	EM29	10/16/2020	N	440-273433-7	Qal	14.8 - 39.6	38	<0.0050	780	7.8	<0.050	<0.0025	<0.050	0.042	0.015 J	<0.50
	EM33	6/4/2021	FD	550-164930-10/9	Qal	14.8 - 39.6	42	<0.00049	710	7.3	<0.0034	<0.00028	0.0032 J	0.047	0.0067 J	0.15 J
	EM33	6/4/2021	N	550-164930-7/8	Qal	14.8 - 39.6	40	<0.00049	710	7.5	<0.0034	<0.00028	0.0021 J	0.047	0.0067 J	0.15 J
	EM36	12/3/2021	FD	550-175222-10/9	Qal	14.8 - 39.6	43	<0.00049	760	10	<0.0034	<0.00028	0.0041 J	0.046	0.0065 J	0.17 J
	EM36	12/3/2021	N	550-175222-7/8	Qal	14.8 - 39.6	40	<0.00049	710	9.4	<0.0034	<0.00028	0.0026 J	0.044	0.0092 J	0.17 J
SWFTS-MW12	BL02	7/13/2017	N	440-188324-6	Qal	15.8 - 40.6	35	<0.0050	710	11	<0.050	<0.0025	<0.050	0.039	<0.012	<0.50
	EM04	10/11/2017	N	440-194090-1	Qal	15.8 - 40.6	33	<0.0050	700	12	<0.050	<0.0025	<0.050	0.015	<0.012	<0.50
	EM06	11/14/2017	N	440-196558-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW12	EM07	12/14/2017	N	440-198571-15	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-4	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-16	Qal	15.8 - 40.6	35	<0.0050	700	11	<0.050	<0.0025	<0.050	0.017	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-12	Qal	15.8 - 40.6	36	<0.0050	720	10	<0.050	<0.0025	<0.050	0.017	<0.012	<2.5
	EM19	5/22/2019	N	440-242198-7	Qal	15.8 - 40.6	35	0.0060 J	750	12	<0.050	<0.0025	<0.050	0.039	<0.012	<5.0
	EM22	11/7/2019	N	440-254150-2	Qal	15.8 - 40.6	47	<0.025	710	10	<0.25	<0.013	<0.25	<0.025	<0.060	<0.50
	EM22	11/26/2019	FD	440-255698-2	Qal	15.8 - 40.6	31 J-	<0.0050 UJ	610 J-	9.0 J-	<0.050 UJ	<0.0025 UJ	<0.050 UJ	<0.0050 UJ	0.019 J	<10 UJ
	EM22	11/26/2019	N	440-255698-1	Qal	15.8 - 40.6	34 J-	<0.0050 UJ	670 J-	10 J-	<0.050 UJ	<0.0025 UJ	<0.050 UJ	<0.0050 UJ	<0.012 UJ	<10 UJ
	EM26	4/30/2020	N	440-265383-3	Qal	15.8 - 40.6	39	<0.0050	560	7.3	<0.050	<0.0025	<0.050	0.024	<0.012	<2.5
	EM29	10/16/2020	N	440-273433-6	Qal	15.8 - 40.6	35	<0.0050	670	9.5	<0.050	<0.0025	<0.050	<0.0050	0.016 J	<0.50
	EM33	6/4/2021	N	550-164930-5/6	Qal	15.8 - 40.6	36	<0.00049	690	9.8	<0.0034	<0.00028	0.0056 J	0.013	0.0080 J	0.12 J
	EM36	12/2/2021	N	550-175153-19/20	Qal	15.8 - 40.6	35	<0.00049	680	10	<0.0034	<0.00028	0.0073 J	0.022	0.0057 J	0.19 J
SWFTS-MW13	BL02	7/12/2017	N	440-188244-6	Qal	17.8 - 47.6	24	<0.0050	850	12	<0.050	<0.0025	<0.050	0.016	<0.012	<0.50
	EM04	10/10/2017	N	440-193989-4	Qal	17.8 - 47.6	33	<0.0050	790	14	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM06	11/15/2017	N	440-196659-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-14	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-7	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-15	Qal	17.8 - 47.6	34	<0.0050	710	13	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-14	Qal	17.8 - 47.6	37	<0.0050	830	15	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM19	5/22/2019	N	440-242198-5	Qal	17.8 - 47.6	37	0.0058 J	750	13	<0.050	<0.0025	<0.050	0.025	<0.012	<5.0
	EM22	11/6/2019	N	440-254051-6	Qal	17.8 - 47.6	26	<0.025	770	13	<0.25	<0.013	<0.25	<0.025	<0.060	<0.50
	EM26	4/30/2020	N	440-265383-2	Qal	17.8 - 47.6	35	<0.0050	810	13	<0.050	<0.0025	<0.050	0.011	<0.060	<2.5
	EM29	10/15/2020	N	550-151259-6	Qal	17.8 - 47.6	31	<0.0050	750	12	<0.050	<0.0025	<0.050	0.019	0.018 J	<2.5
	EM33	6/4/2021	N	550-164930-3/4	Qal	17.8 - 47.6	35	<0.00049	820	14	<0.0034	<0.00028	0.0071 J	0.032	0.0024 J	0.13 J
	EM36	12/2/2021	N	550-175153-17/18	Qal	17.8 - 47.6	39	<0.00049	870	14	<0.0034	<0.00028	0.0075 J	0.032	<0.0023	0.21 J
SWFTS-MW14	BL02	7/12/2017	FD	440-188244-9	Qal	16.8 - 36.6	37	<0.0050	1,100	12	<0.050	<0.0025	<0.050	0.034	<0.012	<0.50
	BL02	7/12/2017	N	440-188244-8	Qal	16.8 - 36.6	36	<0.0050	1,100	11	<0.050	<0.0025	<0.050	0.033	<0.012	<0.50
	EM04	10/11/2017	N	440-194242-8	Qal	16.8 - 36.6	39	<0.0050	890	8.9	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM06	11/15/2017	N	440-196659-3	Qal	16.8 - 36.6	38	<0.0050	900	7.7	<0.050	0.014	<0.050	<0.0050	<0.012	<2.5
	EM07	12/12/2017	N	440-198371-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-11	Qal	16.8 - 36.6	52	<0.010	900	9.6	<0.10	<0.0050	<0.10	<0.010	<0.024	0.65 J
	EM09	3/26/2018	N	440-207137-9	Qal	16.8 - 36.6	46	<0.025	980	8.2	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5 UJ
	EM10	4/30/2018	N	440-210173-9	Qal	16.8 - 36.6	43	<0.025	1,000	7.4	<0.25	<0.013	<0.25	<0.025	<0.060	<5.0
	EM11	7/10/2018	N	440-215437-8	Qal	16.8 - 36.6	43	<0.0050	840	7.5	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM13	8/14/2018	N	440-218109-11	Qal	16.8 - 36.6	40	<0.0050	850	7.5	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM14	9/11/2018	N	440-219886-17	Qal	16.8 - 36.6	44	<0.0050	830	8.0	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM15	10/9/2018	N	440-221855-10	Qal	16.8 - 36.6	43	<0.025	980	8.9	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/21/2019	N	440-242084-1	Qal	16.8 - 36.6	36	<0.0050	860	7.1	<0.050	0.0032 J	<0.050	0.0050 J	<0.012	<0.50
	EM22	11/6/2019	N	440-254051-2	Qal	16.8 - 36.6	30	<0.0050	710	6.1	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM26	5/1/2020	N	440-265414-2	Qal	16.8 - 36.6	32	<0.0050	830	7.2	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5 UJ
	EM29	10/14/2020	N	440-273303-5	Qal	16.8 - 36.6	30	<0.0050	780	7.1	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM33	6/4/2021	N	550-164930-1/2	Qal	16.8 - 36.6	30	<0.00049	780	6.6	<0.0034	0.00093 J	0.0062 J	0.015	0.010 J	0.35 J

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW14	EM36	12/3/2021	N	550-175222-1/2	Qal	16.8 - 36.6	37	<0.00049	760	6.9	<0.0034	<0.00028	0.0055 J	0.0054	<0.0023	0.23 J
SWFTS-MW15	BL02	7/13/2017	N	440-188325-3	Qal	14.8 - 34.6	39	<0.0050	1,200	9.9	<0.050	0.056	<0.050	0.035	<0.012	<0.50
	EM04	10/10/2017	N	440-194094-1	Qal	14.8 - 34.6	36	<0.0050	860	7.9	<0.050	<0.0025	<0.050	0.021	<0.012	<0.50
	EM06	11/14/2017	N	440-196558-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-13	Qal	14.8 - 34.6	39	<0.0050	990	9.3	<0.050	0.0072	<0.050	0.038	<0.012	<0.50
	EM08	2/19/2018	N	440-203775-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-10	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-1	Qal	14.8 - 34.6	36	<0.0050	790	7.5	<0.050	<0.0025	<0.050	0.018	<0.012	<5.0
	EM15	10/9/2018	N	440-221855-11	Qal	14.8 - 34.6	36	<0.025	940	7.7	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/20/2019	N	440-242014-1	Qal	14.8 - 34.6	35	<0.0050	810	6.9	<0.050	<0.0025	<0.050	0.020	<0.012	1.8 J
	EM22	11/6/2019	N	440-254051-3	Qal	14.8 - 34.6	34	<0.0050	740	6.3	<0.050	0.0046 J	<0.050	0.026	<0.012	<0.50
	EM26	4/29/2020	N	440-265342-3	Qal	14.8 - 34.6	34	<0.0050	780	7.4	<0.050	<0.0025	<0.050	0.032	<0.012	<2.5
	EM29	10/15/2020	N	550-151259-4	Qal	14.8 - 34.6	31	<0.0050	660	6.1	<0.050	<0.0025	<0.050	0.013	<0.012	<2.5
	EM33	6/3/2021	N	550-164869-13/14	Qal	14.8 - 34.6	37	<0.00049	720	8.3	<0.0034	<0.00028	0.0035 J	0.029	0.0071 J	0.41 J
	EM36	11/30/2021	N	550-174968-10/9	Qal	14.8 - 34.6	39	<0.00049	750	11	<0.0034	<0.00028	0.0042 J	0.030	<0.0023	0.17 J
SWFTS-MW16	BL02	7/13/2017	N	440-188325-2	Qal	21.8 - 41.6	42	<0.0050	910	11	<0.050	0.083	<0.050	0.043	<0.012	<0.50
	EM04	10/12/2017	N	440-194204-7	Qal	21.8 - 41.6	33	<0.0050	700	8.8	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM06	11/16/2017	N	440-196786-4	Qal	21.8 - 41.6	42	<0.0050	810	6.7	<0.050	0.12	<0.050	0.0091 J	<0.012	<0.50
	EM07	12/12/2017	N	440-198371-4	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-6	Qal	21.8 - 41.6	40 J+	<0.0050	740	7.9	<0.050	0.021 J+	<0.050	<0.0050	<0.012	<1.0
	EM09	3/27/2018	N	440-207268-13	Qal	21.8 - 41.6	33	<0.0050	710	7.8	<0.050	0.0099	<0.050	0.024	<0.012	<0.50
	EM10	5/2/2018	N	440-210430-13	Qal	21.8 - 41.6	41	<0.010	850	9.2	<0.10	<0.0050	<0.10	<0.010	<0.024	0.80 J
	EM11	7/11/2018	N	440-215585-12	Qal	21.8 - 41.6	43	<0.0050	690	7.3	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM13	8/15/2018	N	440-218208-13	Qal	21.8 - 41.6	42	<0.0050	690	7.6	<0.050	0.0060	<0.050	<0.0050	<0.012	<0.50
	EM14	9/10/2018	N	440-219797-6	Qal	21.8 - 41.6	37 J+	<0.0050	620	7.7	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-3	Qal	21.8 - 41.6	40	<0.0050	760	8.9	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM19	5/20/2019	N	440-242014-3	Qal	21.8 - 41.6	35	<0.0050	680	7.8	<0.050	0.012	<0.050	<0.0050	<0.012	<0.50
	EM22	11/6/2019	N	440-254051-5	Qal	21.8 - 41.6	36	<0.0050	580	6.4	<0.050	0.0026 J	<0.050	<0.0050	<0.012	<0.50
	EM26	4/30/2020	N	440-265383-1	Qal	21.8 - 41.6	31	<0.0050	600	8.0	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM29	10/15/2020	N	550-151259-1	Qal	21.8 - 41.6	30	<0.0050	520	6.2	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM33	6/3/2021	N	550-164869-11/12	Qal	21.8 - 41.6	33	<0.00049	590	7.7	<0.0034	<0.00028	0.0054 J	0.0027 J	0.0070 J	0.38 J
	EM36	11/30/2021	N	550-174968-11/12	Qal	21.8 - 41.6	37	<0.00049	610	9.1	<0.0034	<0.00028	0.0033 J	0.0032 J	<0.0023	0.23 J
SWFTS-MW17	BL02	7/12/2017	N	440-188244-1	Qal	22.8 - 52.6	36	<0.0050	500	11	<0.050	<0.0025	<0.050	0.023	<0.012	<0.50
	EM04	10/10/2017	N	440-193989-3	Qal	22.8 - 52.6	35	<0.0050	460	11	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM06	11/15/2017	FD	440-196659-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-5	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-7	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-3	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-13	Qal	22.8 - 52.6	36	<0.0050	410	9.5	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-4	Qal	22.8 - 52.6	36	<0.0050	390	9.8	<0.050	<0.0025	<0.050	<0.0050	<0.012	<2.5
	EM19	5/22/2019	N	440-242198-6	Qal	22.8 - 52.6	36	<0.0050	390	9.3	<0.050	<0.0025	<0.050	0.022	<0.012	<5.0
	EM22	11/7/2019	N	440-254150-1	Qal	22.8 - 52.6	33	<0.0050	390	9.9	<0.050	<0.0025	<0.050	<0.0050	0.013 J	<0.50

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW17	EM26	4/30/2020	N	440-265383-6	Qal	22.8 - 52.6	35	<0.0050	430	10	<0.050	<0.013	<0.050	<0.0050	<0.012	<2.5
	EM29	10/15/2020	N	550-151259-5	Qal	22.8 - 52.6	31	<0.0050	380	8.9	<0.050	<0.0025	<0.050	0.015	<0.012	<2.5
	EM33	6/3/2021	N	550-164869-10/9	Qal	22.8 - 52.6	37	<0.00049	440	10	<0.0034	0.00075 J	0.0050 J	0.025	0.0046 J	0.59 J
	EM36	12/2/2021	N	550-175153-21/22	Qal	22.8 - 52.6	37	<0.00049	470	9.9	<0.0034	<0.00028	0.0044 J	0.025	0.0064 J	0.17 J
SWFTS-MW18	BL02	7/11/2017	N	440-188133-17	Qal	16.8 - 36.6	32	<0.0050	910	11	<0.050	0.0031 J	<0.050	0.037	<0.012	0.63 J
	EM04	10/10/2017	N	440-194094-3	Qal	16.8 - 36.6	33	<0.0050	740	9.0	<0.050	<0.0025	<0.050	0.021	<0.012	<2.5
	EM06	11/15/2017	N	440-196690-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-5	Qal	16.8 - 36.6	38	<0.0050	870	9.7	<0.050	<0.0025	<0.050	0.042	<0.012	<0.50
	EM08	2/22/2018	N	440-204033-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	FD	440-207268-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-6	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-2	Qal	16.8 - 36.6	34	<0.0050	690	8.3	<0.050	<0.0025	<0.050	0.024	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-5	Qal	16.8 - 36.6	36	<0.0050	710	7.5	<0.050	<0.0025	<0.050	0.026	<0.012	<2.5
	EM19	5/21/2019	N	440-242084-15	Qal	16.8 - 36.6	36	<0.0050	660	8.0	<0.050	0.0029 J	<0.050	0.035	<0.012	<0.50
	EM22	11/6/2019	N	440-254051-4	Qal	16.8 - 36.6	33	<0.0050	690	7.8	<0.050	<0.0025	<0.050	0.015	<0.012	<0.50
	EM26	4/29/2020	N	440-265342-2	Qal	16.8 - 36.6	34	<0.0050	690	7.9	<0.050	<0.0025	<0.050	0.023	<0.012	<2.5
	EM29	10/15/2020	N	550-151259-2	Qal	16.8 - 36.6	32	<0.0050	590	6.9	<0.050	<0.0025	<0.050	0.026	0.015 J	<2.5
	EM33	6/3/2021	N	550-164869-7/8	Qal	16.8 - 36.6	37	<0.00049	670	8.7	<0.0034	<0.00028	0.0053 J	0.021	0.0069 J	0.80 J
	EM36	12/1/2021	N	550-175045-5/6	Qal	16.8 - 36.6	43	<0.00049	670	8.3	<0.0034	<0.00028	0.0062 J	0.016	<0.0023	0.58 J
SWFTS-MW19	BL02	7/12/2017	N	440-188244-2	Qal	11.3 - 31.1	36	<0.0050	430	3.7	<0.050	<0.0025	<0.050	0.034	<0.012	<0.50
	EM04	10/12/2017	N	440-194204-1	Qal	11.3 - 31.1	38	<0.0050	420	4.1	<0.050	<0.0025	<0.050	0.030	<0.012	<0.50
	EM06	11/16/2017	N	440-196786-12	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-8	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-3	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	FD	440-210173-5	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	FD	440-215437-11	Qal	11.3 - 31.1	34	<0.0050	420	4.2	<0.050	<0.0025	<0.050	0.022	<0.012	<5.0
	EM11	7/10/2018	N	440-215437-10	Qal	11.3 - 31.1	34	<0.0050	420	4.2	<0.050	<0.0025	<0.050	0.022	<0.012	<5.0
	EM15	10/9/2018	FD	440-221855-5	Qal	11.3 - 31.1	40	<0.0050	480	4.5	<0.050	<0.0025	<0.050	0.031	<0.012	<2.5
	EM15	10/9/2018	N	440-221855-4	Qal	11.3 - 31.1	38	<0.0050	450	4.3	<0.050	<0.0025	<0.050	0.030	<0.012	<2.5
	EM19	5/21/2019	FD	440-242084-7	Qal	11.3 - 31.1	36	<0.0050	420	4.1	<0.050	<0.0025	<0.050	0.034	<0.012	<0.50
	EM19	5/21/2019	N	440-242084-6	Qal	11.3 - 31.1	35	<0.0050	430	4.1	<0.050	<0.0025	<0.050	0.034	<0.012	<0.50
	EM22	11/5/2019	FD	440-253891-7	Qal	11.3 - 31.1	36	<0.0050	410	3.9	<0.050	<0.0025	<0.050	0.031	0.19 J	<0.50
	EM22	11/5/2019	N	440-253891-6	Qal	11.3 - 31.1	37	<0.0050	430	4.1	<0.050	<0.0025	<0.050	0.032	<0.012 UJ	<0.50
	EM26	4/28/2020	FD	440-265288-7	Qal	11.3 - 31.1	30	<0.0050	560	7.0	<0.050	<0.0025	<0.050	0.021	<0.012	<0.50
	EM26	4/28/2020	N	440-265288-4	Qal	11.3 - 31.1	34	<0.0050	550	6.9	<0.050	<0.0025	<0.050	0.020	<0.012	<0.50
	EM29	10/14/2020	FD	440-273303-3	Qal	11.3 - 31.1	38	<0.0050	470	5.0	<0.050	<0.0025	<0.050	0.028	<0.012	<0.50
	EM29	10/14/2020	N	440-273303-2	Qal	11.3 - 31.1	38	<0.0050	450	4.9	<0.050	<0.0025	<0.050	0.028	<0.012	<0.50
	EM33	6/3/2021	FD	550-164869-5/6	Qal	11.3 - 31.1	38	<0.00049	520	6.1	<0.0034	<0.00028	0.0023 J	0.033	0.0066 J	0.83 J
	EM33	6/3/2021	N	550-164869-3/4	Qal	11.3 - 31.1	37	<0.00049	510	6.0	<0.0034	0.00037 J	0.0021 J	0.032	0.0032 J	0.58 J
	EM36	12/1/2021	FD	550-175045-15/16	Qal	11.3 - 31.1	43	<0.00049	500	5.6	<0.0034	0.00039 J	<0.0021	0.036	0.0027 J	0.16 J
	EM36	12/1/2021	N	550-175045-13/14	Qal	11.3 - 31.1	41	<0.00049	470	5.4	<0.0034	<0.00028	<0.0021	0.035	0.0066 J	0.20 J
SWFTS-MW20	BL02	7/12/2017	N	440-188244-5	Qal	12.8 - 37.6	38	<0.0050	1,100	13	<0.050	<0.0025	<0.050	0.045	<0.012	<0.50
	EM04	10/12/2017	FD	440-194202-2	Qal	12.8 - 37.6	40	<0.0050	1,100	13	<0.050	<0.0025	<0.050	0.024	<0.012	<2.5

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW20	EM04	10/12/2017	N	440-194202-1	Qal	12.8 - 37.6	33	<0.0050	1,100	12	<0.050	<0.0025	<0.050	0.022	<0.012	<2.5
	EM06	11/16/2017	N	440-196786-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-3	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-9	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-10	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-8	Qal	12.8 - 37.6	38	<0.0050	860	10	<0.050	<0.0025	<0.050	0.022	<0.012	<5.0
	EM15	10/9/2018	N	440-221855-1	Qal	12.8 - 37.6	43	<0.025	1,000	10	<0.25	<0.013	<0.25	0.028 J	<0.060	<2.5
	EM19	5/21/2019	N	440-242084-3	Qal	12.8 - 37.6	40	0.0066 J	900	9.1	<0.050	0.0060	<0.050	0.030	<0.012	<0.50
	EM22	11/5/2019	N	440-253918-6	Qal	12.8 - 37.6	45	<0.0050	940	10	<0.050	<0.0025	<0.050	0.015	<0.012	<0.50
	EM26	4/29/2020	N	440-265342-5	Qal	12.8 - 37.6	38	<0.0050	880	8.9	<0.050	<0.0025	<0.050	0.0077 J	<0.012	<2.5
	EM29	10/14/2020	N	440-273303-6	Qal	12.8 - 37.6	50	<0.0050	980	11	<0.050	<0.0025	<0.050	0.0094 J	<0.012	<0.50
	EM33	6/3/2021	N	550-164869-1/2	Qal	12.8 - 37.6	46	<0.00049	950	9.7	<0.0034	0.00068 J	0.016 J	0.017	0.0082 J	0.79 J
	EM36	11/29/2021	N	550-174897-1/2	Qal	12.8 - 37.6	44	<0.00049	840	8.1	0.043	<0.00028	0.017 J	0.013	0.012 J	0.21 J
SWFTS-MW21	BL02	7/13/2017	N	440-188324-5	Qal	14.8 - 39.6	38	<0.010	890	14	<0.10	0.032	<0.10	0.032	<0.024	<0.50
	EM04	10/11/2017	N	440-194090-8	Qal	14.8 - 39.6	30	<0.0050	740	13	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM06	11/15/2017	N	440-196665-5	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-10	Qal	14.8 - 39.6	36	<0.010	940	15	<0.10	<0.0050	<0.10	0.023	<0.024	0.50 J
	EM08	2/20/2018	FD	440-203841-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-14	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-3	Qal	14.8 - 39.6	33	<0.0050	750	12	<0.050	<0.0025	<0.050	<0.0050	<0.012	<5.0
	EM15	10/9/2018	N	440-221855-3	Qal	14.8 - 39.6	32	<0.025	810	12	<0.25	<0.013	<0.25	<0.025	<0.060	<2.5
	EM19	5/22/2019	N	440-242198-3	Qal	14.8 - 39.6	32	0.0055 J	770	12	<0.050	<0.0025	<0.050	0.026	<0.012	<5.0
	EM22	11/4/2019	N	440-253773-3	Qal	14.8 - 39.6	34	<0.0050	760	11	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM26	4/29/2020	N	440-265342-1	Qal	14.8 - 39.6	32	<0.0050	660	9.0	<0.050	<0.0025	<0.050	0.015	<0.012	<2.5
	EM29	10/14/2020	N	440-273303-7	Qal	14.8 - 39.6	33	<0.0050	760	11	<0.050	0.012	<0.050	0.015	<0.012	<1.0
	EM33	6/2/2021	N	550-164872-15/16	Qal	14.8 - 39.6	33	<0.00049	760	11	<0.0034	<0.00028	0.0053 J	0.035	0.0033 J	0.26 J
	EM36	12/1/2021	N	550-175045-3/4	Qal	14.8 - 39.6	37	<0.00049	740	11	<0.0034	<0.00028	0.0046 J	0.028	<0.0023	0.24 J
SWFTS-MW22	BL02	7/13/2017	N	440-188324-1	Qal	11.8 - 31.6	59	<0.0050	630	4.8	<0.050	0.82	<0.050	0.066	0.037	<0.50 UJ
	EM04	10/12/2017	N	440-194242-9	Qal	11.8 - 31.6	36	<0.0050	570	4.6	<0.050	<0.0025	<0.050	0.032	<0.012	<0.50
	EM06	11/16/2017	N	440-196786-18	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-17	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-6	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-9	Qal	11.8 - 31.6	36	<0.0050	590	5.1	<0.050	<0.0025	<0.050	0.031	<0.012	<5.0
	EM15	10/9/2018	N	440-221855-2	Qal	11.8 - 31.6	38	<0.025	620	4.9	<0.25	<0.013	<0.25	0.040 J	<0.060	<2.5
	EM19	5/21/2019	N	440-242084-4	Qal	11.8 - 31.6	37	0.0052 J	540	4.4	<0.050	<0.0025	<0.050	0.048	<0.012	<0.50
	EM22	11/5/2019	N	440-253891-4	Qal	11.8 - 31.6	38	<0.0050	570	3.9	<0.050	0.0069 J+	<0.050	0.044	<0.012	<0.50
	EM26	4/28/2020	N	440-265288-5	Qal	11.8 - 31.6	37	<0.0050	590	4.5	<0.050	<0.0025	<0.050	0.039	<0.012	<0.50
	EM29	10/14/2020	N	440-273303-1	Qal	11.8 - 31.6	40	<0.0050	620	5.0	<0.050	<0.0025	<0.050	0.040	<0.012	<0.50
	EM33	6/2/2021	N	550-164872-11/12	Qal	11.8 - 31.6	36	<0.00049	640	5.4	<0.0034	0.0055 J+	<0.0021	0.045	0.0080 J	0.24 J
	EM36	12/2/2021	N	550-175153-1/2	Qal	11.8 - 31.6	41	<0.00049	620	5.0	<0.0034	0.00035 J	0.0036 J	0.049	0.0047 J	0.21 J
SWFTS-MW23	BL02	7/13/2017	N	440-188325-7	Qal	13.8 - 33.6	37	<0.0050	410	4.1	<0.050	<0.0025	<0.050	0.046	<0.012	<0.50

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6010									Dissolved Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW23	EM04	10/11/2017	N	440-194090-7	Qal	13.8 - 33.6	39	<0.0050	400	4.8	<0.050	<0.0025	<0.050	0.041	<0.012	<0.50
	EM06	11/15/2017	N	440-196665-3	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-2	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-14	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-9	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-5	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-7	Qal	13.8 - 33.6	36	<0.0050	350	3.8	<0.050	<0.0025	<0.050	0.037	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-7	Qal	13.8 - 33.6	42	<0.0050	390	4.6	<0.050	<0.0025	<0.050	0.043	<0.012	<2.5
	EM19	5/22/2019	N	440-242201-7	Qal	13.8 - 33.6	29 J	<0.0050	360	4.2	<0.050	0.0025 J	<0.050	0.045	<0.012	<5.0
	EM22	11/5/2019	N	440-253891-5	Qal	13.8 - 33.6	36	<0.0050	380	4.8	<0.050	<0.0025	<0.050	0.037	<0.012	<0.50
	EM26	4/28/2020	N	440-265288-3	Qal	13.8 - 33.6	38	<0.0050	380	4.0	<0.050	<0.0025	<0.050	0.042	<0.012	<0.50
	EM29	10/13/2020	N	440-273236-1	Qal	13.8 - 33.6	39	<0.0050	370	3.9	<0.050	<0.0025	<0.050	0.044	<0.012	<1.0
	EM33	6/2/2021	N	550-164872-3/4	Qal	13.8 - 33.6	38	<0.00049	390	4.5	<0.0034	<0.00028	0.0044 J	0.048	0.0069 J	0.18 J
	EM36	12/2/2021	N	550-175153-15/16	Qal	13.8 - 33.6	42	<0.00049	370	4.1	<0.0034	<0.00028	0.0053 J	0.052	0.0048 J	0.16 J
SWFTS-MW24	BL02	7/13/2017	N	440-188324-2	Qal	12.8 - 37.6	34	<0.0050	920	11	<0.050	<0.0025	<0.050	0.034	<0.012	<0.50
	EM04	10/11/2017	N	440-194242-2	Qal	12.8 - 37.6	33	<0.0050	810	10	<0.050	<0.0025	<0.050	0.019	<0.012	<0.50
	EM06	11/15/2017	N	440-196665-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-12	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-5	Qal	12.8 - 37.6	34	<0.0050	710	8.3	<0.050	<0.0025	<0.050	0.017	<0.012	<5.0
	EM15	10/10/2018	N	440-221975-7	Qal	12.8 - 37.6	40	<0.0050	910	9.6	<0.050	<0.0025	<0.050	0.019	<0.012	<2.5
	EM19	5/22/2019	N	440-242198-1	Qal	12.8 - 37.6	37	0.0055 J	740	8.6	<0.050	0.0030 J	<0.050	0.036	<0.012	<5.0
	EM22	11/5/2019	N	440-253891-2	Qal	12.8 - 37.6	36	<0.0050	720	7.9	<0.050	<0.0025	<0.050	0.024	<0.012	<0.50
	EM26	4/28/2020	N	440-265288-1	Qal	12.8 - 37.6	34	<0.0050	740	8.1	<0.050	<0.0025	<0.050	0.018	<0.012	<0.50
	EM29	10/12/2020	N	440-273153-1	Qal	12.8 - 37.6	39	<0.0050	740	8.2	<0.050	<0.0025	<0.050	0.024	<0.012	2.4
	EM33	6/2/2021	N	550-164872-7/8	Qal	12.8 - 37.6	37	<0.00049	700	8.3	<0.0034	<0.00028	0.0037 J	0.035	0.0061 J	0.11 J
	EM36	12/1/2021	N	550-175045-17/18	Qal	12.8 - 37.6	41	<0.00049	690	8.9	<0.0034	<0.00028	0.0039 J	0.033	0.0029 J	0.14 J
SWFTS-MW25	BL02	7/13/2017	N	440-188324-4	Qal	12.8 - 42.6	37	<0.0050	1,000	10	<0.050	<0.0025	<0.050	0.036	<0.012	<0.50
	EM04	10/11/2017	N	440-194242-1	Qal	12.8 - 42.6	32	<0.0050	860	9.1	<0.050	<0.0025	<0.050	<0.0050	<0.012	<0.50
	EM06	11/15/2017	N	440-196665-2	Qal	12.8 - 42.6	30	<0.0050	830	8.2	<0.050	0.085	<0.050	<0.0050	<0.012	<2.5
	EM07	12/12/2017	N	440-198371-1	Qal	12.8 - 42.6	37	<0.0050	1,000	9.3	<0.050	0.010	<0.050	0.021	<0.012	<0.50
	EM08	2/21/2018	N	440-203937-7	Qal	12.8 - 42.6	49	<0.0050	830	7.6	<0.050	0.13	<0.050	0.042	0.050	<1.0
	EM09	3/28/2018	N	440-207497-13	Qal	12.8 - 42.6	36	<0.0050	930	8.5	<0.050	0.0058	<0.050	0.023	<0.012	<0.50
	EM10	5/3/2018	N	440-210534-2	Qal	12.8 - 42.6	36	<0.0050	1,100	8.6	<0.050	0.0037 J	<0.050	0.024	<0.012	<5.0
	EM11	7/10/2018	N	440-215437-12	Qal	12.8 - 42.6	33	<0.0050	780	7.5	<0.050	0.012	<0.050	0.012	<0.012	<5.0
	EM13	8/15/2018	N	440-218208-10	Qal	12.8 - 42.6	35	<0.0050	830	7.8	<0.050	0.0090	<0.050	0.011	<0.012	<0.50
	EM14	9/12/2018	N	440-220031-2	Qal	12.8 - 42.6	35 J	<0.0050	780 J	7.3 J	<0.050	<0.0025	<0.050	0.011	<0.012	<5.0
	EM15	10/11/2018	N	440-222092-6	Qal	12.8 - 42.6	38	<0.0050	930	8.1	<0.050	<0.0025	<0.050	0.013	<0.012	<2.5
	EM19	5/22/2019	N	440-242201-6	Qal	12.8 - 42.6	35	<0.0050	760	6.4	<0.050	0.0096	<0.050	0.029	<0.012	<5.0
	EM22	11/5/2019	N	440-253918-4	Qal	12.8 - 42.6	35	<0.0050	760	6.1	<0.050	0.012	<0.050	0.023	<0.012	<0.50
	EM26	4/28/2020	N	440-265288-2	Qal	12.8 - 42.6	36	<0.0050	830	7.3	<0.050	<0.0025	<0.050	0.020	<0.012	<0.50
	EM29	10/13/2020	N	440-273236-2	Qal	12.8 - 42.6	37	<0.0050	780	6.8	<0.050	<0.0025	<0.050	0.020	<0.012	<2.5
	EM33	6/2/2021	N	550-164872-5/6	Qal	12.8 - 42.6	39	<0.00049	760	6.9	<0.0034	<0.00028	0.0068 J	0.034	0.0075 J	0.26 J
	EM36	12/1/2021	N	550-175045-19/20	Qal	12.8 - 42.6	41	<0.00049	740	8.3	<0.0034	0.0043 J	0.0045 J	0.029	<0.0023	0.27 J

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COH-2B1	BL02	8/9/2017	N	440-189933-1	Alluvium/UMCf	36.0 - 66.0	61	7.0	<0.50	<50	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-2	Alluvium/UMCf	36.0 - 66.0	63	7.0	<0.50	--	--	--	--	240	240	<4.0
	EM07	12/14/2017	N	440-198571-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	230	230	<4.0
	EM08	2/22/2018	N	440-204033-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	240	240	<4.0
	EM09	3/29/2018	N	440-207586-2	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	240	240	<4.0
	EM10	5/2/2018	N	440-210430-11	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	230	230	<4.0
	EM11	7/10/2018	N	440-215437-6	Alluvium/UMCf	36.0 - 66.0	63	10 J	<5.0	--	--	0.25	--	210	210	<4.0
	EM15	10/11/2018	N	440-222092-1	Alluvium/UMCf	36.0 - 66.0	60	6.9 J	<2.5	--	--	0.025 R	--	240	240	<4.0
	EM19	5/22/2019	N	440-242201-5	Alluvium/UMCf	36.0 - 66.0	55	<5.0	<2.0	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-1	Alluvium/UMCf	36.0 - 66.0	75	15	<0.20	--	--	--	--	--	--	--
	EM26	4/27/2020	N	440-265243-1	Alluvium/UMCf	36.0 - 66.0	64	5.8	<0.20	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-9	Alluvium/UMCf	36.0 - 66.0	84	16	<1.0	--	--	--	--	--	--	--
PC-58	BL01	3/28/2017	N	440-180820-1	Qal	7.8 - 32.8	89	51	<0.50	--	--	--	--	--	--	--
	BL02	7/13/2017	N	440-188324-3	Qal	7.8 - 32.8	100	69	<1.0	<500	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-6	Qal	7.8 - 32.8	110	56	<2.5	--	--	--	--	310	310	<4.0
	EM06	11/16/2017	N	440-196786-11	Qal	7.8 - 32.8	--	--	--	--	--	--	--	280	280	<4.0
	EM07	12/14/2017	N	440-198571-9	Qal	7.8 - 32.8	--	--	--	--	--	--	--	290	290	<4.0
	EM08	2/21/2018	N	440-203937-13	Qal	7.8 - 32.8	--	--	--	--	--	--	--	240	240	<4.0
	EM09	3/28/2018	N	440-207497-6	Qal	7.8 - 32.8	--	--	--	--	--	--	--	240	240	<4.0
	EM10	5/2/2018	N	440-210430-10	Qal	7.8 - 32.8	--	--	--	--	--	--	--	220	220	<4.0
	EM11	7/11/2018	N	440-215717-7	Qal	7.8 - 32.8	100	73	<5.0	--	--	0.045 J	--	250	250	<4.0
	EM15	10/11/2018	N	440-222092-19	Qal	7.8 - 32.8	100	43	<2.5	--	--	<0.025	--	270	270	<4.0
	EM19	5/22/2019	N	440-242200-7	Qal	7.8 - 32.8	94	68	<2.0	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-1	Qal	7.8 - 32.8	100	54	<0.20	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265414-3	Qal	7.8 - 32.8	120	68	<1.0	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-5	Qal	7.8 - 32.8	120	39	<0.20	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-23/24	Qal	7.8 - 32.8	120	49	0.022 J	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-11/12	Qal	7.8 - 32.8	130	58	0.037 J	--	--	--	--	--	--	--
PC-88	EM04	10/11/2017	FD	440-194090-3	Qal	40.0 - 50.0	120	7.0	<0.50	--	--	--	--	240	240	<4.0
	EM04	10/11/2017	N	440-194090-2	Qal	40.0 - 50.0	120	7.5	<0.50	--	--	--	--	270	270	<4.0
	EM06	11/15/2017	FD	440-196690-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	250	250	<4.0
	EM06	11/15/2017	N	440-196690-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	240	240	<4.0
	EM07	12/14/2017	N	440-198571-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	230	230	<4.0
	EM08	2/22/2018	N	440-204033-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	220	220	<4.0
	EM09	3/29/2018	N	440-207586-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	210	210	<4.0
	EM10	5/2/2018	FD	440-210430-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	210	210	<4.0
	EM10	5/2/2018	N	440-210430-8	Qal	40.0 - 50.0	--	--	--	--	--	--	--	210	210	<4.0
	EM11	7/12/2018	FD	440-215717-12	Qal	40.0 - 50.0	130	10 J	<5.0	--	--	0.11	--	220	220	<4.0
	EM11	7/12/2018	N	440-215717-11	Qal	40.0 - 50.0	120	11 J	<5.0	--	--	0.092	--	220	220	<4.0
	EM15	10/11/2018	FD	440-222092-16	Qal	40.0 - 50.0	130	6.0 J	<2.5	--	--	<0.025	--	260	260	<4.0
	EM15	10/11/2018	N	440-222092-15	Qal	40.0 - 50.0	130	7.0 J	<2.5	--	--	<0.025	--	240	240	<4.0
	EM19	5/22/2019	FD	440-242201-3	Qal	40.0 - 50.0	130	5.6 J	<2.0	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-2	Qal	40.0 - 50.0	130	5.7 J	<2.0	--	--	--	--	--	--	--
	EM22	11/7/2019	FD	440-254148-3	Qal	40.0 - 50.0	130	8.4	<0.20	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-2	Qal	40.0 - 50.0	130	7.7	<0.20	--	--	--	--	--	--	--
	EM26	5/1/2020	FD	440-265412-3	Qal	40.0 - 50.0	130	13	<1.0	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-88	EM26	5/1/2020	N	440-265412-2	Qal	40.0 - 50.0	120	18	<1.0	--	--	--	--	--	--	--
	EM29	10/15/2020	FD	550-151259-11	Qal	40.0 - 50.0	110	6.9 J	<1.0	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-10	Qal	40.0 - 50.0	100	7.3 J	<1.0	--	--	--	--	--	--	--
	EM33	6/3/2021	FD	550-164869-27/28	Qal	40.0 - 50.0	130	2.2	0.12	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-25/26	Qal	40.0 - 50.0	130	1.9	0.16	--	--	--	--	--	--	--
	EM36	12/2/2021	FD	550-175153-7/8	Qal	40.0 - 50.0	130	2.7	0.18 J+	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-5/6	Qal	40.0 - 50.0	120	1.8	0.18 J+	--	--	--	--	--	--	--
PC-91	BL01	3/29/2017	N	440-180937-1	Qal	11.5 - 21.5	75	26	<0.50	--	--	0.025 J	--	--	--	--
	BL02	7/12/2017	FD	440-188244-4	Qal	11.5 - 21.5	75	19	<0.50	<500	--	--	--	--	--	--
	BL02	7/12/2017	N	440-188247-5	Qal	11.5 - 21.5	78	21	<1.0	<500	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-3	Qal	11.5 - 21.5	80	9.4	<0.50	--	--	--	--	250	250	<4.0
	EM06	11/16/2017	N	440-196786-8	Qal	11.5 - 21.5	--	--	--	--	--	--	--	270	270	<4.0
	EM07	12/13/2017	N	440-198508-9	Qal	11.5 - 21.5	92	13	<0.50	--	0.10 J	<0.025	0.48	280	280	<4.0
	EM08	2/20/2018	N	440-203841-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	330	330	<4.0
	EM09	3/26/2018	N	440-207137-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	430	430	<4.0
	EM10	5/1/2018	N	440-210284-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	470	470	<4.0
	EM11	7/11/2018	N	440-215585-6	Qal	11.5 - 21.5	78	<5.0	<5.0	--	--	0.049 J	--	540	540	<4.0
	EM15	10/10/2018	N	440-221975-16	Qal	11.5 - 21.5	64	<2.5	<2.5	--	--	<0.025	--	530	530	<4.0
	EM19	5/21/2019	N	440-242084-9	Qal	11.5 - 21.5	100	1.1 J	<0.20	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-3	Qal	11.5 - 21.5	130	1.1 J	<0.20	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-2	Qal	11.5 - 21.5	130	<2.5	<1.0	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-11	Qal	11.5 - 21.5	130	1.2 J	<0.40	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-17/18	Qal	11.5 - 21.5	22	0.39 J	<0.013	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-1/2	Qal	11.5 - 21.5	3.9	0.45 J	0.22	--	--	--	--	--	--	--
PC-92	BL01	3/29/2017	N	440-180937-2	Qal	26.5 - 36.5	85	8.4	0.66 J	--	--	0.052	--	--	--	--
	BL02	7/12/2017	N	440-188247-6	Qal	26.5 - 36.5	87	7.0 J	<5.0	<500	--	--	--	--	--	--
	EM04	10/12/2017	FD	440-194204-5	Qal	26.5 - 36.5	80	6.5	<0.50	--	0.38	0.038 J	2.4	190	190	<4.0
	EM04	10/12/2017	N	440-194204-4	Qal	26.5 - 36.5	88	7.2	<0.50	--	0.40	0.035 J	2.5	190	190	<4.0
	EM06	11/16/2017	FD	440-196786-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	200	200	<4.0
	EM06	11/16/2017	N	440-196786-9	Qal	26.5 - 36.5	--	--	--	--	--	--	--	200	200	<4.0
	EM07	12/14/2017	FD	440-198571-8	Qal	26.5 - 36.5	84	6.2	<0.50	--	0.35	0.064	2.2	190	190	<4.0
	EM07	12/14/2017	N	440-198571-7	Qal	26.5 - 36.5	85	5.6	<0.50	--	0.41	0.062	2.5	190	190	<4.0
	EM08	2/20/2018	FD	440-203841-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	190	190	<4.0
	EM08	2/20/2018	N	440-203841-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	200	200	<4.0
	EM09	3/26/2018	FD	440-207137-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	190	190	<4.0
	EM09	3/26/2018	N	440-207137-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	190	190	<4.0
	EM10	5/1/2018	N	440-210284-4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	200	200	<4.0
	EM11	7/11/2018	N	440-215585-5	Qal	26.5 - 36.5	83	7.9 J	<5.0	--	--	0.076	--	200	200	<4.0
	EM15	10/11/2018	N	440-222092-17	Qal	26.5 - 36.5	76	8.9 J	<2.5	--	--	<0.025	--	200	200	<4.0
	EM19	5/21/2019	N	440-242084-10	Qal	26.5 - 36.5	86	4.5	0.48 J	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-2	Qal	26.5 - 36.5	71	6.0	0.36 J	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-1	Qal	26.5 - 36.5	78	7.5 J	<1.0	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-10	Qal	26.5 - 36.5	73	11	0.43 J	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-19/20	Qal	26.5 - 36.5	78	15	0.44	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-3/4	Qal	26.5 - 36.5	58	7.0	0.46	--	--	--	--	--	--	--
PC-94	BL01	3/28/2017	N	440-180820-2	Qal	9.5 - 19.5	62	27	<0.50	--	--	0.053	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-94	BL02	7/13/2017	N	440-188325-1	Qal	9.5 - 19.5	66	30	<0.50	<500	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-6	Qal	9.5 - 19.5	76	3.3	<0.50	--	0.37	0.098	1.2	290	290	<4.0
	EM06	11/16/2017	N	440-196786-17	Qal	9.5 - 19.5	52	<2.5	<2.5	--	0.24	0.096	0.81	310	310	<4.0
	EM07	12/12/2017	N	440-198371-14	Qal	9.5 - 19.5	--	--	--	--	--	--	--	330	330	<4.0
	EM08	2/21/2018	N	440-203937-12	Qal	9.5 - 19.5	55	14	<1.0	--	<0.10	0.11	4.9	290	290	<4.0
	EM09	3/27/2018	N	440-207268-8	Qal	9.5 - 19.5	50	13	<0.50	--	0.14 J	0.23	4.9	310	310	<4.0
	EM10	5/1/2018	N	440-210284-14	Qal	9.5 - 19.5	60	22	<5.0	--	<0.10 UJ	0.070	6.3	280	280	<4.0
	EM11	7/10/2018	N	440-215437-1	Qal	9.5 - 19.5	44	19 J	<5.0	--	0.33	2.1	5.9	300	300	<4.0
	EM13	8/15/2018	N	440-218208-2	Qal	9.5 - 19.5	49	4.6	<0.50	--	<0.10	0.11	3.2	390	390	<4.0
	EM14	9/11/2018	N	440-219886-9	Qal	9.5 - 19.5	54	6.0 J	<5.0	--	0.14 J	0.10	5.8	340	340	<4.0
	EM15	10/11/2018	N	440-222092-18	Qal	9.5 - 19.5	45	11	<2.5	--	<0.10	0.045 J	8.2	260	260	<4.0
	EM19	5/22/2019	N	440-242201-4	Qal	9.5 - 19.5	42	9.2 J	<2.0	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-1	Qal	9.5 - 19.5	46	15	<0.20	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-2	Qal	9.5 - 19.5	41	15	<0.20	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-7	Qal	9.5 - 19.5	43	14	<1.0	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-21/22	Qal	9.5 - 19.5	43	14	0.13	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-5/6	Qal	9.5 - 19.5	40	16	0.24	--	--	--	--	--	--	--
PC-97	BL02	7/13/2017	N	440-188325-8	Qal	23.0 - 33.0	86	1.0 J	<0.50	<20	--	--	--	--	--	--
	EM04	10/11/2017	FD	440-194242-6	Qal	23.0 - 33.0	84	2.5	<0.50	--	--	--	--	180	180	<4.0
	EM04	10/11/2017	N	440-194242-5	Qal	23.0 - 33.0	85	3.0	<0.50	--	--	--	--	180	180	<4.0
	EM06	11/16/2017	N	440-196786-13	Qal	23.0 - 33.0	--	--	--	--	--	--	--	180	180	<4.0
	EM07	12/13/2017	FD	440-198508-12	Qal	23.0 - 33.0	--	--	--	--	--	--	--	180	180	<4.0
	EM07	12/13/2017	N	440-198508-11	Qal	23.0 - 33.0	--	--	--	--	--	--	--	190	190	<4.0
	EM08	2/21/2018	N	440-203937-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	200	200	<4.0
	EM09	3/27/2018	N	440-207268-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	200	200	<4.0
	EM10	5/1/2018	N	440-210284-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	210	210	<4.0
	EM11	7/10/2018	N	440-215437-3	Qal	23.0 - 33.0	84	<5.0	<5.0	--	--	0.10	--	190	190	<4.0
	EM15	10/11/2018	N	440-222092-13	Qal	23.0 - 33.0	85	<2.5	<2.5	--	--	<0.025	--	200	200	<4.0
	EM19	5/22/2019	N	440-242201-1	Qal	23.0 - 33.0	85	<5.0	<2.0	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-7	Qal	23.0 - 33.0	91	<0.50	0.25 J	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-7	Qal	23.0 - 33.0	93	<2.5	<1.0	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-9	Qal	23.0 - 33.0	90	<2.5	<1.0	--	--	--	--	--	--	--
SWFTS-IW01A	BL02	7/11/2017	N	440-188133-3	Qal	15.8 - 25.6	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW01B	BL02	7/11/2017	N	440-188133-13	Qal	26.9 - 36.7	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW02A	BL02	7/11/2017	N	440-188133-14	Qal	16.8 - 26.6	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW02B	BL02	7/11/2017	N	440-188133-2	Qal	26.3 - 36.1	--	--	--	<100	--	--	--	--	--	--
SWFTS-IW03	BL02	7/11/2017	FD	440-188133-5	Qal	16.8 - 36.6	--	--	--	<500	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-4	Qal	16.8 - 36.6	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW04	BL02	7/11/2017	FD	440-188133-12	Qal	19.8 - 34.6	--	--	--	<1,000	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-11	Qal	19.8 - 34.6	--	--	--	<1,000	--	--	--	--	--	--
SWFTS-IW05	BL02	7/11/2017	N	440-188133-16	Qal	14.6 - 34.4	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW06A	BL02	7/11/2017	N	440-188133-10	Qal	16.8 - 26.6	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW06B	BL02	7/11/2017	N	440-188133-6	Qal	28.8 - 33.6	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW07	BL02	7/11/2017	N	440-188133-7	Qal	17.3 - 37.1	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW08	BL02	7/12/2017	N	440-188247-7	Qal	17.5 - 37.3	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW09	BL02	7/12/2017	FD	440-188244-3	Qal	26.6 - 46.4	--	--	--	<500	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-IW09	BL02	7/12/2017	N	440-188247-8	Qal	26.6 - 46.4	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW10	BL02	7/12/2017	N	440-188247-9	Qal	26.8 - 46.6	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW11	BL02	7/12/2017	N	440-188247-3	Qal	17.3 - 37.1	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW12	BL02	7/12/2017	N	440-188247-4	Qal	14.3 - 39.1	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW13A	BL02	7/11/2017	N	440-188133-1	Qal	15.8 - 25.6	--	--	--	<100	--	--	--	--	--	--
SWFTS-IW13B	BL02	7/11/2017	N	440-188133-15	Qal	27.8 - 37.6	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW14	BL02	7/12/2017	N	440-188247-1	Qal	16.2 - 36.1	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW15	BL02	7/12/2017	N	440-188247-2	Qal	16.4 - 36.2	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW16A	BL02	7/11/2017	N	440-188133-9	Qal	17.3 - 27.1	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW16B	BL02	7/11/2017	N	440-188133-8	Qal	26.5 - 36.3	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW17	BL02	7/13/2017	N	440-188325-6	Qal	17.3 - 37.1	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW18	BL02	7/13/2017	N	440-188325-4	Qal	18.1 - 38.1	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW19	BL02	7/13/2017	N	440-188325-5	Qal	24.3 - 44.1	--	--	--	<500	--	--	--	--	--	--
SWFTS-IW20	BL02	7/12/2017	N	440-188247-10	Qal	30.8 - 50.6	--	--	--	<500	--	--	--	--	--	--
SWFTS-MW01	BL01	3/29/2017	N	440-180937-6	Qal	24.2 - 38.9	66	30	<0.50	--	--	<0.025	--	--	--	--
	EM04	10/10/2017	N	440-194094-2	Qal	24.2 - 38.9	70	12	<0.50	--	0.28	0.035 J	3.6	250	250	<4.0
	EM06	11/15/2017	N	440-196665-4	Qal	24.2 - 38.9	--	--	--	--	--	--	--	310	310	<4.0
	EM07	12/14/2017	N	440-198571-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	330	330	<4.0
	EM08	2/20/2018	N	440-203841-12	Qal	24.2 - 38.9	--	--	--	--	--	--	--	520	520	<4.0
	EM09	3/27/2018	N	440-207268-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	380	380	<4.0
	EM10	4/30/2018	N	440-210173-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	270	270	<4.0
	EM11	7/10/2018	N	440-215437-2	Qal	24.2 - 38.9	69	<5.0	<5.0	--	--	0.046 J	--	500	500	<4.0
	EM14	9/10/2018	N	440-219797-1	Qal	24.2 - 38.9	--	--	--	--	<0.10 UJ	--	8.4	--	--	--
	EM15	10/9/2018	N	440-221855-12	Qal	24.2 - 38.9	53	23	<2.5	--	--	0.028 J	--	400	400	<4.0
	EM19	5/21/2019	N	440-242084-14	Qal	24.2 - 38.9	43	4.8	<0.20	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-3	Qal	24.2 - 38.9	82	1.4 J	<0.20	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-5	Qal	24.2 - 38.9	35	13	<0.20	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-11	Qal	24.2 - 38.9	35	5.9 J	<1.0	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-17/18	Qal	24.2 - 38.9	34	9.6	0.14	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-19/20	Qal	24.2 - 38.9	44	14	0.24	--	--	--	--	--	--	--
SWFTS-MW02	BL01	3/29/2017	N	440-180937-7	Qal	18.4 - 33.1	51	41	<0.50	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-6	Qal	18.4 - 33.1	57	36	1.1	--	<0.10 UJ	<0.025 UJ	6.2	200	200	<4.0
	EM06	11/14/2017	N	440-196558-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	200	200	<4.0
	EM07	12/13/2017	N	440-198508-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	200	200	<4.0
	EM08	2/19/2018	N	440-203775-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	250	250	<4.0
	EM09	3/27/2018	N	440-207268-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	390	390	<4.0
	EM10	4/30/2018	N	440-210173-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	360	360	<4.0
	EM11	7/11/2018	N	440-215717-13	Qal	18.4 - 33.1	60	7.4 J	<5.0	--	--	<0.025	--	330	330	<4.0
	EM14	9/10/2018	N	440-219797-2	Qal	18.4 - 33.1	--	--	--	--	<0.10 UJ	--	<0.11	--	--	--
	EM15	10/10/2018	N	440-221975-15	Qal	18.4 - 33.1	57	4.0 J	<2.5	--	--	<0.025	--	380	380	<4.0
	EM19	5/21/2019	N	440-242084-8	Qal	18.4 - 33.1	52	2.0	0.26 J	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-7	Qal	18.4 - 33.1	53	0.99 J	0.26 J	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-3	Qal	18.4 - 33.1	31	9.1 J	<1.0	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-8	Qal	18.4 - 33.1	32	11	<1.0	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-21/22	Qal	18.4 - 33.1	32	7.3	0.30	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-7/8	Qal	18.4 - 33.1	42	5.9	0.38	--	--	--	--	--	--	--

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Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW03	BL01	3/30/2017	FD	440-181045-6	Qal	27.2 - 42.1	62	46	<0.50	--	--	--	--	--	--	--
	BL01	3/30/2017	N	440-181045-5	Qal	27.2 - 42.1	61	46	<0.50	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-8	Qal	27.2 - 42.1	82	5.0	1.4	--	0.35	0.082	0.35	250	250	<4.0
	EM06	11/16/2017	N	440-196786-16	Qal	27.2 - 42.1	56	14	<2.5	--	0.18 J	0.075	3.4	280	280	<4.0
	EM07	12/12/2017	N	440-198371-13	Qal	27.2 - 42.1	--	--	--	--	--	--	--	270	270	<4.0
	EM08	2/21/2018	N	440-203937-5	Qal	27.2 - 42.1	56	15	1.6 J	--	0.47	0.061	4.7	280	280	<4.0
	EM09	3/27/2018	N	440-207268-15	Qal	27.2 - 42.1	50	24	1.4	--	<0.10	0.056	6.4	250	250	<4.0
	EM10	5/2/2018	N	440-210430-6	Qal	27.2 - 42.1	55	39	0.91 J	--	<0.10	0.031 J	7.9	220	220	<4.0
	EM11	7/10/2018	N	440-215437-5	Qal	27.2 - 42.1	54	9.1 J-	<5.0	--	0.13 J	0.038 J	1.4	310	310	<4.0
	EM13	8/15/2018	N	440-218208-4	Qal	27.2 - 42.1	48	8.5	1.0	--	<0.10	0.080	3.6	320	320	<4.0
	EM14	9/11/2018	N	440-219886-11	Qal	27.2 - 42.1	50	24	<5.0	--	<0.10	0.044 J	4.9	290	290	<4.0
	EM15	10/9/2018	N	440-221855-13	Qal	27.2 - 42.1	48	20	<2.5	--	--	<0.025	--	280	280	<4.0
	EM19	5/21/2019	N	440-242084-12	Qal	27.2 - 42.1	47	19	0.89 J	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-2	Qal	27.2 - 42.1	50	26	0.77 J	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-1	Qal	27.2 - 42.1	43	30	0.77 J	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-10	Qal	27.2 - 42.1	45	28	<1.0	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-15/16	Qal	27.2 - 42.1	47	29	0.72	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-1/2	Qal	27.2 - 42.1	49	27	0.93	--	--	--	--	--	--	--
SWFTS-MW04	BL01	3/31/2017	N	440-181122-1	Qal	25.8 - 40.4	110	10	<2.5	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-7	Qal	25.8 - 40.4	90	3.0	0.53 J	--	0.29	<0.025	1.6	210	210	<4.0
	EM06	11/15/2017	N	440-196659-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	200	200	<4.0
	EM07	12/14/2017	N	440-198571-12	Qal	25.8 - 40.4	--	--	--	--	--	--	--	210	210	<4.0
	EM08	2/21/2018	N	440-203937-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	200	200	<4.0
	EM09	3/27/2018	N	440-207268-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	200	200	<4.0
	EM10	5/1/2018	N	440-210284-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	210	210	<4.0
	EM11	7/10/2018	N	440-215437-4	Qal	25.8 - 40.4	85	6.5 J	<5.0	--	--	0.078	--	230	230	<4.0
	EM15	10/11/2018	N	440-222092-9	Qal	25.8 - 40.4	89	4.6 J	<2.5	--	--	<0.025	--	220	220	<4.0
	EM19	5/21/2019	N	440-242084-11	Qal	25.8 - 40.4	91	3.4	0.62 J	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-6	Qal	25.8 - 40.4	87	2.8	0.63 J	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265412-1	Qal	25.8 - 40.4	80	26	<1.0	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-12	Qal	25.8 - 40.4	77	7.1	0.61 J	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-23/24	Qal	25.8 - 40.4	83	6.8	0.70	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-3/4	Qal	25.8 - 40.4	85	7.8	0.86	--	--	--	--	--	--	--
SWFTS-MW05A	BL01	3/30/2017	N	440-181045-7	Qal	19.3 - 29.3	24	50	<0.50	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-2	Qal	19.3 - 29.3	31	41	<2.5	--	--	--	--	97	97	<4.0
	EM06	11/14/2017	N	440-196558-1	Qal	19.3 - 29.3	--	--	--	--	--	--	--	110	110	<4.0
	EM07	12/13/2017	N	440-198508-3	Qal	19.3 - 29.3	--	--	--	--	--	--	--	100	100	<4.0
	EM08	2/20/2018	N	440-203841-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	100	100	<4.0
	EM09	3/26/2018	N	440-207137-5	Qal	19.3 - 29.3	--	--	--	--	--	--	--	100	100	<4.0
	EM10	4/30/2018	N	440-210173-8	Qal	19.3 - 29.3	--	--	--	--	--	--	--	100	100	<4.0
	EM11	7/11/2018	N	440-215585-14	Qal	19.3 - 29.3	35	46	<5.0	--	--	<0.025	--	120	120	<4.0
	EM15	10/10/2018	N	440-221975-14	Qal	19.3 - 29.3	33	25	<2.5	--	--	0.059	--	220	220	<4.0
	EM19	5/21/2019	N	440-242084-17	Qal	19.3 - 29.3	32	33	<0.20	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-1	Qal	19.3 - 29.3	32	27	0.41 J	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-2	Qal	19.3 - 29.3	33	43	<2.0	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-9	Qal	19.3 - 29.3	31	23	<0.40	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW05A	EM33	6/3/2021	N	550-164869-17/18	Qal	19.3 - 29.3	35	42	0.11	--	--	--	--	--	--	--
	EM36	11/29/2021	N	550-174897-3/4	Qal	19.3 - 29.3	33	41	0.25	--	--	--	--	--	--	--
SWFTS-MW05B	BL01	3/30/2017	N	440-181045-8	Qal	32.3 - 42.0	56	47	<0.50	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-1	Qal	32.3 - 42.0	59	<2.5 UJ	<2.5	--	--	--	--	410	410	<4.0
	EM06	11/14/2017	N	440-196558-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	410	410	<4.0
	EM07	12/13/2017	N	440-198508-4	Qal	32.3 - 42.0	--	--	--	--	--	--	--	300	300	<4.0
	EM08	2/20/2018	N	440-203841-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	310	310	<4.0
	EM09	3/26/2018	N	440-207137-6	Qal	32.3 - 42.0	--	--	--	--	--	--	--	260	260	<4.0
	EM10	4/30/2018	N	440-210173-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	240	240	<4.0
	EM11	7/10/2018	N	440-215585-10	Qal	32.3 - 42.0	80	<5.0	<5.0	--	--	0.14	--	470	470	<4.0
	EM15	10/9/2018	N	440-221855-14	Qal	32.3 - 42.0	25	14	<2.5	--	--	<0.025	--	390	390	<4.0
	EM19	5/21/2019	N	440-242084-18	Qal	32.3 - 42.0	36	6.8	<0.20	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-2	Qal	32.3 - 42.0	61	7.6	<0.20	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-1	Qal	32.3 - 42.0	35	17	<1.0	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-8	Qal	32.3 - 42.0	41	19	<0.40	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-19/20	Qal	32.3 - 42.0	30	1.2	<0.013	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-15/16	Qal	32.3 - 42.0	33	2.6	0.027 J	--	--	--	--	--	--	--
SWFTS-MW06A	BL01	3/30/2017	N	440-181045-1	Qal	11.8 - 21.4	86	0.50 J	<0.50	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-4	Qal	11.8 - 21.4	86	1.4 J	<0.50	--	--	--	--	180	180	<4.0
	EM06	11/16/2017	N	440-196786-19	Qal	11.8 - 21.4	--	--	--	--	--	--	--	180	180	<4.0
	EM07	12/13/2017	N	440-198508-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	180	180	<4.0
	EM08	2/22/2018	N	440-204033-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	180	180	<4.0
	EM09	3/28/2018	N	440-207497-3	Qal	11.8 - 21.4	--	--	--	--	--	--	--	190	190	<4.0
	EM10	5/1/2018	FD	440-210284-10	Qal	11.8 - 21.4	--	--	--	--	--	--	--	200	200	<4.0
	EM10	5/1/2018	N	440-210284-9	Qal	11.8 - 21.4	--	--	--	--	--	--	--	200	200	<4.0
	EM11	7/11/2018	FD	440-215585-3	Qal	11.8 - 21.4	88	<5.0	<5.0	--	--	0.047 J	--	190	190	<4.0
	EM11	7/11/2018	N	440-215585-2	Qal	11.8 - 21.4	90	<5.0	<5.0	--	--	0.064	--	200	200	<4.0
	EM15	10/10/2018	FD	440-221975-10	Qal	11.8 - 21.4	72	9.2 J	<2.5	--	--	<0.025	--	200	200	<4.0
	EM15	10/10/2018	N	440-221975-8	Qal	11.8 - 21.4	76	6.7 J	<2.5	--	--	0.037 J	--	190	190	<4.0
	EM19	5/20/2019	FD	440-242015-2	Qal	11.8 - 21.4	92	0.72 J	0.33 J	--	--	--	--	--	--	--
	EM19	5/20/2019	N	440-242015-1	Qal	11.8 - 21.4	92	0.92 J	0.34 J	--	--	--	--	--	--	--
	EM22	11/6/2019	FD	440-254027-5	Qal	11.8 - 21.4	93	<0.50	0.33 J	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-4	Qal	11.8 - 21.4	93	0.89 J	0.32 J	--	--	--	--	--	--	--
	EM26	4/29/2020	FD	440-265346-6	Qal	11.8 - 21.4	84	<0.50	0.27 J	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-5	Qal	11.8 - 21.4	86	0.90 J	0.27 J	--	--	--	--	--	--	--
	EM29	10/13/2020	FD	440-273236-8	Qal	11.8 - 21.4	86	<1.0	<0.40	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-7	Qal	11.8 - 21.4	86	1.1 J	<0.40	--	--	--	--	--	--	--
	EM33	6/4/2021	FD	550-164930-21/22	Qal	11.8 - 21.4	91	0.57	0.33	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-19/20	Qal	11.8 - 21.4	91	0.87	0.31	--	--	--	--	--	--	--
	EM36	12/1/2021	FD	550-175045-10/9	Qal	11.8 - 21.4	91	0.85	0.42	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-7/8	Qal	11.8 - 21.4	98	0.87	0.41	--	--	--	--	--	--	--
SWFTS-MW06B	BL01	3/30/2017	N	440-181045-2	Qal	25.9 - 35.5	86	1.1 J	<0.50	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-5	Qal	25.9 - 35.5	87	1.3 J	<0.50	--	--	--	--	190	190	<4.0
	EM06	11/16/2017	N	440-196786-20	Qal	25.9 - 35.5	--	--	--	--	--	--	--	190	190	<4.0
	EM07	12/13/2017	N	440-198508-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	190	190	<4.0
	EM08	2/22/2018	N	440-204033-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	180	180	<4.0

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW06B	EM09	3/28/2018	N	440-207497-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	190	190	<4.0
	EM10	5/1/2018	N	440-210284-8	Qal	25.9 - 35.5	--	--	--	--	--	--	--	190	190	<4.0
	EM11	7/11/2018	N	440-215585-4	Qal	25.9 - 35.5	90	<5.0	<5.0	--	--	0.084	--	200	200	<4.0
	EM15	10/10/2018	N	440-221975-9	Qal	25.9 - 35.5	86	<2.5	<2.5	--	--	0.027 J	--	200	200	<4.0
	EM19	5/21/2019	N	440-242084-5	Qal	25.9 - 35.5	93	1.2 J	0.39 J	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-6	Qal	25.9 - 35.5	91	0.81 J	0.36 J	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-4	Qal	25.9 - 35.5	90	1.1 J	0.31 J	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-6	Qal	25.9 - 35.5	89	<1.0	<0.40	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-23/24	Qal	25.9 - 35.5	90	1.3	0.37	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-11/12	Qal	25.9 - 35.5	93	1.0	0.45	--	--	--	--	--	--	--
SWFTS-MW07A	BL01	3/30/2017	N	440-181045-3	Qal	15.0 - 29.5	56	43	<0.50	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-3	Qal	15.0 - 29.5	64	51	<0.50	--	--	--	--	240	240	<4.0
	EM06	11/15/2017	N	440-196659-7	Qal	15.0 - 29.5	--	--	--	--	--	--	--	230	230	<4.0
	EM07	12/14/2017	N	440-198571-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	230	230	<4.0
	EM08	2/19/2018	N	440-203775-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	230	230	<4.0
	EM09	3/28/2018	N	440-207497-4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	220	220	<4.0
	EM10	5/2/2018	N	440-210430-2	Qal	15.0 - 29.5	--	--	--	--	--	--	--	220	220	<4.0
	EM11	7/11/2018	N	440-215585-7	Qal	15.0 - 29.5	73	46	<5.0	--	--	<0.025	--	220	220	<4.0
	EM15	10/10/2018	N	440-221975-11	Qal	15.0 - 29.5	73	47	<2.5	--	--	<0.025	--	260	260	<4.0
	EM19	5/22/2019	N	440-242200-5	Qal	15.0 - 29.5	88	36	<2.0	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-4	Qal	15.0 - 29.5	79	40	<0.20	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-5	Qal	15.0 - 29.5	73	40	<1.0	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-1	Qal	15.0 - 29.5	76	47	<0.20	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-25/26	Qal	15.0 - 29.5	78	34	0.15	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-3/4	Qal	15.0 - 29.5	79	28	0.25	--	--	--	--	--	--	--
SWFTS-MW07B	BL01	3/30/2017	N	440-181045-4	Qal	33.8 - 38.3	73	59	<0.50	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-4	Qal	33.8 - 38.3	79	48	<0.50	--	--	--	--	230	230	<4.0
	EM06	11/15/2017	N	440-196659-8	Qal	33.8 - 38.3	--	--	--	--	--	--	--	230	230	<4.0
	EM07	12/14/2017	N	440-198571-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	240	240	<4.0
	EM08	2/19/2018	N	440-203775-2	Qal	33.8 - 38.3	--	--	--	--	--	--	--	230	230	<4.0
	EM09	3/28/2018	N	440-207497-10	Qal	33.8 - 38.3	--	--	--	--	--	--	--	220	220	<4.0
	EM10	5/2/2018	N	440-210430-1	Qal	33.8 - 38.3	--	--	--	--	--	--	--	250	250	<4.0
	EM11	7/11/2018	N	440-215585-8	Qal	33.8 - 38.3	83	52	<5.0	--	--	0.025 J	--	230	230	<4.0
	EM15	10/10/2018	N	440-221975-12	Qal	33.8 - 38.3	83	45	<2.5	--	--	0.10	--	250	250	<4.0
	EM19	5/22/2019	N	440-242200-6	Qal	33.8 - 38.3	73	44	<2.0	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-5	Qal	33.8 - 38.3	87	36	0.24 J	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-4	Qal	33.8 - 38.3	76	56	<1.0	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-2	Qal	33.8 - 38.3	82	35	0.22 J	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-27/28	Qal	33.8 - 38.3	77	26	0.28	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-5/6	Qal	33.8 - 38.3	76	26	0.41	--	--	--	--	--	--	--
SWFTS-MW08A	BL01	3/30/2017	N	440-181045-9	Qal	20.2 - 34.8	66	27	<0.50	--	--	<0.025 UJ	--	--	--	--
	EM04	10/10/2017	N	440-194094-4	Qal	20.2 - 34.8	70	31	<2.5	--	--	--	--	190	190	<4.0
	EM06	11/15/2017	N	440-196659-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	190	190	<4.0
	EM07	12/14/2017	N	440-198571-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	190	190	<4.0
	EM08	2/22/2018	N	440-204033-8	Qal	20.2 - 34.8	--	--	--	--	--	--	--	200	200	<4.0
	EM09	3/29/2018	N	440-207586-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	180	180	<4.0

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW08A	EM10	5/3/2018	N	440-210534-5	Qal	20.2 - 34.8	--	--	--	--	--	--	--	150	150	<4.0
	EM11	7/11/2018	N	440-215717-14	Qal	20.2 - 34.8	68	37	<5.0	--	--	<0.025	--	190	190	<4.0
	EM15	10/10/2018	N	440-221975-13	Qal	20.2 - 34.8	67	31	<2.5	--	--	<0.025	--	210	210	<4.0
	EM19	5/22/2019	N	440-242198-4	Qal	20.2 - 34.8	69	26	<2.0	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-6	Qal	20.2 - 34.8	69	30	<0.20	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-3	Qal	20.2 - 34.8	60	24	<1.0	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-4	Qal	20.2 - 34.8	67	27	<0.20	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-29/30	Qal	20.2 - 34.8	66	26	0.13	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-23/24	Qal	20.2 - 34.8	66	25	0.19 J+	--	--	--	--	--	--	--
SWFTS-MW08C	BL01	3/28/2017	N	440-180820-3	UMCf	49.9 - 69.5	37	55	<0.50	--	--	0.093	--	--	--	--
SWFTS-MW09A	BL01	3/29/2017	N	440-180937-3	Qal	19.3 - 28.9	66	29	<0.50	--	--	0.043 J	--	--	--	--
	EM04	10/11/2017	N	440-194094-7	Qal	19.3 - 28.9	50	1.8 J	<0.50	--	--	--	--	290	290	<4.0
	EM06	11/16/2017	N	440-196786-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	340	340	<4.0
	EM07	12/12/2017	N	440-198371-6	Qal	19.3 - 28.9	--	--	--	--	--	--	--	320	320	<4.0
	EM08	2/20/2018	N	440-203841-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	310	310	<4.0
	EM09	3/27/2018	N	440-207268-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	300	300	<4.0
	EM10	5/1/2018	N	440-210284-13	Qal	19.3 - 28.9	--	--	--	--	--	--	--	280	280	<4.0
	EM11	7/12/2018	N	440-215717-10	Qal	19.3 - 28.9	39	8.2 J	<5.0	--	--	0.025 J	--	340	340	<4.0
	EM15	10/9/2018	N	440-221855-7	Qal	19.3 - 28.9	35	12	<2.5	--	--	0.33	--	300	300	<4.0
	EM19	5/22/2019	N	440-242200-1	Qal	19.3 - 28.9	26	8.6 J	<2.0	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-1	Qal	19.3 - 28.9	45	10	0.41 J	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-4	Qal	19.3 - 28.9	37	16	0.47 J	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-3	Qal	19.3 - 28.9	37	16	<1.0	--	--	--	--	--	--	--
	EM33	6/1/2021	N	550-164699-1/2	Qal	19.3 - 28.9	37	15	0.29	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-10/9	Qal	19.3 - 28.9	44	11	0.55 J+	--	--	--	--	--	--	--
SWFTS-MW09B	BL01	3/29/2017	FD	440-180937-5	Qal	34.4 - 39.0	58	37	<0.50	--	--	0.064	--	--	--	--
	BL01	3/29/2017	N	440-180937-4	Qal	34.4 - 39.0	66	40	<0.50	--	--	0.068	--	--	--	--
	EM04	10/11/2017	N	440-194094-5	Qal	34.4 - 39.0	57	5.0 J	<2.5	--	--	--	--	340	340	<4.0
	EM06	11/16/2017	N	440-196786-15	Qal	34.4 - 39.0	--	--	--	--	--	--	--	380	380	<4.0
	EM07	12/12/2017	N	440-198371-7	Qal	34.4 - 39.0	--	--	--	--	--	--	--	310	310	<4.0
	EM08	2/20/2018	N	440-203841-13	Qal	34.4 - 39.0	--	--	--	--	--	--	--	430	430	<4.0
	EM09	3/27/2018	N	440-207268-6	Qal	34.4 - 39.0	--	--	--	--	--	--	--	250	250	<4.0
	EM10	4/30/2018	N	440-210173-11	Qal	34.4 - 39.0	--	--	--	--	--	--	--	230	230	<4.0
	EM11	7/12/2018	N	440-215717-9	Qal	34.4 - 39.0	50	15 J	<5.0	--	--	<0.025	--	290	290	<4.0
	EM15	10/9/2018	N	440-221855-8	Qal	34.4 - 39.0	50	21	<2.5	--	--	<0.025	--	250	250	<4.0
	EM19	5/22/2019	N	440-242200-2	Qal	34.4 - 39.0	63	21	<2.0	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-3	Qal	34.4 - 39.0	57	25	0.39 J	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-3	Qal	34.4 - 39.0	53	31	0.39 J	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-4	Qal	34.4 - 39.0	60	28	<1.0	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-1/2	Qal	34.4 - 39.0	62	27	0.48	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-11/12	Qal	34.4 - 39.0	64	26	0.42 J+	--	--	--	--	--	--	--
SWFTS-MW10A	BL01	3/31/2017	N	440-181122-2	Qal	20.4 - 35.0	93	28	<2.5	--	--	0.059	--	--	--	--
	EM04	10/12/2017	N	440-194242-10	Qal	20.4 - 35.0	100	2.0	<0.50	--	--	--	--	390	390	<4.0
	EM06	11/16/2017	FD	440-196786-6	Qal	20.4 - 35.0	59	<2.5	<2.5	--	0.28	0.13 J	0.28	450	450	<4.0
	EM06	11/16/2017	N	440-196786-5	Qal	20.4 - 35.0	64	<2.5	<2.5	--	0.19 J	0.14	0.19	450	450	<4.0
	EM07	12/12/2017	FD	440-198371-11	Qal	20.4 - 35.0	--	--	--	--	--	--	--	410	410	<4.0

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW10A	EM07	12/12/2017	N	440-198371-10	Qal	20.4 - 35.0	--	--	--	--	--	--	--	410	410	<4.0
	EM08	2/20/2018	FD	440-203841-5	Qal	20.4 - 35.0	18	1.9 J	<0.50	--	0.20	<0.025	1.5 J	470	470	<4.0
	EM08	2/20/2018	N	440-203841-4	Qal	20.4 - 35.0	20	2.2	<0.50	--	0.15 J	<0.025	0.15 J	470	470	<4.0
	EM09	3/26/2018	FD	440-207137-8	Qal	20.4 - 35.0	16	10	<0.50	--	<0.10	<0.025	0.36	370	370	<4.0
	EM09	3/26/2018	N	440-207137-7	Qal	20.4 - 35.0	15	8.3	<0.50	--	<0.10	<0.025	0.37	370	370	<4.0
	EM10	5/1/2018	N	440-210284-1	Qal	20.4 - 35.0	20	10 J	<5.0	--	<0.10	<0.025	0.96	330	330	<4.0
	EM11	7/11/2018	N	440-215585-9	Qal	20.4 - 35.0	28	18 J	<5.0	--	0.10 J	<0.025	0.99	360	360	<4.0
	EM13	8/14/2018	N	440-218109-10	Qal	20.4 - 35.0	25	8.0 J	<5.0	--	<0.10	<0.025	<0.11	360	360	<4.0
	EM14	9/10/2018	N	440-219797-4	Qal	20.4 - 35.0	28	7.6 J	<5.0	--	0.19 J	<0.025	0.19	350	350	<4.0
	EM15	10/9/2018	N	440-221855-9	Qal	20.4 - 35.0	26	4.5 J	<2.5	--	0.32	<0.025	0.32	380	380	<4.0
	EM19	5/21/2019	N	440-242084-2	Qal	20.4 - 35.0	43	8.9	<0.20	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-1	Qal	20.4 - 35.0	39	8.4	<0.20	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-6	Qal	20.4 - 35.0	46	41	<0.20	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-4	Qal	20.4 - 35.0	53	38	<0.20	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-13/14	Qal	20.4 - 35.0	65	49	0.20	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-17/18	Qal	20.4 - 35.0	56	32	0.096 J	--	--	--	--	--	--	--
SWFTS-MW10C	BL01	3/28/2017	N	440-180820-4	UMCf	43.5 - 63.1	26	37	<0.50	--	--	0.059	--	--	--	--
SWFTS-MW11	BL02	7/12/2017	N	440-188244-7	Qal	14.8 - 39.6	34	65	<0.50	<1,000	<0.10 UJ	0.059 J-	12	200	200	<4.0
	EM04	10/11/2017	N	440-194094-8	Qal	14.8 - 39.6	64	68	<2.5	--	<0.10	<0.025	11	210	210	<4.0
	EM06	11/16/2017	N	440-196786-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	210	210	<4.0
	EM07	12/14/2017	N	440-198571-13	Qal	14.8 - 39.6	--	--	--	--	--	--	--	220	220	<4.0
	EM08	2/21/2018	FD	440-203937-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	190	190	<4.0
	EM08	2/21/2018	N	440-203937-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	190	190	<4.0
	EM09	3/28/2018	FD	440-207497-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	160	160	<4.0
	EM09	3/28/2018	N	440-207497-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	180	180	<4.0
	EM10	5/1/2018	FD	440-210367-1	Qal	14.8 - 39.6	--	--	--	--	--	--	--	190	190	<4.0
	EM10	5/1/2018	N	440-210284-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	180	180	<4.0
	EM11	7/12/2018	FD	440-215717-18	Qal	14.8 - 39.6	76	56	<5.0	--	<0.10	<0.025	16	200	200	<4.0
	EM11	7/12/2018	N	440-215717-17	Qal	14.8 - 39.6	72	55	<5.0	--	<0.10	<0.025	16	190	190	<4.0
	EM15	10/11/2018	FD	440-222092-11	Qal	14.8 - 39.6	75	61	<2.5	--	0.19 J	<0.025	17	210	210	<4.0
	EM15	10/11/2018	N	440-222092-10	Qal	14.8 - 39.6	77	61	<2.5	--	<0.10	<0.025	17	210	210	<4.0
	EM19	5/22/2019	FD	440-242200-4	Qal	14.8 - 39.6	100	58	<2.0	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-3	Qal	14.8 - 39.6	87	53	<2.0	--	--	--	--	--	--	--
	EM22	11/7/2019	FD	440-254150-4	Qal	14.8 - 39.6	91	46	<0.20	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-3	Qal	14.8 - 39.6	91	48	<0.20	--	--	--	--	--	--	--
	EM26	4/30/2020	FD	440-265383-5	Qal	14.8 - 39.6	94	71	<1.0	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-4	Qal	14.8 - 39.6	96	78	<1.0	--	--	--	--	--	--	--
	EM29	10/16/2020	FD	440-273433-8	Qal	14.8 - 39.6	100	57	<0.20	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-7	Qal	14.8 - 39.6	97	54	<0.20	--	--	--	--	--	--	--
	EM33	6/4/2021	FD	550-164930-10/9	Qal	14.8 - 39.6	95	40	0.033 J	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-7/8	Qal	14.8 - 39.6	96	37	0.027 J	--	--	--	--	--	--	--
	EM36	12/3/2021	FD	550-175222-10/9	Qal	14.8 - 39.6	95	33	0.060 J	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-7/8	Qal	14.8 - 39.6	96	34	0.075 J	--	--	--	--	--	--	--
SWFTS-MW12	BL02	7/13/2017	N	440-188324-6	Qal	15.8 - 40.6	62	51	<0.50	<500	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-1	Qal	15.8 - 40.6	66	61	<0.50	--	<0.10	<0.025	13	110	110	<4.0
	EM06	11/14/2017	N	440-196558-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	110	110	<4.0

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW12	EM07	12/14/2017	N	440-198571-15	Qal	15.8 - 40.6	--	--	--	--	--	--	--	110	110	<4.0
	EM08	2/22/2018	N	440-204033-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	120	120	<4.0
	EM09	3/28/2018	N	440-207497-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	130	130	<4.0
	EM10	5/3/2018	N	440-210534-4	Qal	15.8 - 40.6	--	--	--	--	--	--	--	110	110	<4.0
	EM11	7/12/2018	N	440-215717-16	Qal	15.8 - 40.6	69	48	<5.0	--	--	<0.025	--	110	110	<4.0
	EM15	10/11/2018	N	440-222092-12	Qal	15.8 - 40.6	62	47	<2.5	--	--	<0.025	--	130	130	<4.0
	EM19	5/22/2019	N	440-242198-7	Qal	15.8 - 40.6	70	52	<2.0	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-2	Qal	15.8 - 40.6	100	2.8	<0.20	--	--	--	--	--	--	--
	EM22	11/26/2019	FD	440-255698-2	Qal	15.8 - 40.6	96 J-	390 J-	<4.0 UJ	--	--	--	--	--	--	--
	EM22	11/26/2019	N	440-255698-1	Qal	15.8 - 40.6	120 J-	330 J-	<4.0 UJ	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-3	Qal	15.8 - 40.6	120	120	<1.0	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-6	Qal	15.8 - 40.6	19	36	<0.20	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-5/6	Qal	15.8 - 40.6	13	23	<0.013	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-19/20	Qal	15.8 - 40.6	22	31	<0.013	--	--	--	--	--	--	--
SWFTS-MW13	BL02	7/12/2017	N	440-188244-6	Qal	17.8 - 47.6	24	40	<0.50	<500	<0.10	0.033 J	12	110	110	<4.0
	EM04	10/10/2017	N	440-193989-4	Qal	17.8 - 47.6	49	50	<2.5	--	--	--	--	120	120	<4.0
	EM06	11/15/2017	N	440-196659-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	100	100	<4.0
	EM07	12/14/2017	N	440-198571-14	Qal	17.8 - 47.6	--	--	--	--	--	--	--	110	110	<4.0
	EM08	2/22/2018	N	440-204033-7	Qal	17.8 - 47.6	--	--	--	--	--	--	--	100	100	<4.0
	EM09	3/26/2018	N	440-207137-4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	100	100	<4.0
	EM10	5/3/2018	N	440-210534-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	96	96	<4.0
	EM11	7/12/2018	N	440-215717-15	Qal	17.8 - 47.6	45	41	<5.0	--	--	0.027 J	--	94	94	<4.0
	EM15	10/11/2018	N	440-222092-14	Qal	17.8 - 47.6	44	48	<2.5	--	--	<0.025	--	99	99	<4.0
	EM19	5/22/2019	N	440-242198-5	Qal	17.8 - 47.6	47	37	<2.0	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-6	Qal	17.8 - 47.6	53	55	<0.20	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-2	Qal	17.8 - 47.6	56	59	<1.0	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-6	Qal	17.8 - 47.6	56	58	<1.0	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-3/4	Qal	17.8 - 47.6	54	59	0.091 J	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-17/18	Qal	17.8 - 47.6	59	59	0.10 J+	--	--	--	--	--	--	--
SWFTS-MW14	BL02	7/12/2017	FD	440-188244-9	Qal	16.8 - 36.6	54	59	<0.50	<500	<0.10	0.045 J	12	200	200	<4.0
	BL02	7/12/2017	N	440-188244-8	Qal	16.8 - 36.6	56	61	<0.50	<500	<0.10	0.062	12	200	200	<4.0
	EM04	10/11/2017	N	440-194242-8	Qal	16.8 - 36.6	160	2.4	<0.50	--	0.11 J	0.040 J	0.11	600	600	<4.0
	EM06	11/15/2017	N	440-196659-3	Qal	16.8 - 36.6	88	<2.5	<2.5	--	0.19 J	0.15 J-	0.19	560	560	<4.0
	EM07	12/12/2017	N	440-198371-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	430	430	<4.0
	EM08	2/20/2018	N	440-203841-11	Qal	16.8 - 36.6	180	7.3 J-	<0.50	200 R	1.1	2.6	1.1	1,000	1,000	<4.0
	EM09	3/26/2018	N	440-207137-9	Qal	16.8 - 36.6	110	190 J-	<2.5	--	0.87	0.39	0.87	1,100	1,100	<4.0
	EM10	4/30/2018	N	440-210173-9	Qal	16.8 - 36.6	71	220	<5.0	--	0.42	0.43	0.42	1,200	1,200	<4.0
	EM11	7/10/2018	N	440-215437-8	Qal	16.8 - 36.6	18	110	<5.0	--	0.45	0.52	0.45	1,300	1,300	<4.0
	EM13	8/14/2018	N	440-218109-11	Qal	16.8 - 36.6	13	180 J+	<5.0	--	0.41	0.35	0.41	1,300	1,300	<4.0
	EM14	9/11/2018	N	440-219886-17	Qal	16.8 - 36.6	17	510	<5.0	--	0.78	0.43	0.78	1,200	1,200	<4.0
	EM15	10/9/2018	N	440-221855-10	Qal	16.8 - 36.6	13	200	<2.5	--	0.70	0.14	0.70	1,300	1,300	<4.0
	EM19	5/21/2019	N	440-242084-1	Qal	16.8 - 36.6	1.5	89	<0.20	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-2	Qal	16.8 - 36.6	<0.50	36	<0.20	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265414-2	Qal	16.8 - 36.6	<2.5	87 J-	<1.0	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-5	Qal	16.8 - 36.6	2.5	3.7	<0.20	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-1/2	Qal	16.8 - 36.6	10	14	0.030 J	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW14	EM36	12/3/2021	N	550-175222-1/2	Qal	16.8 - 36.6	63	0.73	<0.013	--	--	--	--	--	--	--
SWFTS-MW15	BL02	7/13/2017	N	440-188325-3	Qal	14.8 - 34.6	62	28	<0.50	<500	<0.10	0.15	10	220	220	<4.0
	EM04	10/10/2017	N	440-194094-1	Qal	14.8 - 34.6	67	29	<0.50	--	<0.10	0.072	11	200	200	<4.0
	EM06	11/14/2017	N	440-196558-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	200	200	<4.0
	EM07	12/13/2017	N	440-198508-13	Qal	14.8 - 34.6	79	33	<0.50	--	<0.10	<0.025	12	200	200	<4.0
	EM08	2/19/2018	N	440-203775-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	190	190	<4.0
	EM09	3/26/2018	N	440-207137-10	Qal	14.8 - 34.6	--	--	--	--	--	--	--	190	190	<4.0
	EM10	5/2/2018	N	440-210430-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	190	190	<4.0
	EM11	7/11/2018	N	440-215717-1	Qal	14.8 - 34.6	79	21	<5.0	--	--	0.065	--	290	290	<4.0
	EM15	10/9/2018	N	440-221855-11	Qal	14.8 - 34.6	23	50	<2.5	--	--	0.049 J	--	290	290	<4.0
	EM19	5/20/2019	N	440-242014-1	Qal	14.8 - 34.6	69	26	0.36 J	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-3	Qal	14.8 - 34.6	75	32	<0.20	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-3	Qal	14.8 - 34.6	53	29	<1.0	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-4	Qal	14.8 - 34.6	56	16	<1.0	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-13/14	Qal	14.8 - 34.6	47	26	0.017 J	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-10/9	Qal	14.8 - 34.6	60	24	0.15 J+	--	--	--	--	--	--	--
SWFTS-MW16	BL02	7/13/2017	N	440-188325-2	Qal	21.8 - 41.6	61	43	<0.50	<500	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-7	Qal	21.8 - 41.6	76	17	<0.50	--	0.43	0.081	2.5	640	640	<4.0
	EM06	11/16/2017	N	440-196786-4	Qal	21.8 - 41.6	44	35	<0.50	--	2.8	0.37	4.0	960	960	<4.0
	EM07	12/12/2017	N	440-198371-4	Qal	21.8 - 41.6	--	--	--	--	--	--	--	790	790	<4.0
	EM08	2/21/2018	N	440-203937-6	Qal	21.8 - 41.6	15	8.1	<1.0	--	0.23	0.096	0.23	780	780	<4.0
	EM09	3/27/2018	N	440-207268-13	Qal	21.8 - 41.6	63	31	<0.50	--	<0.10	0.12	12	200	200	<4.0
	EM10	5/2/2018	N	440-210430-13	Qal	21.8 - 41.6	13	22	<0.50 UJ	--	0.34	0.051	3.8	510	510	<4.0
	EM11	7/11/2018	N	440-215585-12	Qal	21.8 - 41.6	39	21	<5.0	--	0.75	0.11	0.75	1,100	1,100	<4.0
	EM13	8/15/2018	N	440-218208-13	Qal	21.8 - 41.6	6.3	<0.50 UJ	<0.50	--	0.61	0.14	0.61	810	810	<4.0
	EM14	9/10/2018	N	440-219797-6	Qal	21.8 - 41.6	11	<5.0	<5.0	--	0.58	0.076	1.0	680	680	<4.0
	EM15	10/11/2018	N	440-222092-3	Qal	21.8 - 41.6	9.0	<2.5	<2.5	--	0.59	<0.025	1.4	570	570	<4.0
	EM19	5/20/2019	N	440-242014-3	Qal	21.8 - 41.6	3.1	5.8	<0.20	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-5	Qal	21.8 - 41.6	2.6	5.5	<0.20	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-1	Qal	21.8 - 41.6	20	<2.5	<1.0	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-1	Qal	21.8 - 41.6	18	5.1 J	<1.0	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-11/12	Qal	21.8 - 41.6	10	<0.074	<0.013	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-11/12	Qal	21.8 - 41.6	6.2	0.69	0.027 J	--	--	--	--	--	--	--
SWFTS-MW17	BL02	7/12/2017	N	440-188244-1	Qal	22.8 - 52.6	51	32	<0.50	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-3	Qal	22.8 - 52.6	56	30	<2.5	--	<0.10	<0.025	16	94	94	<4.0
	EM06	11/15/2017	FD	440-196659-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	93	93	<4.0
	EM06	11/15/2017	N	440-196659-5	Qal	22.8 - 52.6	--	--	--	--	--	--	--	93	93	<4.0
	EM07	12/13/2017	FD	440-198508-7	Qal	22.8 - 52.6	--	--	--	--	--	--	--	92	92	<4.0
	EM07	12/13/2017	N	440-198508-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	93	93	<4.0
	EM08	2/22/2018	N	440-204033-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	92	92	<4.0
	EM09	3/28/2018	N	440-207497-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	93	93	<4.0
	EM10	5/3/2018	N	440-210534-3	Qal	22.8 - 52.6	--	--	--	--	--	--	--	93	93	<4.0
	EM11	7/11/2018	N	440-215585-13	Qal	22.8 - 52.6	53	22	<5.0	--	--	<0.025	--	93	93	<4.0
	EM15	10/11/2018	N	440-222092-4	Qal	22.8 - 52.6	55	23	<2.5	--	--	<0.025	--	98	98	<4.0
	EM19	5/22/2019	N	440-242198-6	Qal	22.8 - 52.6	55	22	<2.0	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-1	Qal	22.8 - 52.6	56	24	<0.20	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW17	EM26	4/30/2020	N	440-265383-6	Qal	22.8 - 52.6	57	24	<1.0	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-5	Qal	22.8 - 52.6	55	25	<1.0	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-10/9	Qal	22.8 - 52.6	58	26	0.084 J	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-21/22	Qal	22.8 - 52.6	62	33	0.12 J+	--	--	--	--	--	--	--
SWFTS-MW18	BL02	7/11/2017	N	440-188133-17	Qal	16.8 - 36.6	71	36	<0.50	<500	<0.10	0.25	12	190	190	<4.0
	EM04	10/10/2017	N	440-194094-3	Qal	16.8 - 36.6	66	38	<2.5	--	--	--	--	190	190	<4.0
	EM06	11/15/2017	N	440-196690-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	190	190	<4.0
	EM07	12/13/2017	N	440-198508-5	Qal	16.8 - 36.6	73	41	<0.50	--	<0.10	0.058	12	200	200	<4.0
	EM08	2/22/2018	N	440-204033-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	210	210	<4.0
	EM09	3/27/2018	FD	440-207268-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	550	550	<4.0
	EM09	3/27/2018	N	440-207268-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	580	580	<4.0
	EM10	5/1/2018	N	440-210284-6	Qal	16.8 - 36.6	--	--	--	--	--	--	--	190	190	<4.0
	EM11	7/11/2018	N	440-215717-2	Qal	16.8 - 36.6	67	37	<5.0	--	--	0.045 J	--	200	200	<4.0
	EM15	10/11/2018	N	440-222092-5	Qal	16.8 - 36.6	76	43	<2.5	--	--	<0.025	--	240	240	<4.0
	EM19	5/21/2019	N	440-242084-15	Qal	16.8 - 36.6	66	38	0.25 J	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-4	Qal	16.8 - 36.6	63	12	<0.20	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-2	Qal	16.8 - 36.6	54	24	<1.0	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-2	Qal	16.8 - 36.6	60	29	<1.0	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-7/8	Qal	16.8 - 36.6	52	34	0.077 J	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-5/6	Qal	16.8 - 36.6	210	3.1	0.019 J	--	--	--	--	--	--	--
SWFTS-MW19	BL02	7/12/2017	N	440-188244-2	Qal	11.3 - 31.1	68	2.2	<0.50	<20	0.18 J	<0.025	0.51	240	240	<4.0
	EM04	10/12/2017	N	440-194204-1	Qal	11.3 - 31.1	71	2.8	<0.50	--	--	--	--	230	230	<4.0
	EM06	11/16/2017	N	440-196786-12	Qal	11.3 - 31.1	--	--	--	--	--	--	--	220	220	<4.0
	EM07	12/12/2017	N	440-198371-8	Qal	11.3 - 31.1	--	--	--	--	--	--	--	210	210	<4.0
	EM08	2/20/2018	N	440-203841-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	210	210	<4.0
	EM09	3/27/2018	N	440-207268-3	Qal	11.3 - 31.1	--	--	--	--	--	--	--	210	210	<4.0
	EM10	4/30/2018	FD	440-210173-5	Qal	11.3 - 31.1	--	--	--	--	--	--	--	220	220	<4.0
	EM10	4/30/2018	N	440-210173-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	200	200	<4.0
	EM11	7/10/2018	FD	440-215437-11	Qal	11.3 - 31.1	67	5.9 J	<5.0	--	--	0.028 J	--	200	200	<4.0
	EM11	7/10/2018	N	440-215437-10	Qal	11.3 - 31.1	68	6.0 J	<5.0	--	--	0.035 J	--	210	210	<4.0
	EM15	10/9/2018	FD	440-221855-5	Qal	11.3 - 31.1	71	6.6 J	<2.5	--	--	<0.025	--	230	230	<4.0
	EM15	10/9/2018	N	440-221855-4	Qal	11.3 - 31.1	73	4.9 J	<2.5	--	--	<0.025	--	220	220	<4.0
	EM19	5/21/2019	FD	440-242084-7	Qal	11.3 - 31.1	74	3.9	<0.20	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-6	Qal	11.3 - 31.1	74	4.0	<0.20	--	--	--	--	--	--	--
	EM22	11/5/2019	FD	440-253891-7	Qal	11.3 - 31.1	77	5.3	<0.20	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-6	Qal	11.3 - 31.1	77	5.1	<0.20	--	--	--	--	--	--	--
	EM26	4/28/2020	FD	440-265288-7	Qal	11.3 - 31.1	64	12	<0.20	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-4	Qal	11.3 - 31.1	64	11	<0.20	--	--	--	--	--	--	--
	EM29	10/14/2020	FD	440-273303-3	Qal	11.3 - 31.1	67	4.6	<0.20	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-2	Qal	11.3 - 31.1	69	5.0	<0.20	--	--	--	--	--	--	--
	EM33	6/3/2021	FD	550-164869-5/6	Qal	11.3 - 31.1	72	3.1	0.048 J	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-3/4	Qal	11.3 - 31.1	71	3.2	0.049 J	--	--	--	--	--	--	--
	EM36	12/1/2021	FD	550-175045-15/16	Qal	11.3 - 31.1	75	3.5	0.074 J	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-13/14	Qal	11.3 - 31.1	75	3.0	0.078 J	--	--	--	--	--	--	--
SWFTS-MW20	BL02	7/12/2017	N	440-188244-5	Qal	12.8 - 37.6	69	98	<0.50	<500	--	--	--	--	--	--
	EM04	10/12/2017	FD	440-194202-2	Qal	12.8 - 37.6	76	89	<2.5	--	<0.10	0.11 J	9.1	200	200	<4.0

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Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW20	EM04	10/12/2017	N	440-194202-1	Qal	12.8 - 37.6	77	85	<2.5	--	<0.10	0.044 J	8.5	200	200	<4.0
	EM06	11/16/2017	N	440-196786-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	380	380	<4.0
	EM07	12/12/2017	N	440-198371-3	Qal	12.8 - 37.6	--	--	--	--	--	--	--	210	210	<4.0
	EM08	2/19/2018	N	440-203775-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	510	510	<4.0
	EM09	3/27/2018	N	440-207268-9	Qal	12.8 - 37.6	--	--	--	--	--	--	--	400	400	<4.0
	EM10	4/30/2018	N	440-210173-10	Qal	12.8 - 37.6	--	--	--	--	--	--	--	490	490	<4.0
	EM11	7/11/2018	N	440-215717-8	Qal	12.8 - 37.6	74	39	<5.0	--	--	0.10	--	510	510	<4.0
	EM15	10/9/2018	N	440-221855-1	Qal	12.8 - 37.6	70	24	<2.5	--	--	0.15	--	580	580	<4.0
	EM19	5/21/2019	N	440-242084-3	Qal	12.8 - 37.6	74	15	<0.20	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-6	Qal	12.8 - 37.6	82	10	<0.20	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-5	Qal	12.8 - 37.6	71	7.7 J	<1.0	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-6	Qal	12.8 - 37.6	100	6.0	<0.20	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-1/2	Qal	12.8 - 37.6	140	2.8	0.10	--	--	--	--	--	--	--
	EM36	11/29/2021	N	550-174897-1/2	Qal	12.8 - 37.6	160	0.87	0.24	--	--	--	--	--	--	--
SWFTS-MW21	BL02	7/13/2017	N	440-188324-5	Qal	14.8 - 39.6	42	49	<0.50	<500	<0.10	0.58	15	120	120	<4.0
	EM04	10/11/2017	N	440-194090-8	Qal	14.8 - 39.6	52	6.8	<0.50	--	0.29	0.15	2.1	230	230	<4.0
	EM06	11/15/2017	N	440-196665-5	Qal	14.8 - 39.6	--	--	--	--	--	--	--	400	400	<4.0
	EM07	12/13/2017	N	440-198508-10	Qal	14.8 - 39.6	38	37 J+	<0.50	--	<0.10 UJ	0.10	6.4	350	350	<4.0
	EM08	2/20/2018	FD	440-203841-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	180	180	<4.0
	EM08	2/20/2018	N	440-203841-9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	180	180	<4.0
	EM09	3/27/2018	N	440-207268-14	Qal	14.8 - 39.6	--	--	--	--	--	--	--	170	170	<4.0
	EM10	4/30/2018	N	440-210173-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	170	170	<4.0
	EM11	7/12/2018	N	440-215717-3	Qal	14.8 - 39.6	51	11 J	<5.0	--	--	0.054	--	330	330	<4.0
	EM15	10/9/2018	N	440-221855-3	Qal	14.8 - 39.6	31	23	<2.5	--	--	0.38	--	390	390	<4.0
	EM19	5/22/2019	N	440-242198-3	Qal	14.8 - 39.6	33	20	<2.0	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-3	Qal	14.8 - 39.6	81	14	<0.20	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-1	Qal	14.8 - 39.6	45	31	<1.0	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-7	Qal	14.8 - 39.6	33	12	<0.40	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-15/16	Qal	14.8 - 39.6	37	12	0.072 J	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-3/4	Qal	14.8 - 39.6	47	11	0.12	--	--	--	--	--	--	--
SWFTS-MW22	BL02	7/13/2017	N	440-188324-1	Qal	11.8 - 31.6	52	25	<0.50	<500	0.44	3.3	2.6	230	230	<4.0
	EM04	10/12/2017	N	440-194242-9	Qal	11.8 - 31.6	58	19	<0.50	--	--	--	--	240	240	<4.0
	EM06	11/16/2017	N	440-196786-18	Qal	11.8 - 31.6	--	--	--	--	--	--	--	240	240	<4.0
	EM07	12/14/2017	N	440-198571-17	Qal	11.8 - 31.6	--	--	--	--	--	--	--	240	240	<4.0
	EM08	2/21/2018	N	440-203937-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	230	230	<4.0
	EM09	3/28/2018	N	440-207497-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	230	230	<4.0
	EM10	4/30/2018	N	440-210173-6	Qal	11.8 - 31.6	--	--	--	--	--	--	--	230	230	<4.0
	EM11	7/10/2018	N	440-215437-9	Qal	11.8 - 31.6	61	11 J	<5.0	--	--	0.089	--	250	250	<4.0
	EM15	10/9/2018	N	440-221855-2	Qal	11.8 - 31.6	63	12	<2.5	--	--	0.050	--	260	260	<4.0
	EM19	5/21/2019	N	440-242084-4	Qal	11.8 - 31.6	68	15	<0.20	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-4	Qal	11.8 - 31.6	71	13	<0.20	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-5	Qal	11.8 - 31.6	65	14	<0.20	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-1	Qal	11.8 - 31.6	62	21	<0.20	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-11/12	Qal	11.8 - 31.6	66	19	0.061 J	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-1/2	Qal	11.8 - 31.6	70	18	0.096 J	--	--	--	--	--	--	--
SWFTS-MW23	BL02	7/13/2017	N	440-188325-7	Qal	13.8 - 33.6	91	2.7	<0.50	<20	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Dissolved Metals by SW6020			EPA 300.1B	EPA 351.2	EPA 365.3	NTOTAL	SM2320B		
							Arsenic	Selenium	Thallium	Chlorite	Total Kjeldahl Nitrogen (TKN)	Phosphorus	Nitrogen, Total	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3
							µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW23	EM04	10/11/2017	N	440-194090-7	Qal	13.8 - 33.6	88	2.5	<0.50	--	0.30	0.036 J	1.2	200	200	<4.0
	EM06	11/15/2017	N	440-196665-3	Qal	13.8 - 33.6	--	--	--	--	--	--	--	200	200	<4.0
	EM07	12/12/2017	N	440-198371-2	Qal	13.8 - 33.6	--	--	--	--	--	--	--	190	190	<4.0
	EM08	2/21/2018	N	440-203937-14	Qal	13.8 - 33.6	--	--	--	--	--	--	--	190	190	<4.0
	EM09	3/28/2018	N	440-207497-9	Qal	13.8 - 33.6	--	--	--	--	--	--	--	190	190	<4.0
	EM10	5/2/2018	N	440-210430-5	Qal	13.8 - 33.6	--	--	--	--	--	--	--	210	210	<4.0
	EM11	7/10/2018	N	440-215437-7	Qal	13.8 - 33.6	82	<5.0	<5.0	--	--	0.10	--	210	210	<4.0
	EM15	10/11/2018	N	440-222092-7	Qal	13.8 - 33.6	88	<2.5	<2.5	--	--	<0.025	--	210	210	<4.0
	EM19	5/22/2019	N	440-242201-7	Qal	13.8 - 33.6	81	<5.0	<2.0	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-5	Qal	13.8 - 33.6	89	1.5 J	<0.20	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-3	Qal	13.8 - 33.6	85	2.1	<0.20	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-1	Qal	13.8 - 33.6	86	1.4 J	<0.40	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-3/4	Qal	13.8 - 33.6	89	1.1 J+	0.068 J	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-15/16	Qal	13.8 - 33.6	97	0.81	0.071 J	--	--	--	--	--	--	--
SWFTS-MW24	BL02	7/13/2017	N	440-188324-2	Qal	12.8 - 37.6	60	36	<0.50	<500	<0.10	0.11	13	170	170	<4.0
	EM04	10/11/2017	N	440-194242-2	Qal	12.8 - 37.6	67	20	<0.50	--	--	--	--	200	200	<4.0
	EM06	11/15/2017	N	440-196665-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	240	240	<4.0
	EM07	12/12/2017	N	440-198371-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	190	190	<4.0
	EM08	2/21/2018	N	440-203937-8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	230	230	<4.0
	EM09	3/28/2018	N	440-207497-12	Qal	12.8 - 37.6	--	--	--	--	--	--	--	270	270	<4.0
	EM10	5/2/2018	N	440-210430-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	260	260	<4.0
	EM11	7/12/2018	N	440-215717-5	Qal	12.8 - 37.6	59	18 J	<5.0	--	--	0.043 J	--	250	250	<4.0
	EM15	10/10/2018	N	440-221975-7	Qal	12.8 - 37.6	57	11	<2.5	--	--	<0.025	--	300	300	<4.0
	EM19	5/22/2019	N	440-242198-1	Qal	12.8 - 37.6	63	12 J	<2.0	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-2	Qal	12.8 - 37.6	66	18	<0.20	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-1	Qal	12.8 - 37.6	46	12	0.38 J	--	--	--	--	--	--	--
	EM29	10/12/2020	N	440-273153-1	Qal	12.8 - 37.6	62	13	0.25 J	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-7/8	Qal	12.8 - 37.6	60	13	0.064 J	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-17/18	Qal	12.8 - 37.6	60	16	0.12	--	--	--	--	--	--	--
SWFTS-MW25	BL02	7/13/2017	N	440-188324-4	Qal	12.8 - 42.6	67	53	<0.50	<500 UJ	<0.10	0.48	10	210	210	<4.0
	EM04	10/11/2017	N	440-194242-1	Qal	12.8 - 42.6	43	4.7	<0.50	--	--	--	--	300	300	<4.0
	EM06	11/15/2017	N	440-196665-2	Qal	12.8 - 42.6	41	2.5 J	<2.5	--	0.17 J	0.40	0.17	400	400	<4.0
	EM07	12/12/2017	N	440-198371-1	Qal	12.8 - 42.6	37	2.9	0.50 J	--	0.12 J	0.14	0.12	330	330	<4.0
	EM08	2/21/2018	N	440-203937-7	Qal	12.8 - 42.6	41	4.7	<1.0	--	0.11 J	1.1	0.11	350	350	<4.0
	EM09	3/28/2018	N	440-207497-13	Qal	12.8 - 42.6	<0.50	2.6 J+	<0.50	--	0.20	0.097	3.0	320	320	<4.0
	EM10	5/3/2018	N	440-210534-2	Qal	12.8 - 42.6	39	12 J	<5.0	--	0.12 J	<0.25	4.3	290	290	<4.0
	EM11	7/10/2018	N	440-215437-12	Qal	12.8 - 42.6	38	6.6 J	<5.0	--	0.24	0.23	3.8	310	310	<4.0
	EM13	8/15/2018	N	440-218208-10	Qal	12.8 - 42.6	37	6.6	0.51 J	--	0.21	0.44	5.4	340	340	<4.0
	EM14	9/12/2018	N	440-220031-2	Qal	12.8 - 42.6	39	7.5 J	<5.0	--	0.24	0.49	7.1	310	310	<4.0
	EM15	10/11/2018	N	440-222092-6	Qal	12.8 - 42.6	41	12	<2.5	--	<0.10	<0.025	7.9	310	310	<4.0
	EM19	5/22/2019	N	440-242201-6	Qal	12.8 - 42.6	41	18 J	<2.0	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-4	Qal	12.8 - 42.6	50	19	0.39 J	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-2	Qal	12.8 - 42.6	48	36	0.55 J	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-2	Qal	12.8 - 42.6	48	32	<1.0	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-5/6	Qal	12.8 - 42.6	57	27	0.46	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-19/20	Qal	12.8 - 42.6	57	23	0.63	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COH-2B1	BL02	8/9/2017	N	440-189933-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-2	Alluvium/UMCf	36.0 - 66.0	<4.0	2,800	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-5	Alluvium/UMCf	36.0 - 66.0	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-6	Alluvium/UMCf	36.0 - 66.0	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-2	Alluvium/UMCf	36.0 - 66.0	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-11	Alluvium/UMCf	36.0 - 66.0	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-6	Alluvium/UMCf	36.0 - 66.0	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-1	Alluvium/UMCf	36.0 - 66.0	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM26	4/27/2020	N	440-265243-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-9	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
PC-58	BL01	3/28/2017	N	440-180820-1	Qal	7.8 - 32.8	--	--	--	<0.050	0.018	<0.0010	1.8	<0.0025	200	0.016
	BL02	7/13/2017	N	440-188324-3	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-6	Qal	7.8 - 32.8	<4.0	2,800	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-11	Qal	7.8 - 32.8	<4.0	2,900	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-9	Qal	7.8 - 32.8	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-13	Qal	7.8 - 32.8	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-6	Qal	7.8 - 32.8	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-10	Qal	7.8 - 32.8	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-7	Qal	7.8 - 32.8	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-19	Qal	7.8 - 32.8	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-7	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-1	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265414-3	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-5	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-23/24	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-11/12	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
PC-88	EM04	10/11/2017	FD	440-194090-3	Qal	40.0 - 50.0	<4.0	3,400	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-2	Qal	40.0 - 50.0	<4.0	3,400	--	--	--	--	--	--	--	--
	EM06	11/15/2017	FD	440-196690-10	Qal	40.0 - 50.0	<4.0	3,200	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196690-9	Qal	40.0 - 50.0	<4.0	3,200	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-11	Qal	40.0 - 50.0	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-10	Qal	40.0 - 50.0	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-3	Qal	40.0 - 50.0	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	FD	440-210430-9	Qal	40.0 - 50.0	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-8	Qal	40.0 - 50.0	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-12	Qal	40.0 - 50.0	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-11	Qal	40.0 - 50.0	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	FD	440-222092-16	Qal	40.0 - 50.0	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-15	Qal	40.0 - 50.0	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	FD	440-242201-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	FD	440-254148-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	FD	440-265412-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-88	EM26	5/1/2020	N	440-265412-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	FD	550-151259-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	FD	550-164869-27/28	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-25/26	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	FD	550-175153-7/8	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-5/6	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
PC-91	BL01	3/29/2017	N	440-180937-1	Qal	11.5 - 21.5	--	2,600	--	--	--	--	--	--	--	--
	BL02	7/12/2017	FD	440-188244-4	Qal	11.5 - 21.5	--	--	0.41 J	--	--	--	--	--	--	--
	BL02	7/12/2017	N	440-188247-5	Qal	11.5 - 21.5	--	--	0.45 J	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-3	Qal	11.5 - 21.5	<4.0	2,400	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-8	Qal	11.5 - 21.5	<4.0	2,300	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-9	Qal	11.5 - 21.5	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-1	Qal	11.5 - 21.5	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-1	Qal	11.5 - 21.5	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-3	Qal	11.5 - 21.5	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-6	Qal	11.5 - 21.5	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-16	Qal	11.5 - 21.5	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-9	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-2	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-11	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-17/18	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-1/2	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
PC-92	BL01	3/29/2017	N	440-180937-2	Qal	26.5 - 36.5	--	3,700	--	--	--	--	--	--	--	--
	BL02	7/12/2017	N	440-188247-6	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	FD	440-194204-5	Qal	26.5 - 36.5	<4.0	2,900	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-4	Qal	26.5 - 36.5	<4.0	2,900	--	--	--	--	--	--	--	--
	EM06	11/16/2017	FD	440-196786-10	Qal	26.5 - 36.5	<4.0	2,400	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-9	Qal	26.5 - 36.5	<4.0	2,400	--	--	--	--	--	--	--	--
	EM07	12/14/2017	FD	440-198571-8	Qal	26.5 - 36.5	<4.0	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-7	Qal	26.5 - 36.5	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-3	Qal	26.5 - 36.5	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-2	Qal	26.5 - 36.5	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	FD	440-207137-3	Qal	26.5 - 36.5	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-2	Qal	26.5 - 36.5	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-4	Qal	26.5 - 36.5	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-5	Qal	26.5 - 36.5	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-17	Qal	26.5 - 36.5	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-1	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-19/20	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-3/4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
PC-94	BL01	3/28/2017	N	440-180820-2	Qal	9.5 - 19.5	--	5,100	--	1.0	0.039	<0.0020	3.1	<0.0050	390	0.041

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-94	BL02	7/13/2017	N	440-188325-1	Qal	9.5 - 19.5	--	--	34	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-6	Qal	9.5 - 19.5	<4.0	5,100	<0.25	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-17	Qal	9.5 - 19.5	<4.0	4,700	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-14	Qal	9.5 - 19.5	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-12	Qal	9.5 - 19.5	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-8	Qal	9.5 - 19.5	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-14	Qal	9.5 - 19.5	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-1	Qal	9.5 - 19.5	<4.0	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-2	Qal	9.5 - 19.5	<4.0	--	--	--	--	--	--	--	--	--
	EM14	9/11/2018	N	440-219886-9	Qal	9.5 - 19.5	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-18	Qal	9.5 - 19.5	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-4	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-1	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-2	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-7	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-21/22	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-5/6	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
PC-97	BL02	7/13/2017	N	440-188325-8	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	FD	440-194242-6	Qal	23.0 - 33.0	<4.0	2,800	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-5	Qal	23.0 - 33.0	<4.0	2,800	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-13	Qal	23.0 - 33.0	<4.0	2,700	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-12	Qal	23.0 - 33.0	<4.0	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-11	Qal	23.0 - 33.0	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-4	Qal	23.0 - 33.0	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-4	Qal	23.0 - 33.0	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-7	Qal	23.0 - 33.0	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-3	Qal	23.0 - 33.0	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-13	Qal	23.0 - 33.0	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-1	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-9	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
SWFTS-IW01A	BL02	7/11/2017	N	440-188133-3	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW01B	BL02	7/11/2017	N	440-188133-13	Qal	26.9 - 36.7	--	--	--	--	--	--	--	--	--	--
SWFTS-IW02A	BL02	7/11/2017	N	440-188133-14	Qal	16.8 - 26.6	--	6,600	--	--	--	--	--	--	--	--
SWFTS-IW02B	BL02	7/11/2017	N	440-188133-2	Qal	26.3 - 36.1	--	6,500	--	--	--	--	--	--	--	--
SWFTS-IW03	BL02	7/11/2017	FD	440-188133-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW04	BL02	7/11/2017	FD	440-188133-12	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-11	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW05	BL02	7/11/2017	N	440-188133-16	Qal	14.6 - 34.4	--	5,500	--	--	--	--	--	--	--	--
SWFTS-IW06A	BL02	7/11/2017	N	440-188133-10	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW06B	BL02	7/11/2017	N	440-188133-6	Qal	28.8 - 33.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW07	BL02	7/11/2017	N	440-188133-7	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW08	BL02	7/12/2017	N	440-188247-7	Qal	17.5 - 37.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW09	BL02	7/12/2017	FD	440-188244-3	Qal	26.6 - 46.4	--	5,000	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-IW09	BL02	7/12/2017	N	440-188247-8	Qal	26.6 - 46.4	--	5,000	--	--	--	--	--	--	--	--
SWFTS-IW10	BL02	7/12/2017	N	440-188247-9	Qal	26.8 - 46.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW11	BL02	7/12/2017	N	440-188247-3	Qal	17.3 - 37.1	--	3,300	--	--	--	--	--	--	--	--
SWFTS-IW12	BL02	7/12/2017	N	440-188247-4	Qal	14.3 - 39.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13A	BL02	7/11/2017	N	440-188133-1	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13B	BL02	7/11/2017	N	440-188133-15	Qal	27.8 - 37.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW14	BL02	7/12/2017	N	440-188247-1	Qal	16.2 - 36.1	--	6,100	--	--	--	--	--	--	--	--
SWFTS-IW15	BL02	7/12/2017	N	440-188247-2	Qal	16.4 - 36.2	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16A	BL02	7/11/2017	N	440-188133-9	Qal	17.3 - 27.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16B	BL02	7/11/2017	N	440-188133-8	Qal	26.5 - 36.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW17	BL02	7/13/2017	N	440-188325-6	Qal	17.3 - 37.1	--	5,300	--	--	--	--	--	--	--	--
SWFTS-IW18	BL02	7/13/2017	N	440-188325-4	Qal	18.1 - 38.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW19	BL02	7/13/2017	N	440-188325-5	Qal	24.3 - 44.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW20	BL02	7/12/2017	N	440-188247-10	Qal	30.8 - 50.6	--	5,200	--	--	--	--	--	--	--	--
SWFTS-MW01	BL01	3/29/2017	N	440-180937-6	Qal	24.2 - 38.9	--	5,300	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-194094-2	Qal	24.2 - 38.9	<4.0	5,500	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-4	Qal	24.2 - 38.9	<4.0	4,700	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-10	Qal	24.2 - 38.9	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-12	Qal	24.2 - 38.9	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-10	Qal	24.2 - 38.9	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-1	Qal	24.2 - 38.9	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-2	Qal	24.2 - 38.9	<4.0	--	--	--	--	--	--	--	--	--
	EM14	9/10/2018	N	440-219797-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-12	Qal	24.2 - 38.9	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-14	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-3	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-5	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-11	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-17/18	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-19/20	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
SWFTS-MW02	BL01	3/29/2017	N	440-180937-7	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-6	Qal	18.4 - 33.1	<4.0	6,400	<0.25	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-3	Qal	18.4 - 33.1	<4.0	6,000	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-8	Qal	18.4 - 33.1	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-1	Qal	18.4 - 33.1	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-1	Qal	18.4 - 33.1	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-3	Qal	18.4 - 33.1	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-13	Qal	18.4 - 33.1	<4.0	--	--	--	--	--	--	--	--	--
	EM14	9/10/2018	N	440-219797-2	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-15	Qal	18.4 - 33.1	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-7	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-21/22	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-7/8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW03	BL01	3/30/2017	FD	440-181045-6	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	BL01	3/30/2017	N	440-181045-5	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-8	Qal	27.2 - 42.1	<4.0	5,500	<0.25	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-16	Qal	27.2 - 42.1	<4.0	4,900	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-13	Qal	27.2 - 42.1	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-5	Qal	27.2 - 42.1	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-15	Qal	27.2 - 42.1	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-6	Qal	27.2 - 42.1	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-5	Qal	27.2 - 42.1	<4.0	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-4	Qal	27.2 - 42.1	<4.0	--	--	--	--	--	--	--	--	--
	EM14	9/11/2018	N	440-219886-11	Qal	27.2 - 42.1	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-13	Qal	27.2 - 42.1	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-12	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-2	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-1	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-10	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-15/16	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-1/2	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
SWFTS-MW04	BL01	3/31/2017	N	440-181122-1	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-7	Qal	25.8 - 40.4	<4.0	2,500	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-2	Qal	25.8 - 40.4	<4.0	2,600	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-12	Qal	25.8 - 40.4	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-2	Qal	25.8 - 40.4	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-5	Qal	25.8 - 40.4	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-5	Qal	25.8 - 40.4	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-4	Qal	25.8 - 40.4	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-9	Qal	25.8 - 40.4	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-11	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-6	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265412-1	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-12	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-23/24	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-3/4	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
SWFTS-MW05A	BL01	3/30/2017	N	440-181045-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-2	Qal	19.3 - 29.3	<4.0	6,100	--	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-1	Qal	19.3 - 29.3	<4.0	5,700	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-3	Qal	19.3 - 29.3	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-7	Qal	19.3 - 29.3	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-5	Qal	19.3 - 29.3	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-8	Qal	19.3 - 29.3	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-14	Qal	19.3 - 29.3	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-14	Qal	19.3 - 29.3	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-17	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-1	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-2	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-9	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW05A	EM33	6/3/2021	N	550-164869-17/18	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM36	11/29/2021	N	550-174897-3/4	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
SWFTS-MW05B	BL01	3/30/2017	N	440-181045-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-1	Qal	32.3 - 42.0	<4.0	5,300	--	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-2	Qal	32.3 - 42.0	<4.0	4,600	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-4	Qal	32.3 - 42.0	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-8	Qal	32.3 - 42.0	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-6	Qal	32.3 - 42.0	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-2	Qal	32.3 - 42.0	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215585-10	Qal	32.3 - 42.0	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-14	Qal	32.3 - 42.0	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-18	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-1	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-19/20	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-15/16	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
SWFTS-MW06A	BL01	3/30/2017	N	440-181045-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-4	Qal	11.8 - 21.4	<4.0	2,700	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-19	Qal	11.8 - 21.4	<4.0	2,800	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-1	Qal	11.8 - 21.4	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-1	Qal	11.8 - 21.4	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-3	Qal	11.8 - 21.4	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210284-10	Qal	11.8 - 21.4	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-9	Qal	11.8 - 21.4	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	FD	440-215585-3	Qal	11.8 - 21.4	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-2	Qal	11.8 - 21.4	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	FD	440-221975-10	Qal	11.8 - 21.4	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-8	Qal	11.8 - 21.4	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	FD	440-242015-2	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	N	440-242015-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	FD	440-254027-5	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-4	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	FD	440-265346-6	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-5	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	FD	440-273236-8	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-7	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	FD	550-164930-21/22	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-19/20	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	FD	550-175045-10/9	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-7/8	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
SWFTS-MW06B	BL01	3/30/2017	N	440-181045-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-5	Qal	25.9 - 35.5	<4.0	2,500	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-20	Qal	25.9 - 35.5	<4.0	2,500	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-2	Qal	25.9 - 35.5	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-5	Qal	25.9 - 35.5	<4.0	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW06B	EM09	3/28/2018	N	440-207497-2	Qal	25.9 - 35.5	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-8	Qal	25.9 - 35.5	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-4	Qal	25.9 - 35.5	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-9	Qal	25.9 - 35.5	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-6	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-4	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-6	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-23/24	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-11/12	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
SWFTS-MW07A	BL01	3/30/2017	N	440-181045-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-3	Qal	15.0 - 29.5	<4.0	5,300	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-7	Qal	15.0 - 29.5	<4.0	5,000	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-3	Qal	15.0 - 29.5	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-3	Qal	15.0 - 29.5	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-4	Qal	15.0 - 29.5	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-2	Qal	15.0 - 29.5	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-7	Qal	15.0 - 29.5	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-11	Qal	15.0 - 29.5	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-5	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-5	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-1	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-25/26	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-3/4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
SWFTS-MW07B	BL01	3/30/2017	N	440-181045-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-4	Qal	33.8 - 38.3	<4.0	4,200	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-8	Qal	33.8 - 38.3	<4.0	4,100	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-4	Qal	33.8 - 38.3	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-2	Qal	33.8 - 38.3	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-10	Qal	33.8 - 38.3	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-1	Qal	33.8 - 38.3	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-8	Qal	33.8 - 38.3	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-12	Qal	33.8 - 38.3	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-6	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-5	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-2	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-27/28	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-5/6	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
SWFTS-MW08A	BL01	3/30/2017	N	440-181045-9	Qal	20.2 - 34.8	--	5,300	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-194094-4	Qal	20.2 - 34.8	<4.0	5,000	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-4	Qal	20.2 - 34.8	<4.0	4,400	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-1	Qal	20.2 - 34.8	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-8	Qal	20.2 - 34.8	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-1	Qal	20.2 - 34.8	<4.0	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW08A	EM10	5/3/2018	N	440-210534-5	Qal	20.2 - 34.8	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-14	Qal	20.2 - 34.8	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-13	Qal	20.2 - 34.8	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-6	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-3	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-29/30	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-23/24	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
SWFTS-MW08C	BL01	3/28/2017	N	440-180820-3	UMCf	49.9 - 69.5	--	6,700	--	--	--	--	--	--	--	--
SWFTS-MW09A	BL01	3/29/2017	N	440-180937-3	Qal	19.3 - 28.9	--	5,100	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-7	Qal	19.3 - 28.9	<4.0	5,100	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-14	Qal	19.3 - 28.9	<4.0	4,500	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-6	Qal	19.3 - 28.9	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-14	Qal	19.3 - 28.9	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-7	Qal	19.3 - 28.9	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-13	Qal	19.3 - 28.9	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-10	Qal	19.3 - 28.9	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-7	Qal	19.3 - 28.9	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-1	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-1	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-4	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-3	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM33	6/1/2021	N	550-164699-1/2	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-10/9	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
SWFTS-MW09B	BL01	3/29/2017	FD	440-180937-5	Qal	34.4 - 39.0	--	5,000	--	--	--	--	--	--	--	--
	BL01	3/29/2017	N	440-180937-4	Qal	34.4 - 39.0	--	5,100	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-5	Qal	34.4 - 39.0	<4.0	5,100	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-15	Qal	34.4 - 39.0	<4.0	4,400	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-7	Qal	34.4 - 39.0	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-13	Qal	34.4 - 39.0	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-6	Qal	34.4 - 39.0	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-11	Qal	34.4 - 39.0	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-9	Qal	34.4 - 39.0	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-8	Qal	34.4 - 39.0	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-2	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-3	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-3	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-4	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-1/2	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-11/12	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
SWFTS-MW10A	BL01	3/31/2017	N	440-181122-2	Qal	20.4 - 35.0	--	4,300	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194242-10	Qal	20.4 - 35.0	<4.0	3,300	--	--	--	--	--	--	--	--
	EM06	11/16/2017	FD	440-196786-6	Qal	20.4 - 35.0	<4.0	3,000	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-5	Qal	20.4 - 35.0	<4.0	3,000	--	--	--	--	--	--	--	--
	EM07	12/12/2017	FD	440-198371-11	Qal	20.4 - 35.0	<4.0	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW10A	EM07	12/12/2017	N	440-198371-10	Qal	20.4 - 35.0	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-5	Qal	20.4 - 35.0	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-4	Qal	20.4 - 35.0	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	FD	440-207137-8	Qal	20.4 - 35.0	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-7	Qal	20.4 - 35.0	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-1	Qal	20.4 - 35.0	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-9	Qal	20.4 - 35.0	<4.0	--	--	--	--	--	--	--	--	--
	EM13	8/14/2018	N	440-218109-10	Qal	20.4 - 35.0	<4.0	--	--	--	--	--	--	--	--	--
	EM14	9/10/2018	N	440-219797-4	Qal	20.4 - 35.0	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-9	Qal	20.4 - 35.0	<4.0	4,100	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-2	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-1	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-6	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-4	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-13/14	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-17/18	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
SWFTS-MW10C	BL01	3/28/2017	N	440-180820-4	UMCf	43.5 - 63.1	--	6,500	--	--	--	--	--	--	--	--
SWFTS-MW11	BL02	7/12/2017	N	440-188244-7	Qal	14.8 - 39.6	<4.0	5,000	17	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-8	Qal	14.8 - 39.6	<4.0	5,600	19	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-3	Qal	14.8 - 39.6	<4.0	5,200	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-13	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	FD	440-203937-11	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-10	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	FD	440-207497-8	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-7	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210367-1	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-11	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-18	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-17	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	FD	440-222092-11	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-10	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	FD	440-242200-4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	FD	440-254150-4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	FD	440-265383-5	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	FD	440-273433-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	FD	550-164930-10/9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-7/8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	FD	550-175222-10/9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-7/8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW12	BL02	7/13/2017	N	440-188324-6	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-1	Qal	15.8 - 40.6	<4.0	6,100	33	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-5	Qal	15.8 - 40.6	<4.0	5,800	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW12	EM07	12/14/2017	N	440-198571-15	Qal	15.8 - 40.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-2	Qal	15.8 - 40.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-5	Qal	15.8 - 40.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-4	Qal	15.8 - 40.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-16	Qal	15.8 - 40.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-12	Qal	15.8 - 40.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-7	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/26/2019	FD	440-255698-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/26/2019	N	440-255698-1	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-3	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-6	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-5/6	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-19/20	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW13	BL02	7/12/2017	N	440-188244-6	Qal	17.8 - 47.6	<4.0	5,200	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-4	Qal	17.8 - 47.6	<4.0	6,600	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-1	Qal	17.8 - 47.6	<4.0	6,200	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-14	Qal	17.8 - 47.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-7	Qal	17.8 - 47.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-4	Qal	17.8 - 47.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-1	Qal	17.8 - 47.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-15	Qal	17.8 - 47.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-14	Qal	17.8 - 47.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-5	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-6	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-2	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-6	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-3/4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-17/18	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW14	BL02	7/12/2017	FD	440-188244-9	Qal	16.8 - 36.6	<4.0	5,700	--	--	--	--	--	--	--	--
	BL02	7/12/2017	N	440-188244-8	Qal	16.8 - 36.6	<4.0	5,800	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-8	Qal	16.8 - 36.6	<4.0	5,300	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-3	Qal	16.8 - 36.6	<4.0	4,800	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-12	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-11	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-9	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-9	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-8	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM13	8/14/2018	N	440-218109-11	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM14	9/11/2018	N	440-219886-17	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-10	Qal	16.8 - 36.6	<4.0	4,100	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-1	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265414-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-1/2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW14	EM36	12/3/2021	N	550-175222-1/2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW15	BL02	7/13/2017	N	440-188325-3	Qal	14.8 - 34.6	<4.0	5,300	27	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-194094-1	Qal	14.8 - 34.6	<4.0	4,900	--	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-4	Qal	14.8 - 34.6	<4.0	4,600	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-13	Qal	14.8 - 34.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-4	Qal	14.8 - 34.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-10	Qal	14.8 - 34.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-3	Qal	14.8 - 34.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-1	Qal	14.8 - 34.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-11	Qal	14.8 - 34.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	N	440-242014-1	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-13/14	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-10/9	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW16	BL02	7/13/2017	N	440-188325-2	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-7	Qal	21.8 - 41.6	<4.0	4,800	<0.25	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-4	Qal	21.8 - 41.6	<4.0	3,300	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-4	Qal	21.8 - 41.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-6	Qal	21.8 - 41.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-13	Qal	21.8 - 41.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-13	Qal	21.8 - 41.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-12	Qal	21.8 - 41.6	<4.0	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-13	Qal	21.8 - 41.6	<4.0	--	--	--	--	--	--	--	--	--
	EM14	9/10/2018	N	440-219797-6	Qal	21.8 - 41.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-3	Qal	21.8 - 41.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	N	440-242014-3	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-5	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-1	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-1	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-11/12	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-11/12	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW17	BL02	7/12/2017	N	440-188244-1	Qal	22.8 - 52.6	--	--	19	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-3	Qal	22.8 - 52.6	<4.0	4,800	--	--	--	--	--	--	--	--
	EM06	11/15/2017	FD	440-196659-6	Qal	22.8 - 52.6	<4.0	4,300	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-5	Qal	22.8 - 52.6	<4.0	4,300	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-7	Qal	22.8 - 52.6	<4.0	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-6	Qal	22.8 - 52.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-11	Qal	22.8 - 52.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-11	Qal	22.8 - 52.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-3	Qal	22.8 - 52.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-13	Qal	22.8 - 52.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-4	Qal	22.8 - 52.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-1	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW17	EM26	4/30/2020	N	440-265383-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-5	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-10/9	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-21/22	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW18	BL02	7/11/2017	N	440-188133-17	Qal	16.8 - 36.6	<4.0	5,300	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-194094-3	Qal	16.8 - 36.6	<4.0	5,200	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196690-11	Qal	16.8 - 36.6	<4.0	4,800	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-5	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-4	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	FD	440-207268-12	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-11	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-6	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-2	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-5	Qal	16.8 - 36.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-15	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-7/8	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-5/6	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW19	BL02	7/12/2017	N	440-188244-2	Qal	11.3 - 31.1	<4.0	1,900	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-1	Qal	11.3 - 31.1	<4.0	2,200	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-12	Qal	11.3 - 31.1	<4.0	2,200	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-8	Qal	11.3 - 31.1	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-6	Qal	11.3 - 31.1	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-3	Qal	11.3 - 31.1	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	FD	440-210173-5	Qal	11.3 - 31.1	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-4	Qal	11.3 - 31.1	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	FD	440-215437-11	Qal	11.3 - 31.1	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-10	Qal	11.3 - 31.1	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	FD	440-221855-5	Qal	11.3 - 31.1	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-4	Qal	11.3 - 31.1	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	FD	440-242084-7	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	FD	440-253891-7	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	FD	440-265288-7	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	FD	440-273303-3	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-2	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	FD	550-164869-5/6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-3/4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	FD	550-175045-15/16	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-13/14	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
SWFTS-MW20	BL02	7/12/2017	N	440-188244-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	FD	440-194202-2	Qal	12.8 - 37.6	<4.0	6,600	1.1 J	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW20	EM04	10/12/2017	N	440-194202-1	Qal	12.8 - 37.6	<4.0	6,500	0.87 J	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-7	Qal	12.8 - 37.6	<4.0	5,800	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-3	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-5	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-9	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-10	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-8	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-1	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-3	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-6	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-6	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-1/2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM36	11/29/2021	N	550-174897-1/2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW21	BL02	7/13/2017	N	440-188324-5	Qal	14.8 - 39.6	<4.0	6,000	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-8	Qal	14.8 - 39.6	<4.0	6,200	1.9 J	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-5	Qal	14.8 - 39.6	<4.0	5,800	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-10	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-10	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-9	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-14	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-7	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-3	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-3	Qal	14.8 - 39.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-1	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-15/16	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-3/4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW22	BL02	7/13/2017	N	440-188324-1	Qal	11.8 - 31.6	<4.0	2,900	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194242-9	Qal	11.8 - 31.6	<4.0	3,100	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-18	Qal	11.8 - 31.6	<4.0	2,800	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-17	Qal	11.8 - 31.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-1	Qal	11.8 - 31.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-1	Qal	11.8 - 31.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-6	Qal	11.8 - 31.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-9	Qal	11.8 - 31.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-2	Qal	11.8 - 31.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-4	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-4	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-5	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-11/12	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-1/2	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW23	BL02	7/13/2017	N	440-188325-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	SM2320B	SM2540C	SW7199	Total Metals by SW6010						
							Hydroxide Alkalinity as CaCO3	Total Dissolved Solids	Chromium, Hexavalent	Aluminum	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium
							mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW23	EM04	10/11/2017	N	440-194090-7	Qal	13.8 - 33.6	<4.0	2,300	<0.25	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-3	Qal	13.8 - 33.6	<4.0	2,500	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-2	Qal	13.8 - 33.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-14	Qal	13.8 - 33.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-9	Qal	13.8 - 33.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-5	Qal	13.8 - 33.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-7	Qal	13.8 - 33.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-7	Qal	13.8 - 33.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-5	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-3	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-1	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-3/4	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-15/16	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW24	BL02	7/13/2017	N	440-188324-2	Qal	12.8 - 37.6	<4.0	4,900	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-2	Qal	12.8 - 37.6	<4.0	5,100	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-1	Qal	12.8 - 37.6	<4.0	4,900	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-5	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-8	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-12	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-7	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-5	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-7	Qal	12.8 - 37.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/12/2020	N	440-273153-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-7/8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-17/18	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW25	BL02	7/13/2017	N	440-188324-4	Qal	12.8 - 42.6	<4.0	5,400	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-1	Qal	12.8 - 42.6	<4.0	5,100	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-2	Qal	12.8 - 42.6	<4.0	4,600	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-1	Qal	12.8 - 42.6	<4.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-7	Qal	12.8 - 42.6	<4.0	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-13	Qal	12.8 - 42.6	<4.0	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-2	Qal	12.8 - 42.6	<4.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-12	Qal	12.8 - 42.6	<4.0	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-10	Qal	12.8 - 42.6	<4.0	--	--	--	--	--	--	--	--	--
	EM14	9/12/2018	N	440-220031-2	Qal	12.8 - 42.6	<4.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-6	Qal	12.8 - 42.6	<4.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-6	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-4	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-5/6	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-19/20	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COH-2B1	BL02	8/9/2017	N	440-189933-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	0.11	--	--	--	--
	EM04	10/12/2017	N	440-194204-2	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	0.19	--	--	--	--
	EM07	12/14/2017	N	440-198571-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-2	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-11	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	0.24	--	--	--	--
	EM15	10/11/2018	N	440-222092-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	0.17	--	--	--	--
	EM19	5/22/2019	N	440-242201-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	0.16	--	--	--	--
	EM22	11/4/2019	N	440-253773-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	1.2	--	--	--	--
	EM26	4/27/2020	N	440-265243-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	0.41	--	--	--	--
	EM29	10/13/2020	N	440-273236-9	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	0.64	--	--	--	--
PC-58	BL01	3/28/2017	N	440-180820-1	Qal	7.8 - 32.8	<0.0050	<0.0050	<0.050	<0.0035	140	0.013 J	0.17	<0.0050	<0.10	44
	BL02	7/13/2017	N	440-188324-3	Qal	7.8 - 32.8	--	--	--	--	--	<0.015	--	--	--	--
	EM04	10/11/2017	N	440-194094-6	Qal	7.8 - 32.8	--	--	--	--	--	<0.015	--	--	--	--
	EM06	11/16/2017	N	440-196786-11	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-9	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-13	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-6	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-10	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-7	Qal	7.8 - 32.8	--	--	--	--	--	<0.015	--	--	--	--
	EM15	10/11/2018	N	440-222092-19	Qal	7.8 - 32.8	--	--	--	--	--	<0.015	--	--	--	--
	EM19	5/22/2019	N	440-242200-7	Qal	7.8 - 32.8	--	--	--	--	--	0.041	--	--	--	--
	EM22	11/7/2019	N	440-254148-1	Qal	7.8 - 32.8	--	--	--	--	--	<0.015	--	--	--	--
	EM26	5/1/2020	N	440-265414-3	Qal	7.8 - 32.8	--	--	--	--	--	<0.015	--	--	--	--
	EM29	10/16/2020	N	440-273433-5	Qal	7.8 - 32.8	--	--	--	--	--	<0.015	--	--	--	--
	EM33	6/2/2021	N	550-164872-23/24	Qal	7.8 - 32.8	--	--	--	--	--	0.0092 J	--	--	--	--
	EM36	12/3/2021	N	550-175222-11/12	Qal	7.8 - 32.8	--	--	--	--	--	0.023	--	--	--	--
PC-88	EM04	10/11/2017	FD	440-194090-3	Qal	40.0 - 50.0	--	--	--	--	--	0.95	--	--	--	--
	EM04	10/11/2017	N	440-194090-2	Qal	40.0 - 50.0	--	--	--	--	--	0.88	--	--	--	--
	EM06	11/15/2017	FD	440-196690-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196690-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	FD	440-210430-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-8	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-12	Qal	40.0 - 50.0	--	--	--	--	--	0.74	--	--	--	--
	EM11	7/12/2018	N	440-215717-11	Qal	40.0 - 50.0	--	--	--	--	--	0.80	--	--	--	--
	EM15	10/11/2018	FD	440-222092-16	Qal	40.0 - 50.0	--	--	--	--	--	1.1	--	--	--	--
	EM15	10/11/2018	N	440-222092-15	Qal	40.0 - 50.0	--	--	--	--	--	1.2	--	--	--	--
	EM19	5/22/2019	FD	440-242201-3	Qal	40.0 - 50.0	--	--	--	--	--	0.89 J	--	--	--	--
	EM19	5/22/2019	N	440-242201-2	Qal	40.0 - 50.0	--	--	--	--	--	0.91 J	--	--	--	--
	EM22	11/7/2019	FD	440-254148-3	Qal	40.0 - 50.0	--	--	--	--	--	0.63	--	--	--	--
	EM22	11/7/2019	N	440-254148-2	Qal	40.0 - 50.0	--	--	--	--	--	0.60	--	--	--	--
	EM26	5/1/2020	FD	440-265412-3	Qal	40.0 - 50.0	--	--	--	--	--	0.54 J	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-88	EM26	5/1/2020	N	440-265412-2	Qal	40.0 - 50.0	--	--	--	--	--	0.75 J	--	--	--	--
	EM29	10/15/2020	FD	550-151259-11	Qal	40.0 - 50.0	--	--	--	--	--	0.65	--	--	--	--
	EM29	10/15/2020	N	550-151259-10	Qal	40.0 - 50.0	--	--	--	--	--	0.64	--	--	--	--
	EM33	6/3/2021	FD	550-164869-27/28	Qal	40.0 - 50.0	--	--	--	--	--	0.31	--	--	--	--
	EM33	6/3/2021	N	550-164869-25/26	Qal	40.0 - 50.0	--	--	--	--	--	0.30	--	--	--	--
	EM36	12/2/2021	FD	550-175153-7/8	Qal	40.0 - 50.0	--	--	--	--	--	0.44	--	--	--	--
	EM36	12/2/2021	N	550-175153-5/6	Qal	40.0 - 50.0	--	--	--	--	--	0.44	--	--	--	--
PC-91	BL01	3/29/2017	N	440-180937-1	Qal	11.5 - 21.5	--	--	--	--	--	0.11	--	--	--	--
	BL02	7/12/2017	FD	440-188244-4	Qal	11.5 - 21.5	--	--	--	--	--	0.14	--	--	--	--
	BL02	7/12/2017	N	440-188247-5	Qal	11.5 - 21.5	--	--	--	--	--	0.19	--	--	--	--
	EM04	10/12/2017	N	440-194204-3	Qal	11.5 - 21.5	--	--	--	--	--	0.15	--	--	--	--
	EM06	11/16/2017	N	440-196786-8	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-9	Qal	11.5 - 21.5	--	--	--	--	--	0.062	--	--	--	--
	EM08	2/20/2018	N	440-203841-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-6	Qal	11.5 - 21.5	--	--	--	--	--	0.57	--	--	--	--
	EM15	10/10/2018	N	440-221975-16	Qal	11.5 - 21.5	--	--	--	--	--	0.44	--	--	--	--
	EM19	5/21/2019	N	440-242084-9	Qal	11.5 - 21.5	--	--	--	--	--	1.4	--	--	--	--
	EM22	11/6/2019	N	440-254027-3	Qal	11.5 - 21.5	--	--	--	--	--	1.3	--	--	--	--
	EM26	4/30/2020	N	440-265382-2	Qal	11.5 - 21.5	--	--	--	--	--	1.1	--	--	--	--
	EM29	10/14/2020	N	440-273303-11	Qal	11.5 - 21.5	--	--	--	--	--	3.0	--	--	--	--
	EM33	6/2/2021	N	550-164872-17/18	Qal	11.5 - 21.5	--	--	--	--	--	3.7	--	--	--	--
	EM36	11/30/2021	N	550-174968-1/2	Qal	11.5 - 21.5	--	--	--	--	--	3.1	--	--	--	--
PC-92	BL01	3/29/2017	N	440-180937-2	Qal	26.5 - 36.5	--	--	--	--	--	0.86	--	--	--	--
	BL02	7/12/2017	N	440-188247-6	Qal	26.5 - 36.5	--	--	--	--	--	0.80	--	--	--	--
	EM04	10/12/2017	FD	440-194204-5	Qal	26.5 - 36.5	--	--	--	--	--	0.56	--	--	--	--
	EM04	10/12/2017	N	440-194204-4	Qal	26.5 - 36.5	--	--	--	--	--	0.55	--	--	--	--
	EM06	11/16/2017	FD	440-196786-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-9	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	FD	440-198571-8	Qal	26.5 - 36.5	--	--	--	--	--	1.3	--	--	--	--
	EM07	12/14/2017	N	440-198571-7	Qal	26.5 - 36.5	--	--	--	--	--	1.2	--	--	--	--
	EM08	2/20/2018	FD	440-203841-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	FD	440-207137-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-5	Qal	26.5 - 36.5	--	--	--	--	--	0.78	--	--	--	--
	EM15	10/11/2018	N	440-222092-17	Qal	26.5 - 36.5	--	--	--	--	--	0.54	--	--	--	--
	EM19	5/21/2019	N	440-242084-10	Qal	26.5 - 36.5	--	--	--	--	--	0.86	--	--	--	--
	EM22	11/6/2019	N	440-254027-2	Qal	26.5 - 36.5	--	--	--	--	--	0.78	--	--	--	--
	EM26	4/30/2020	N	440-265382-1	Qal	26.5 - 36.5	--	--	--	--	--	0.13	--	--	--	--
	EM29	10/14/2020	N	440-273303-10	Qal	26.5 - 36.5	--	--	--	--	--	0.71	--	--	--	--
	EM33	6/2/2021	N	550-164872-19/20	Qal	26.5 - 36.5	--	--	--	--	--	0.76	--	--	--	--
	EM36	11/30/2021	N	550-174968-3/4	Qal	26.5 - 36.5	--	--	--	--	--	1.4	--	--	--	--
PC-94	BL01	3/28/2017	N	440-180820-2	Qal	9.5 - 19.5	<0.010	<0.010	1.0	<0.0070	200	0.022 J	0.17	<0.010	<0.20	62

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-94	BL02	7/13/2017	N	440-188325-1	Qal	9.5 - 19.5	--	--	--	--	--	0.14	--	--	--	--
	EM04	10/11/2017	N	440-194090-6	Qal	9.5 - 19.5	--	--	--	--	--	2.8	--	--	--	--
	EM06	11/16/2017	N	440-196786-17	Qal	9.5 - 19.5	--	--	--	--	--	3.0	--	--	--	--
	EM07	12/12/2017	N	440-198371-14	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-12	Qal	9.5 - 19.5	--	--	--	--	--	2.6	--	--	--	--
	EM09	3/27/2018	N	440-207268-8	Qal	9.5 - 19.5	--	--	--	--	--	3.4	--	--	--	--
	EM10	5/1/2018	N	440-210284-14	Qal	9.5 - 19.5	--	--	--	--	--	2.3	--	--	--	--
	EM11	7/10/2018	N	440-215437-1	Qal	9.5 - 19.5	--	--	--	--	--	6.3	--	--	--	--
	EM13	8/15/2018	N	440-218208-2	Qal	9.5 - 19.5	--	--	--	--	--	3.9	--	--	--	--
	EM14	9/11/2018	N	440-219886-9	Qal	9.5 - 19.5	--	--	--	--	--	3.5 J	--	--	--	--
	EM15	10/11/2018	N	440-222092-18	Qal	9.5 - 19.5	--	--	--	--	--	5.0	--	--	--	--
	EM19	5/22/2019	N	440-242201-4	Qal	9.5 - 19.5	--	--	--	--	--	3.5	--	--	--	--
	EM22	11/6/2019	N	440-254027-1	Qal	9.5 - 19.5	--	--	--	--	--	2.6	--	--	--	--
	EM26	4/28/2020	N	440-265289-2	Qal	9.5 - 19.5	--	--	--	--	--	3.4	--	--	--	--
	EM29	10/15/2020	N	550-151259-7	Qal	9.5 - 19.5	--	--	--	--	--	2.8	--	--	--	--
	EM33	6/2/2021	N	550-164872-21/22	Qal	9.5 - 19.5	--	--	--	--	--	2.8	--	--	--	--
	EM36	11/30/2021	N	550-174968-5/6	Qal	9.5 - 19.5	--	--	--	--	--	5.0	--	--	--	--
PC-97	BL02	7/13/2017	N	440-188325-8	Qal	23.0 - 33.0	--	--	--	--	--	1.2	--	--	--	--
	EM04	10/11/2017	FD	440-194242-6	Qal	23.0 - 33.0	--	--	--	--	--	1.3	--	--	--	--
	EM04	10/11/2017	N	440-194242-5	Qal	23.0 - 33.0	--	--	--	--	--	1.3	--	--	--	--
	EM06	11/16/2017	N	440-196786-13	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-12	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-11	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-3	Qal	23.0 - 33.0	--	--	--	--	--	0.97	--	--	--	--
	EM15	10/11/2018	N	440-222092-13	Qal	23.0 - 33.0	--	--	--	--	--	0.95	--	--	--	--
	EM19	5/22/2019	N	440-242201-1	Qal	23.0 - 33.0	--	--	--	--	--	1.0	--	--	--	--
	EM22	11/6/2019	N	440-254027-7	Qal	23.0 - 33.0	--	--	--	--	--	0.92	--	--	--	--
	EM26	4/30/2020	N	440-265383-7	Qal	23.0 - 33.0	--	--	--	--	--	0.69	--	--	--	--
	EM29	10/15/2020	N	550-151259-9	Qal	23.0 - 33.0	--	--	--	--	--	1.3	--	--	--	--
SWFTS-IW01A	BL02	7/11/2017	N	440-188133-3	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW01B	BL02	7/11/2017	N	440-188133-13	Qal	26.9 - 36.7	--	--	--	--	--	--	--	--	--	--
SWFTS-IW02A	BL02	7/11/2017	N	440-188133-14	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW02B	BL02	7/11/2017	N	440-188133-2	Qal	26.3 - 36.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW03	BL02	7/11/2017	FD	440-188133-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW04	BL02	7/11/2017	FD	440-188133-12	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-11	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW05	BL02	7/11/2017	N	440-188133-16	Qal	14.6 - 34.4	--	--	--	--	--	--	--	--	--	--
SWFTS-IW06A	BL02	7/11/2017	N	440-188133-10	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW06B	BL02	7/11/2017	N	440-188133-6	Qal	28.8 - 33.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW07	BL02	7/11/2017	N	440-188133-7	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW08	BL02	7/12/2017	N	440-188247-7	Qal	17.5 - 37.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW09	BL02	7/12/2017	FD	440-188244-3	Qal	26.6 - 46.4	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-IW09	BL02	7/12/2017	N	440-188247-8	Qal	26.6 - 46.4	--	--	--	--	--	--	--	--	--	--
SWFTS-IW10	BL02	7/12/2017	N	440-188247-9	Qal	26.8 - 46.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW11	BL02	7/12/2017	N	440-188247-3	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW12	BL02	7/12/2017	N	440-188247-4	Qal	14.3 - 39.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13A	BL02	7/11/2017	N	440-188133-1	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13B	BL02	7/11/2017	N	440-188133-15	Qal	27.8 - 37.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW14	BL02	7/12/2017	N	440-188247-1	Qal	16.2 - 36.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW15	BL02	7/12/2017	N	440-188247-2	Qal	16.4 - 36.2	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16A	BL02	7/11/2017	N	440-188133-9	Qal	17.3 - 27.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16B	BL02	7/11/2017	N	440-188133-8	Qal	26.5 - 36.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW17	BL02	7/13/2017	N	440-188325-6	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW18	BL02	7/13/2017	N	440-188325-4	Qal	18.1 - 38.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW19	BL02	7/13/2017	N	440-188325-5	Qal	24.3 - 44.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW20	BL02	7/12/2017	N	440-188247-10	Qal	30.8 - 50.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW01	BL01	3/29/2017	N	440-180937-6	Qal	24.2 - 38.9	--	--	--	--	--	<0.010	--	--	--	--
	EM04	10/10/2017	N	440-194094-2	Qal	24.2 - 38.9	--	--	--	--	--	3.7	--	--	--	--
	EM06	11/15/2017	N	440-196665-4	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-12	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-2	Qal	24.2 - 38.9	--	--	--	--	--	4.7	--	--	--	--
	EM14	9/10/2018	N	440-219797-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-12	Qal	24.2 - 38.9	--	--	--	--	--	3.3	--	--	--	--
	EM19	5/21/2019	N	440-242084-14	Qal	24.2 - 38.9	--	--	--	--	--	4.9	--	--	--	--
	EM22	11/5/2019	N	440-253918-3	Qal	24.2 - 38.9	--	--	--	--	--	4.3	--	--	--	--
	EM26	4/28/2020	N	440-265289-5	Qal	24.2 - 38.9	--	--	--	--	--	5.6	--	--	--	--
	EM29	10/13/2020	N	440-273236-11	Qal	24.2 - 38.9	--	--	--	--	--	4.4	--	--	--	--
	EM33	6/4/2021	N	550-164930-17/18	Qal	24.2 - 38.9	--	--	--	--	--	3.7	--	--	--	--
	EM36	11/30/2021	N	550-174968-19/20	Qal	24.2 - 38.9	--	--	--	--	--	2.6	--	--	--	--
SWFTS-MW02	BL01	3/29/2017	N	440-180937-7	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-6	Qal	18.4 - 33.1	--	--	--	--	--	1.6	--	--	--	--
	EM06	11/14/2017	N	440-196558-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-13	Qal	18.4 - 33.1	--	--	--	--	--	1.6	--	--	--	--
	EM14	9/10/2018	N	440-219797-2	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-15	Qal	18.4 - 33.1	--	--	--	--	--	1.8	--	--	--	--
	EM19	5/21/2019	N	440-242084-8	Qal	18.4 - 33.1	--	--	--	--	--	2.2	--	--	--	--
	EM22	11/7/2019	N	440-254148-7	Qal	18.4 - 33.1	--	--	--	--	--	2.7	--	--	--	--
	EM26	4/30/2020	N	440-265382-3	Qal	18.4 - 33.1	--	--	--	--	--	1.9	--	--	--	--
	EM29	10/15/2020	N	550-151259-8	Qal	18.4 - 33.1	--	--	--	--	--	2.4	--	--	--	--
	EM33	6/3/2021	N	550-164869-21/22	Qal	18.4 - 33.1	--	--	--	--	--	2.2	--	--	--	--
	EM36	11/30/2021	N	550-174968-7/8	Qal	18.4 - 33.1	--	--	--	--	--	2.2	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW03	BL01	3/30/2017	FD	440-181045-6	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	BL01	3/30/2017	N	440-181045-5	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-8	Qal	27.2 - 42.1	--	--	--	--	--	6.9	--	--	--	--
	EM06	11/16/2017	N	440-196786-16	Qal	27.2 - 42.1	--	--	--	--	--	4.4	--	--	--	--
	EM07	12/12/2017	N	440-198371-13	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-5	Qal	27.2 - 42.1	--	--	--	--	--	2.9	--	--	--	--
	EM09	3/27/2018	N	440-207268-15	Qal	27.2 - 42.1	--	--	--	--	--	2.6	--	--	--	--
	EM10	5/2/2018	N	440-210430-6	Qal	27.2 - 42.1	--	--	--	--	--	2.6	--	--	--	--
	EM11	7/10/2018	N	440-215437-5	Qal	27.2 - 42.1	--	--	--	--	--	2.6	--	--	--	--
	EM13	8/15/2018	N	440-218208-4	Qal	27.2 - 42.1	--	--	--	--	--	2.3	--	--	--	--
	EM14	9/11/2018	N	440-219886-11	Qal	27.2 - 42.1	--	--	--	--	--	2.4	--	--	--	--
	EM15	10/9/2018	N	440-221855-13	Qal	27.2 - 42.1	--	--	--	--	--	2.4	--	--	--	--
	EM19	5/21/2019	N	440-242084-12	Qal	27.2 - 42.1	--	--	--	--	--	2.4	--	--	--	--
	EM22	11/4/2019	N	440-253773-2	Qal	27.2 - 42.1	--	--	--	--	--	2.0	--	--	--	--
	EM26	4/28/2020	N	440-265289-1	Qal	27.2 - 42.1	--	--	--	--	--	2.6	--	--	--	--
	EM29	10/13/2020	N	440-273236-10	Qal	27.2 - 42.1	--	--	--	--	--	2.3	--	--	--	--
	EM33	6/3/2021	N	550-164869-15/16	Qal	27.2 - 42.1	--	--	--	--	--	2.0	--	--	--	--
	EM36	12/1/2021	N	550-175045-1/2	Qal	27.2 - 42.1	--	--	--	--	--	1.9	--	--	--	--
SWFTS-MW04	BL01	3/31/2017	N	440-181122-1	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-7	Qal	25.8 - 40.4	--	--	--	--	--	0.65	--	--	--	--
	EM06	11/15/2017	N	440-196659-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-12	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-4	Qal	25.8 - 40.4	--	--	--	--	--	0.86	--	--	--	--
	EM15	10/11/2018	N	440-222092-9	Qal	25.8 - 40.4	--	--	--	--	--	0.77	--	--	--	--
	EM19	5/21/2019	N	440-242084-11	Qal	25.8 - 40.4	--	--	--	--	--	0.86	--	--	--	--
	EM22	11/7/2019	N	440-254150-6	Qal	25.8 - 40.4	--	--	--	--	--	0.82	--	--	--	--
	EM26	5/1/2020	N	440-265412-1	Qal	25.8 - 40.4	--	--	--	--	--	1.3	--	--	--	--
	EM29	10/14/2020	N	440-273303-12	Qal	25.8 - 40.4	--	--	--	--	--	1.0	--	--	--	--
	EM33	6/3/2021	N	550-164869-23/24	Qal	25.8 - 40.4	--	--	--	--	--	0.95	--	--	--	--
	EM36	12/2/2021	N	550-175153-3/4	Qal	25.8 - 40.4	--	--	--	--	--	1.2	--	--	--	--
SWFTS-MW05A	BL01	3/30/2017	N	440-181045-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-2	Qal	19.3 - 29.3	--	--	--	--	--	<0.015	--	--	--	--
	EM06	11/14/2017	N	440-196558-1	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-3	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-5	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-8	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-14	Qal	19.3 - 29.3	--	--	--	--	--	<0.015	--	--	--	--
	EM15	10/10/2018	N	440-221975-14	Qal	19.3 - 29.3	--	--	--	--	--	<0.015	--	--	--	--
	EM19	5/21/2019	N	440-242084-17	Qal	19.3 - 29.3	--	--	--	--	--	<0.015	--	--	--	--
	EM22	11/5/2019	N	440-253918-1	Qal	19.3 - 29.3	--	--	--	--	--	<0.015	--	--	--	--
	EM26	4/29/2020	N	440-265346-2	Qal	19.3 - 29.3	--	--	--	--	--	<0.015	--	--	--	--
	EM29	10/14/2020	N	440-273303-9	Qal	19.3 - 29.3	--	--	--	--	--	<0.015	--	--	--	--

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Groundwater Analytical Results Summary - Secondary Parameters
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Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW05A	EM33	6/3/2021	N	550-164869-17/18	Qal	19.3 - 29.3	--	--	--	--	--	0.020	--	--	--	--
	EM36	11/29/2021	N	550-174897-3/4	Qal	19.3 - 29.3	--	--	--	--	--	0.018 J	--	--	--	--
SWFTS-MW05B	BL01	3/30/2017	N	440-181045-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-1	Qal	32.3 - 42.0	--	--	--	--	--	11	--	--	--	--
	EM06	11/14/2017	N	440-196558-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-4	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-6	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215585-10	Qal	32.3 - 42.0	--	--	--	--	--	2.0	--	--	--	--
	EM15	10/9/2018	N	440-221855-14	Qal	32.3 - 42.0	--	--	--	--	--	2.1	--	--	--	--
	EM19	5/21/2019	N	440-242084-18	Qal	32.3 - 42.0	--	--	--	--	--	2.2	--	--	--	--
	EM22	11/5/2019	N	440-253918-2	Qal	32.3 - 42.0	--	--	--	--	--	1.9	--	--	--	--
	EM26	4/29/2020	N	440-265346-1	Qal	32.3 - 42.0	--	--	--	--	--	1.9	--	--	--	--
	EM29	10/14/2020	N	440-273303-8	Qal	32.3 - 42.0	--	--	--	--	--	2.2	--	--	--	--
	EM33	6/3/2021	N	550-164869-19/20	Qal	32.3 - 42.0	--	--	--	--	--	2.4	--	--	--	--
	EM36	11/30/2021	N	550-174968-15/16	Qal	32.3 - 42.0	--	--	--	--	--	1.6	--	--	--	--
SWFTS-MW06A	BL01	3/30/2017	N	440-181045-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-4	Qal	11.8 - 21.4	--	--	--	--	--	0.96	--	--	--	--
	EM06	11/16/2017	N	440-196786-19	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-3	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210284-10	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-9	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	FD	440-215585-3	Qal	11.8 - 21.4	--	--	--	--	--	0.70	--	--	--	--
	EM11	7/11/2018	N	440-215585-2	Qal	11.8 - 21.4	--	--	--	--	--	0.68	--	--	--	--
	EM15	10/10/2018	FD	440-221975-10	Qal	11.8 - 21.4	--	--	--	--	--	0.83	--	--	--	--
	EM15	10/10/2018	N	440-221975-8	Qal	11.8 - 21.4	--	--	--	--	--	0.81	--	--	--	--
	EM19	5/20/2019	FD	440-242015-2	Qal	11.8 - 21.4	--	--	--	--	--	0.79	--	--	--	--
	EM19	5/20/2019	N	440-242015-1	Qal	11.8 - 21.4	--	--	--	--	--	0.80	--	--	--	--
	EM22	11/6/2019	FD	440-254027-5	Qal	11.8 - 21.4	--	--	--	--	--	0.93	--	--	--	--
	EM22	11/6/2019	N	440-254027-4	Qal	11.8 - 21.4	--	--	--	--	--	0.94	--	--	--	--
	EM26	4/29/2020	FD	440-265346-6	Qal	11.8 - 21.4	--	--	--	--	--	0.58	--	--	--	--
	EM26	4/29/2020	N	440-265346-5	Qal	11.8 - 21.4	--	--	--	--	--	0.58	--	--	--	--
	EM29	10/13/2020	FD	440-273236-8	Qal	11.8 - 21.4	--	--	--	--	--	0.82	--	--	--	--
	EM29	10/13/2020	N	440-273236-7	Qal	11.8 - 21.4	--	--	--	--	--	0.80	--	--	--	--
	EM33	6/4/2021	FD	550-164930-21/22	Qal	11.8 - 21.4	--	--	--	--	--	0.86	--	--	--	--
	EM33	6/4/2021	N	550-164930-19/20	Qal	11.8 - 21.4	--	--	--	--	--	0.87	--	--	--	--
	EM36	12/1/2021	FD	550-175045-10/9	Qal	11.8 - 21.4	--	--	--	--	--	0.81	--	--	--	--
	EM36	12/1/2021	N	550-175045-7/8	Qal	11.8 - 21.4	--	--	--	--	--	0.83	--	--	--	--
SWFTS-MW06B	BL01	3/30/2017	N	440-181045-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-5	Qal	25.9 - 35.5	--	--	--	--	--	0.97	--	--	--	--
	EM06	11/16/2017	N	440-196786-20	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW06B	EM09	3/28/2018	N	440-207497-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-8	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-4	Qal	25.9 - 35.5	--	--	--	--	--	0.77	--	--	--	--
	EM15	10/10/2018	N	440-221975-9	Qal	25.9 - 35.5	--	--	--	--	--	0.98	--	--	--	--
	EM19	5/21/2019	N	440-242084-5	Qal	25.9 - 35.5	--	--	--	--	--	0.89	--	--	--	--
	EM22	11/6/2019	N	440-254027-6	Qal	25.9 - 35.5	--	--	--	--	--	1.1	--	--	--	--
	EM26	4/29/2020	N	440-265346-4	Qal	25.9 - 35.5	--	--	--	--	--	0.79	--	--	--	--
	EM29	10/13/2020	N	440-273236-6	Qal	25.9 - 35.5	--	--	--	--	--	0.89	--	--	--	--
	EM33	6/4/2021	N	550-164930-23/24	Qal	25.9 - 35.5	--	--	--	--	--	1.1	--	--	--	--
	EM36	12/1/2021	N	550-175045-11/12	Qal	25.9 - 35.5	--	--	--	--	--	0.94	--	--	--	--
SWFTS-MW07A	BL01	3/30/2017	N	440-181045-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-3	Qal	15.0 - 29.5	--	--	--	--	--	1.1	--	--	--	--
	EM06	11/15/2017	N	440-196659-7	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-2	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-7	Qal	15.0 - 29.5	--	--	--	--	--	1.2	--	--	--	--
	EM15	10/10/2018	N	440-221975-11	Qal	15.0 - 29.5	--	--	--	--	--	1.1	--	--	--	--
	EM19	5/22/2019	N	440-242200-5	Qal	15.0 - 29.5	--	--	--	--	--	0.65	--	--	--	--
	EM22	11/7/2019	N	440-254148-4	Qal	15.0 - 29.5	--	--	--	--	--	0.71	--	--	--	--
	EM26	4/30/2020	N	440-265382-5	Qal	15.0 - 29.5	--	--	--	--	--	0.68	--	--	--	--
	EM29	10/16/2020	N	440-273433-1	Qal	15.0 - 29.5	--	--	--	--	--	0.90	--	--	--	--
	EM33	6/4/2021	N	550-164930-25/26	Qal	15.0 - 29.5	--	--	--	--	--	0.75	--	--	--	--
	EM36	12/3/2021	N	550-175222-3/4	Qal	15.0 - 29.5	--	--	--	--	--	0.96	--	--	--	--
SWFTS-MW07B	BL01	3/30/2017	N	440-181045-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-4	Qal	33.8 - 38.3	--	--	--	--	--	0.98	--	--	--	--
	EM06	11/15/2017	N	440-196659-8	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-2	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-10	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-1	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-8	Qal	33.8 - 38.3	--	--	--	--	--	0.89	--	--	--	--
	EM15	10/10/2018	N	440-221975-12	Qal	33.8 - 38.3	--	--	--	--	--	0.65	--	--	--	--
	EM19	5/22/2019	N	440-242200-6	Qal	33.8 - 38.3	--	--	--	--	--	0.64	--	--	--	--
	EM22	11/7/2019	N	440-254148-5	Qal	33.8 - 38.3	--	--	--	--	--	0.59	--	--	--	--
	EM26	4/30/2020	N	440-265382-4	Qal	33.8 - 38.3	--	--	--	--	--	0.90	--	--	--	--
	EM29	10/16/2020	N	440-273433-2	Qal	33.8 - 38.3	--	--	--	--	--	0.62	--	--	--	--
	EM33	6/4/2021	N	550-164930-27/28	Qal	33.8 - 38.3	--	--	--	--	--	0.90	--	--	--	--
	EM36	12/3/2021	N	550-175222-5/6	Qal	33.8 - 38.3	--	--	--	--	--	1.3	--	--	--	--
SWFTS-MW08A	BL01	3/30/2017	N	440-181045-9	Qal	20.2 - 34.8	--	--	--	--	--	0.014 J	--	--	--	--
	EM04	10/10/2017	N	440-194094-4	Qal	20.2 - 34.8	--	--	--	--	--	<0.015	--	--	--	--
	EM06	11/15/2017	N	440-196659-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-8	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW08A	EM10	5/3/2018	N	440-210534-5	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-14	Qal	20.2 - 34.8	--	--	--	--	--	<0.015	--	--	--	--
	EM15	10/10/2018	N	440-221975-13	Qal	20.2 - 34.8	--	--	--	--	--	<0.015	--	--	--	--
	EM19	5/22/2019	N	440-242198-4	Qal	20.2 - 34.8	--	--	--	--	--	<0.015	--	--	--	--
	EM22	11/7/2019	N	440-254148-6	Qal	20.2 - 34.8	--	--	--	--	--	<0.015	--	--	--	--
	EM26	4/29/2020	N	440-265346-3	Qal	20.2 - 34.8	--	--	--	--	--	<0.015	--	--	--	--
	EM29	10/16/2020	N	440-273433-4	Qal	20.2 - 34.8	--	--	--	--	--	<0.015	--	--	--	--
	EM33	6/4/2021	N	550-164930-29/30	Qal	20.2 - 34.8	--	--	--	--	--	<0.0083	--	--	--	--
	EM36	12/2/2021	N	550-175153-23/24	Qal	20.2 - 34.8	--	--	--	--	--	<0.0083	--	--	--	--
SWFTS-MW08C	BL01	3/28/2017	N	440-180820-3	UMCf	49.9 - 69.5	--	--	--	--	--	<0.010	--	--	--	--
SWFTS-MW09A	BL01	3/29/2017	N	440-180937-3	Qal	19.3 - 28.9	--	--	--	--	--	0.024	--	--	--	--
	EM04	10/11/2017	N	440-194094-7	Qal	19.3 - 28.9	--	--	--	--	--	8.9	--	--	--	--
	EM06	11/16/2017	N	440-196786-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-6	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-13	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-10	Qal	19.3 - 28.9	--	--	--	--	--	3.8	--	--	--	--
	EM15	10/9/2018	N	440-221855-7	Qal	19.3 - 28.9	--	--	--	--	--	3.4	--	--	--	--
	EM19	5/22/2019	N	440-242200-1	Qal	19.3 - 28.9	--	--	--	--	--	3.6	--	--	--	--
	EM22	11/5/2019	N	440-253891-1	Qal	19.3 - 28.9	--	--	--	--	--	2.9	--	--	--	--
	EM26	4/28/2020	N	440-265289-4	Qal	19.3 - 28.9	--	--	--	--	--	3.7	--	--	--	--
	EM29	10/13/2020	N	440-273236-3	Qal	19.3 - 28.9	--	--	--	--	--	3.2	--	--	--	--
	EM33	6/1/2021	N	550-164699-1/2	Qal	19.3 - 28.9	--	--	--	--	--	3.3	--	--	--	--
	EM36	12/2/2021	N	550-175153-10/9	Qal	19.3 - 28.9	--	--	--	--	--	4.2	--	--	--	--
SWFTS-MW09B	BL01	3/29/2017	FD	440-180937-5	Qal	34.4 - 39.0	--	--	--	--	--	0.82	--	--	--	--
	BL01	3/29/2017	N	440-180937-4	Qal	34.4 - 39.0	--	--	--	--	--	0.84	--	--	--	--
	EM04	10/11/2017	N	440-194094-5	Qal	34.4 - 39.0	--	--	--	--	--	6.8	--	--	--	--
	EM06	11/16/2017	N	440-196786-15	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-7	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-13	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-6	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-11	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-9	Qal	34.4 - 39.0	--	--	--	--	--	2.5	--	--	--	--
	EM15	10/9/2018	N	440-221855-8	Qal	34.4 - 39.0	--	--	--	--	--	2.2	--	--	--	--
	EM19	5/22/2019	N	440-242200-2	Qal	34.4 - 39.0	--	--	--	--	--	<0.015	--	--	--	--
	EM22	11/5/2019	N	440-253891-3	Qal	34.4 - 39.0	--	--	--	--	--	1.8	--	--	--	--
	EM26	4/28/2020	N	440-265289-3	Qal	34.4 - 39.0	--	--	--	--	--	2.0	--	--	--	--
	EM29	10/13/2020	N	440-273236-4	Qal	34.4 - 39.0	--	--	--	--	--	1.5	--	--	--	--
	EM33	6/2/2021	N	550-164872-1/2	Qal	34.4 - 39.0	--	--	--	--	--	1.4	--	--	--	--
	EM36	12/2/2021	N	550-175153-11/12	Qal	34.4 - 39.0	--	--	--	--	--	1.7	--	--	--	--
SWFTS-MW10A	BL01	3/31/2017	N	440-181122-2	Qal	20.4 - 35.0	--	--	--	--	--	1.1	--	--	--	--
	EM04	10/12/2017	N	440-194242-10	Qal	20.4 - 35.0	--	--	--	--	--	4.3	--	--	--	--
	EM06	11/16/2017	FD	440-196786-6	Qal	20.4 - 35.0	--	--	--	--	--	2.5	--	--	--	--
	EM06	11/16/2017	N	440-196786-5	Qal	20.4 - 35.0	--	--	--	--	--	2.4	--	--	--	--
	EM07	12/12/2017	FD	440-198371-11	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--

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Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW10A	EM07	12/12/2017	N	440-198371-10	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-5	Qal	20.4 - 35.0	--	--	--	--	--	2.4	--	--	--	--
	EM08	2/20/2018	N	440-203841-4	Qal	20.4 - 35.0	--	--	--	--	--	2.4	--	--	--	--
	EM09	3/26/2018	FD	440-207137-8	Qal	20.4 - 35.0	--	--	--	--	--	2.4	--	--	--	--
	EM09	3/26/2018	N	440-207137-7	Qal	20.4 - 35.0	--	--	--	--	--	2.6	--	--	--	--
	EM10	5/1/2018	N	440-210284-1	Qal	20.4 - 35.0	--	--	--	--	--	2.5	--	--	--	--
	EM11	7/11/2018	N	440-215585-9	Qal	20.4 - 35.0	--	--	--	--	--	2.1	--	--	--	--
	EM13	8/14/2018	N	440-218109-10	Qal	20.4 - 35.0	--	--	--	--	--	1.8	--	--	--	--
	EM14	9/10/2018	N	440-219797-4	Qal	20.4 - 35.0	--	--	--	--	--	1.8	--	--	--	--
	EM15	10/9/2018	N	440-221855-9	Qal	20.4 - 35.0	--	--	--	--	--	1.7	--	--	--	--
	EM19	5/21/2019	N	440-242084-2	Qal	20.4 - 35.0	--	--	--	--	--	1.5	--	--	--	--
	EM22	11/6/2019	N	440-254051-1	Qal	20.4 - 35.0	--	--	--	--	--	1.6	--	--	--	--
	EM26	4/29/2020	N	440-265342-6	Qal	20.4 - 35.0	--	--	--	--	--	1.8	--	--	--	--
	EM29	10/14/2020	N	440-273303-4	Qal	20.4 - 35.0	--	--	--	--	--	1.7	--	--	--	--
	EM33	6/4/2021	N	550-164930-13/14	Qal	20.4 - 35.0	--	--	--	--	--	1.8	--	--	--	--
	EM36	11/30/2021	N	550-174968-17/18	Qal	20.4 - 35.0	--	--	--	--	--	1.5	--	--	--	--
SWFTS-MW10C	BL01	3/28/2017	N	440-180820-4	UMCf	43.5 - 63.1	--	--	--	--	--	0.066	--	--	--	--
SWFTS-MW11	BL02	7/12/2017	N	440-188244-7	Qal	14.8 - 39.6	--	--	--	--	--	0.16	--	--	--	--
	EM04	10/11/2017	N	440-194094-8	Qal	14.8 - 39.6	--	--	--	--	--	0.21	--	--	--	--
	EM06	11/16/2017	N	440-196786-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-13	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	FD	440-203937-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	FD	440-207497-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210367-1	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-18	Qal	14.8 - 39.6	--	--	--	--	--	<0.015	--	--	--	--
	EM11	7/12/2018	N	440-215717-17	Qal	14.8 - 39.6	--	--	--	--	--	<0.015	--	--	--	--
	EM15	10/11/2018	FD	440-222092-11	Qal	14.8 - 39.6	--	--	--	--	--	<0.015	--	--	--	--
	EM15	10/11/2018	N	440-222092-10	Qal	14.8 - 39.6	--	--	--	--	--	<0.015	--	--	--	--
	EM19	5/22/2019	FD	440-242200-4	Qal	14.8 - 39.6	--	--	--	--	--	<0.015 UJ	--	--	--	--
	EM19	5/22/2019	N	440-242200-3	Qal	14.8 - 39.6	--	--	--	--	--	1.8 J	--	--	--	--
	EM22	11/7/2019	FD	440-254150-4	Qal	14.8 - 39.6	--	--	--	--	--	<0.015	--	--	--	--
	EM22	11/7/2019	N	440-254150-3	Qal	14.8 - 39.6	--	--	--	--	--	<0.015	--	--	--	--
	EM26	4/30/2020	FD	440-265383-5	Qal	14.8 - 39.6	--	--	--	--	--	<0.015	--	--	--	--
	EM26	4/30/2020	N	440-265383-4	Qal	14.8 - 39.6	--	--	--	--	--	<0.015	--	--	--	--
	EM29	10/16/2020	FD	440-273433-8	Qal	14.8 - 39.6	--	--	--	--	--	<0.015	--	--	--	--
	EM29	10/16/2020	N	440-273433-7	Qal	14.8 - 39.6	--	--	--	--	--	<0.015	--	--	--	--
	EM33	6/4/2021	FD	550-164930-10/9	Qal	14.8 - 39.6	--	--	--	--	--	<0.0083	--	--	--	--
	EM33	6/4/2021	N	550-164930-7/8	Qal	14.8 - 39.6	--	--	--	--	--	<0.0083	--	--	--	--
	EM36	12/3/2021	FD	550-175222-10/9	Qal	14.8 - 39.6	--	--	--	--	--	<0.0083	--	--	--	--
	EM36	12/3/2021	N	550-175222-7/8	Qal	14.8 - 39.6	--	--	--	--	--	<0.0083	--	--	--	--
SWFTS-MW12	BL02	7/13/2017	N	440-188324-6	Qal	15.8 - 40.6	--	--	--	--	--	<0.015	--	--	--	--
	EM04	10/11/2017	N	440-194090-1	Qal	15.8 - 40.6	--	--	--	--	--	<0.015	--	--	--	--
	EM06	11/14/2017	N	440-196558-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW12	EM07	12/14/2017	N	440-198571-15	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-4	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-16	Qal	15.8 - 40.6	--	--	--	--	--	<0.015	--	--	--	--
	EM15	10/11/2018	N	440-222092-12	Qal	15.8 - 40.6	--	--	--	--	--	0.065	--	--	--	--
	EM19	5/22/2019	N	440-242198-7	Qal	15.8 - 40.6	--	--	--	--	--	<0.015	--	--	--	--
	EM22	11/7/2019	N	440-254150-2	Qal	15.8 - 40.6	--	--	--	--	--	46	--	--	--	--
	EM22	11/26/2019	FD	440-255698-2	Qal	15.8 - 40.6	--	--	--	--	--	37 J-	--	--	--	--
	EM22	11/26/2019	N	440-255698-1	Qal	15.8 - 40.6	--	--	--	--	--	37 J-	--	--	--	--
	EM26	4/30/2020	N	440-265383-3	Qal	15.8 - 40.6	--	--	--	--	--	1.7	--	--	--	--
	EM29	10/16/2020	N	440-273433-6	Qal	15.8 - 40.6	--	--	--	--	--	2.2	--	--	--	--
	EM33	6/4/2021	N	550-164930-5/6	Qal	15.8 - 40.6	--	--	--	--	--	2.0	--	--	--	--
	EM36	12/2/2021	N	550-175153-19/20	Qal	15.8 - 40.6	--	--	--	--	--	0.58	--	--	--	--
SWFTS-MW13	BL02	7/12/2017	N	440-188244-6	Qal	17.8 - 47.6	--	--	--	--	--	0.18	--	--	--	--
	EM04	10/10/2017	N	440-193989-4	Qal	17.8 - 47.6	--	--	--	--	--	<0.015	--	--	--	--
	EM06	11/15/2017	N	440-196659-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-14	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-7	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-15	Qal	17.8 - 47.6	--	--	--	--	--	<0.015	--	--	--	--
	EM15	10/11/2018	N	440-222092-14	Qal	17.8 - 47.6	--	--	--	--	--	<0.015	--	--	--	--
	EM19	5/22/2019	N	440-242198-5	Qal	17.8 - 47.6	--	--	--	--	--	<0.015	--	--	--	--
	EM22	11/6/2019	N	440-254051-6	Qal	17.8 - 47.6	--	--	--	--	--	<0.015	--	--	--	--
	EM26	4/30/2020	N	440-265383-2	Qal	17.8 - 47.6	--	--	--	--	--	<0.015	--	--	--	--
	EM29	10/15/2020	N	550-151259-6	Qal	17.8 - 47.6	--	--	--	--	--	<0.015	--	--	--	--
	EM33	6/4/2021	N	550-164930-3/4	Qal	17.8 - 47.6	--	--	--	--	--	<0.0083	--	--	--	--
	EM36	12/2/2021	N	550-175153-17/18	Qal	17.8 - 47.6	--	--	--	--	--	<0.0083	--	--	--	--
SWFTS-MW14	BL02	7/12/2017	FD	440-188244-9	Qal	16.8 - 36.6	--	--	--	--	--	0.68	--	--	--	--
	BL02	7/12/2017	N	440-188244-8	Qal	16.8 - 36.6	--	--	--	--	--	0.66	--	--	--	--
	EM04	10/11/2017	N	440-194242-8	Qal	16.8 - 36.6	--	--	--	--	--	5.4	--	--	--	--
	EM06	11/15/2017	N	440-196659-3	Qal	16.8 - 36.6	--	--	--	--	--	3.6 J-	--	--	--	--
	EM07	12/12/2017	N	440-198371-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-11	Qal	16.8 - 36.6	--	--	--	--	--	7.1	--	--	--	--
	EM09	3/26/2018	N	440-207137-9	Qal	16.8 - 36.6	--	--	--	--	--	1.4	--	--	--	--
	EM10	4/30/2018	N	440-210173-9	Qal	16.8 - 36.6	--	--	--	--	--	0.65	--	--	--	--
	EM11	7/10/2018	N	440-215437-8	Qal	16.8 - 36.6	--	--	--	--	--	0.80	--	--	--	--
	EM13	8/14/2018	N	440-218109-11	Qal	16.8 - 36.6	--	--	--	--	--	0.49	--	--	--	--
	EM14	9/11/2018	N	440-219886-17	Qal	16.8 - 36.6	--	--	--	--	--	0.45	--	--	--	--
	EM15	10/9/2018	N	440-221855-10	Qal	16.8 - 36.6	--	--	--	--	--	0.42	--	--	--	--
	EM19	5/21/2019	N	440-242084-1	Qal	16.8 - 36.6	--	--	--	--	--	0.33	--	--	--	--
	EM22	11/6/2019	N	440-254051-2	Qal	16.8 - 36.6	--	--	--	--	--	0.44	--	--	--	--
	EM26	5/1/2020	N	440-265414-2	Qal	16.8 - 36.6	--	--	--	--	--	1.3	--	--	--	--
	EM29	10/14/2020	N	440-273303-5	Qal	16.8 - 36.6	--	--	--	--	--	1.7	--	--	--	--
	EM33	6/4/2021	N	550-164930-1/2	Qal	16.8 - 36.6	--	--	--	--	--	1.8	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW14	EM36	12/3/2021	N	550-175222-1/2	Qal	16.8 - 36.6	--	--	--	--	--	1.7	--	--	--	--
SWFTS-MW15	BL02	7/13/2017	N	440-188325-3	Qal	14.8 - 34.6	--	--	--	--	--	0.29	--	--	--	--
	EM04	10/10/2017	N	440-194094-1	Qal	14.8 - 34.6	--	--	--	--	--	0.13	--	--	--	--
	EM06	11/14/2017	N	440-196558-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-13	Qal	14.8 - 34.6	--	--	--	--	--	0.022	--	--	--	--
	EM08	2/19/2018	N	440-203775-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-10	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-1	Qal	14.8 - 34.6	--	--	--	--	--	0.65	--	--	--	--
	EM15	10/9/2018	N	440-221855-11	Qal	14.8 - 34.6	--	--	--	--	--	5.0	--	--	--	--
	EM19	5/20/2019	N	440-242014-1	Qal	14.8 - 34.6	--	--	--	--	--	0.66	--	--	--	--
	EM22	11/6/2019	N	440-254051-3	Qal	14.8 - 34.6	--	--	--	--	--	0.13	--	--	--	--
	EM26	4/29/2020	N	440-265342-3	Qal	14.8 - 34.6	--	--	--	--	--	0.50	--	--	--	--
	EM29	10/15/2020	N	550-151259-4	Qal	14.8 - 34.6	--	--	--	--	--	1.8	--	--	--	--
	EM33	6/3/2021	N	550-164869-13/14	Qal	14.8 - 34.6	--	--	--	--	--	0.43	--	--	--	--
	EM36	11/30/2021	N	550-174968-10/9	Qal	14.8 - 34.6	--	--	--	--	--	0.14	--	--	--	--
SWFTS-MW16	BL02	7/13/2017	N	440-188325-2	Qal	21.8 - 41.6	--	--	--	--	--	1.5	--	--	--	--
	EM04	10/12/2017	N	440-194204-7	Qal	21.8 - 41.6	--	--	--	--	--	8.2	--	--	--	--
	EM06	11/16/2017	N	440-196786-4	Qal	21.8 - 41.6	--	--	--	--	--	2.4	--	--	--	--
	EM07	12/12/2017	N	440-198371-4	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-6	Qal	21.8 - 41.6	--	--	--	--	--	7.7	--	--	--	--
	EM09	3/27/2018	N	440-207268-13	Qal	21.8 - 41.6	--	--	--	--	--	0.34	--	--	--	--
	EM10	5/2/2018	N	440-210430-13	Qal	21.8 - 41.6	--	--	--	--	--	3.2	--	--	--	--
	EM11	7/11/2018	N	440-215585-12	Qal	21.8 - 41.6	--	--	--	--	--	4.3	--	--	--	--
	EM13	8/15/2018	N	440-218208-13	Qal	21.8 - 41.6	--	--	--	--	--	2.4 J-	--	--	--	--
	EM14	9/10/2018	N	440-219797-6	Qal	21.8 - 41.6	--	--	--	--	--	2.9	--	--	--	--
	EM15	10/11/2018	N	440-222092-3	Qal	21.8 - 41.6	--	--	--	--	--	3.2	--	--	--	--
	EM19	5/20/2019	N	440-242014-3	Qal	21.8 - 41.6	--	--	--	--	--	2.0	--	--	--	--
	EM22	11/6/2019	N	440-254051-5	Qal	21.8 - 41.6	--	--	--	--	--	1.3	--	--	--	--
	EM26	4/30/2020	N	440-265383-1	Qal	21.8 - 41.6	--	--	--	--	--	2.2 J	--	--	--	--
	EM29	10/15/2020	N	550-151259-1	Qal	21.8 - 41.6	--	--	--	--	--	1.5	--	--	--	--
	EM33	6/3/2021	N	550-164869-11/12	Qal	21.8 - 41.6	--	--	--	--	--	1.7	--	--	--	--
	EM36	11/30/2021	N	550-174968-11/12	Qal	21.8 - 41.6	--	--	--	--	--	1.8	--	--	--	--
SWFTS-MW17	BL02	7/12/2017	N	440-188244-1	Qal	22.8 - 52.6	--	--	--	--	--	<0.030	--	--	--	--
	EM04	10/10/2017	N	440-193989-3	Qal	22.8 - 52.6	--	--	--	--	--	<0.015	--	--	--	--
	EM06	11/15/2017	FD	440-196659-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-5	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-7	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-3	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-13	Qal	22.8 - 52.6	--	--	--	--	--	<0.015	--	--	--	--
	EM15	10/11/2018	N	440-222092-4	Qal	22.8 - 52.6	--	--	--	--	--	<0.015	--	--	--	--
	EM19	5/22/2019	N	440-242198-6	Qal	22.8 - 52.6	--	--	--	--	--	<0.015	--	--	--	--
	EM22	11/7/2019	N	440-254150-1	Qal	22.8 - 52.6	--	--	--	--	--	<0.015	--	--	--	--

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Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW17	EM26	4/30/2020	N	440-265383-6	Qal	22.8 - 52.6	--	--	--	--	--	<0.015	--	--	--	--
	EM29	10/15/2020	N	550-151259-5	Qal	22.8 - 52.6	--	--	--	--	--	<0.015	--	--	--	--
	EM33	6/3/2021	N	550-164869-10/9	Qal	22.8 - 52.6	--	--	--	--	--	<0.0083	--	--	--	--
	EM36	12/2/2021	N	550-175153-21/22	Qal	22.8 - 52.6	--	--	--	--	--	0.016 J	--	--	--	--
SWFTS-MW18	BL02	7/11/2017	N	440-188133-17	Qal	16.8 - 36.6	--	--	--	--	--	0.10	--	--	--	--
	EM04	10/10/2017	N	440-194094-3	Qal	16.8 - 36.6	--	--	--	--	--	0.86	--	--	--	--
	EM06	11/15/2017	N	440-196690-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-5	Qal	16.8 - 36.6	--	--	--	--	--	0.49	--	--	--	--
	EM08	2/22/2018	N	440-204033-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	FD	440-207268-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-6	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-2	Qal	16.8 - 36.6	--	--	--	--	--	0.18	--	--	--	--
	EM15	10/11/2018	N	440-222092-5	Qal	16.8 - 36.6	--	--	--	--	--	0.12	--	--	--	--
	EM19	5/21/2019	N	440-242084-15	Qal	16.8 - 36.6	--	--	--	--	--	0.95	--	--	--	--
	EM22	11/6/2019	N	440-254051-4	Qal	16.8 - 36.6	--	--	--	--	--	2.8	--	--	--	--
	EM26	4/29/2020	N	440-265342-2	Qal	16.8 - 36.6	--	--	--	--	--	1.6	--	--	--	--
	EM29	10/15/2020	N	550-151259-2	Qal	16.8 - 36.6	--	--	--	--	--	1.5	--	--	--	--
	EM33	6/3/2021	N	550-164869-7/8	Qal	16.8 - 36.6	--	--	--	--	--	1.7	--	--	--	--
	EM36	12/1/2021	N	550-175045-5/6	Qal	16.8 - 36.6	--	--	--	--	--	3.0	--	--	--	--
SWFTS-MW19	BL02	7/12/2017	N	440-188244-2	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM04	10/12/2017	N	440-194204-1	Qal	11.3 - 31.1	--	--	--	--	--	0.043	--	--	--	--
	EM06	11/16/2017	N	440-196786-12	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-8	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-3	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	FD	440-210173-5	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	FD	440-215437-11	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM11	7/10/2018	N	440-215437-10	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM15	10/9/2018	FD	440-221855-5	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM15	10/9/2018	N	440-221855-4	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM19	5/21/2019	FD	440-242084-7	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM19	5/21/2019	N	440-242084-6	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM22	11/5/2019	FD	440-253891-7	Qal	11.3 - 31.1	--	--	--	--	--	0.029	--	--	--	--
	EM22	11/5/2019	N	440-253891-6	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM26	4/28/2020	FD	440-265288-7	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM26	4/28/2020	N	440-265288-4	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM29	10/14/2020	FD	440-273303-3	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM29	10/14/2020	N	440-273303-2	Qal	11.3 - 31.1	--	--	--	--	--	<0.015	--	--	--	--
	EM33	6/3/2021	FD	550-164869-5/6	Qal	11.3 - 31.1	--	--	--	--	--	<0.0083	--	--	--	--
	EM33	6/3/2021	N	550-164869-3/4	Qal	11.3 - 31.1	--	--	--	--	--	<0.0083	--	--	--	--
	EM36	12/1/2021	FD	550-175045-15/16	Qal	11.3 - 31.1	--	--	--	--	--	<0.0083	--	--	--	--
	EM36	12/1/2021	N	550-175045-13/14	Qal	11.3 - 31.1	--	--	--	--	--	<0.0083	--	--	--	--
SWFTS-MW20	BL02	7/12/2017	N	440-188244-5	Qal	12.8 - 37.6	--	--	--	--	--	0.38	--	--	--	--
	EM04	10/12/2017	FD	440-194202-2	Qal	12.8 - 37.6	--	--	--	--	--	2.2 J	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW20	EM04	10/12/2017	N	440-194202-1	Qal	12.8 - 37.6	--	--	--	--	--	1.3 J	--	--	--	--
	EM06	11/16/2017	N	440-196786-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-3	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-9	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-10	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-8	Qal	12.8 - 37.6	--	--	--	--	--	2.6	--	--	--	--
	EM15	10/9/2018	N	440-221855-1	Qal	12.8 - 37.6	--	--	--	--	--	2.2	--	--	--	--
	EM19	5/21/2019	N	440-242084-3	Qal	12.8 - 37.6	--	--	--	--	--	5.6	--	--	--	--
	EM22	11/5/2019	N	440-253918-6	Qal	12.8 - 37.6	--	--	--	--	--	3.6	--	--	--	--
	EM26	4/29/2020	N	440-265342-5	Qal	12.8 - 37.6	--	--	--	--	--	3.9	--	--	--	--
	EM29	10/14/2020	N	440-273303-6	Qal	12.8 - 37.6	--	--	--	--	--	2.3	--	--	--	--
	EM33	6/3/2021	N	550-164869-1/2	Qal	12.8 - 37.6	--	--	--	--	--	3.2	--	--	--	--
	EM36	11/29/2021	N	550-174897-1/2	Qal	12.8 - 37.6	--	--	--	--	--	3.5	--	--	--	--
SWFTS-MW21	BL02	7/13/2017	N	440-188324-5	Qal	14.8 - 39.6	--	--	--	--	--	0.44	--	--	--	--
	EM04	10/11/2017	N	440-194090-8	Qal	14.8 - 39.6	--	--	--	--	--	2.2	--	--	--	--
	EM06	11/15/2017	N	440-196665-5	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-10	Qal	14.8 - 39.6	--	--	--	--	--	1.5	--	--	--	--
	EM08	2/20/2018	FD	440-203841-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-14	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-3	Qal	14.8 - 39.6	--	--	--	--	--	2.2	--	--	--	--
	EM15	10/9/2018	N	440-221855-3	Qal	14.8 - 39.6	--	--	--	--	--	2.9	--	--	--	--
	EM19	5/22/2019	N	440-242198-3	Qal	14.8 - 39.6	--	--	--	--	--	5.9	--	--	--	--
	EM22	11/4/2019	N	440-253773-3	Qal	14.8 - 39.6	--	--	--	--	--	5.4	--	--	--	--
	EM26	4/29/2020	N	440-265342-1	Qal	14.8 - 39.6	--	--	--	--	--	1.8	--	--	--	--
	EM29	10/14/2020	N	440-273303-7	Qal	14.8 - 39.6	--	--	--	--	--	5.2	--	--	--	--
	EM33	6/2/2021	N	550-164872-15/16	Qal	14.8 - 39.6	--	--	--	--	--	4.8	--	--	--	--
	EM36	12/1/2021	N	550-175045-3/4	Qal	14.8 - 39.6	--	--	--	--	--	4.5	--	--	--	--
SWFTS-MW22	BL02	7/13/2017	N	440-188324-1	Qal	11.8 - 31.6	--	--	--	--	--	2.3	--	--	--	--
	EM04	10/12/2017	N	440-194242-9	Qal	11.8 - 31.6	--	--	--	--	--	1.5	--	--	--	--
	EM06	11/16/2017	N	440-196786-18	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-17	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-6	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-9	Qal	11.8 - 31.6	--	--	--	--	--	0.75	--	--	--	--
	EM15	10/9/2018	N	440-221855-2	Qal	11.8 - 31.6	--	--	--	--	--	0.42	--	--	--	--
	EM19	5/21/2019	N	440-242084-4	Qal	11.8 - 31.6	--	--	--	--	--	1.1	--	--	--	--
	EM22	11/5/2019	N	440-253891-4	Qal	11.8 - 31.6	--	--	--	--	--	0.38	--	--	--	--
	EM26	4/28/2020	N	440-265288-5	Qal	11.8 - 31.6	--	--	--	--	--	0.57	--	--	--	--
	EM29	10/14/2020	N	440-273303-1	Qal	11.8 - 31.6	--	--	--	--	--	0.59	--	--	--	--
	EM33	6/2/2021	N	550-164872-11/12	Qal	11.8 - 31.6	--	--	--	--	--	0.49	--	--	--	--
	EM36	12/2/2021	N	550-175153-1/2	Qal	11.8 - 31.6	--	--	--	--	--	1.5	--	--	--	--
SWFTS-MW23	BL02	7/13/2017	N	440-188325-7	Qal	13.8 - 33.6	--	--	--	--	--	0.086	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									
							Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW23	EM04	10/11/2017	N	440-194090-7	Qal	13.8 - 33.6	--	--	--	--	--	0.10	--	--	--	--
	EM06	11/15/2017	N	440-196665-3	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-2	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-14	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-9	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-5	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-7	Qal	13.8 - 33.6	--	--	--	--	--	0.14	--	--	--	--
	EM15	10/11/2018	N	440-222092-7	Qal	13.8 - 33.6	--	--	--	--	--	0.095	--	--	--	--
	EM19	5/22/2019	N	440-242201-7	Qal	13.8 - 33.6	--	--	--	--	--	0.12	--	--	--	--
	EM22	11/5/2019	N	440-253891-5	Qal	13.8 - 33.6	--	--	--	--	--	0.14	--	--	--	--
	EM26	4/28/2020	N	440-265288-3	Qal	13.8 - 33.6	--	--	--	--	--	0.13	--	--	--	--
	EM29	10/13/2020	N	440-273236-1	Qal	13.8 - 33.6	--	--	--	--	--	0.15	--	--	--	--
	EM33	6/2/2021	N	550-164872-3/4	Qal	13.8 - 33.6	--	--	--	--	--	0.16	--	--	--	--
	EM36	12/2/2021	N	550-175153-15/16	Qal	13.8 - 33.6	--	--	--	--	--	0.16	--	--	--	--
SWFTS-MW24	BL02	7/13/2017	N	440-188324-2	Qal	12.8 - 37.6	--	--	--	--	--	0.051	--	--	--	--
	EM04	10/11/2017	N	440-194242-2	Qal	12.8 - 37.6	--	--	--	--	--	0.16	--	--	--	--
	EM06	11/15/2017	N	440-196665-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-12	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-5	Qal	12.8 - 37.6	--	--	--	--	--	0.64	--	--	--	--
	EM15	10/10/2018	N	440-221975-7	Qal	12.8 - 37.6	--	--	--	--	--	0.69	--	--	--	--
	EM19	5/22/2019	N	440-242198-1	Qal	12.8 - 37.6	--	--	--	--	--	0.21	--	--	--	--
	EM22	11/5/2019	N	440-253891-2	Qal	12.8 - 37.6	--	--	--	--	--	<0.015	--	--	--	--
	EM26	4/28/2020	N	440-265288-1	Qal	12.8 - 37.6	--	--	--	--	--	1.4	--	--	--	--
	EM29	10/12/2020	N	440-273153-1	Qal	12.8 - 37.6	--	--	--	--	--	<0.015	--	--	--	--
	EM33	6/2/2021	N	550-164872-7/8	Qal	12.8 - 37.6	--	--	--	--	--	0.089	--	--	--	--
	EM36	12/1/2021	N	550-175045-17/18	Qal	12.8 - 37.6	--	--	--	--	--	0.15	--	--	--	--
SWFTS-MW25	BL02	7/13/2017	N	440-188324-4	Qal	12.8 - 42.6	--	--	--	--	--	1.1	--	--	--	--
	EM04	10/11/2017	N	440-194242-1	Qal	12.8 - 42.6	--	--	--	--	--	4.9	--	--	--	--
	EM06	11/15/2017	N	440-196665-2	Qal	12.8 - 42.6	--	--	--	--	--	6.3	--	--	--	--
	EM07	12/12/2017	N	440-198371-1	Qal	12.8 - 42.6	--	--	--	--	--	7.2	--	--	--	--
	EM08	2/21/2018	N	440-203937-7	Qal	12.8 - 42.6	--	--	--	--	--	6.7	--	--	--	--
	EM09	3/28/2018	N	440-207497-13	Qal	12.8 - 42.6	--	--	--	--	--	5.6	--	--	--	--
	EM10	5/3/2018	N	440-210534-2	Qal	12.8 - 42.6	--	--	--	--	--	5.3	--	--	--	--
	EM11	7/10/2018	N	440-215437-12	Qal	12.8 - 42.6	--	--	--	--	--	4.4	--	--	--	--
	EM13	8/15/2018	N	440-218208-10	Qal	12.8 - 42.6	--	--	--	--	--	4.3	--	--	--	--
	EM14	9/12/2018	N	440-220031-2	Qal	12.8 - 42.6	--	--	--	--	--	3.8	--	--	--	--
	EM15	10/11/2018	N	440-222092-6	Qal	12.8 - 42.6	--	--	--	--	--	3.5	--	--	--	--
	EM19	5/22/2019	N	440-242201-6	Qal	12.8 - 42.6	--	--	--	--	--	3.9	--	--	--	--
	EM22	11/5/2019	N	440-253918-4	Qal	12.8 - 42.6	--	--	--	--	--	2.6	--	--	--	--
	EM26	4/28/2020	N	440-265288-2	Qal	12.8 - 42.6	--	--	--	--	--	4.6	--	--	--	--
	EM29	10/13/2020	N	440-273236-2	Qal	12.8 - 42.6	--	--	--	--	--	2.9	--	--	--	--
	EM33	6/2/2021	N	550-164872-5/6	Qal	12.8 - 42.6	--	--	--	--	--	3.0	--	--	--	--
	EM36	12/1/2021	N	550-175045-19/20	Qal	12.8 - 42.6	--	--	--	--	--	2.7	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
COH-2B1	BL02	8/9/2017	N	440-189933-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-2	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-2	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-11	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM26	4/27/2020	N	440-265243-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-9	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--	--
PC-58	BL01	3/28/2017	N	440-180820-1	Qal	7.8 - 32.8	34	<0.0050	540	6.0	<0.050	<0.0025	<0.050	0.060	<0.012	<0.50
	BL02	7/13/2017	N	440-188324-3	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-6	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-11	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-9	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-13	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-6	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-10	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-7	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-19	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-7	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-1	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265414-3	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-5	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-23/24	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-11/12	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--	--
PC-88	EM04	10/11/2017	FD	440-194090-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	FD	440-196690-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196690-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	FD	440-210430-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-8	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-12	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	FD	440-222092-16	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-15	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	FD	440-242201-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	FD	440-254148-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	FD	440-265412-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
PC-88	EM26	5/1/2020	N	440-265412-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	FD	550-151259-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	FD	550-164869-27/28	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-25/26	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	FD	550-175153-7/8	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-5/6	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--	--
PC-91	BL01	3/29/2017	N	440-180937-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	BL02	7/12/2017	FD	440-188244-4	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	BL02	7/12/2017	N	440-188247-5	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-8	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-9	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-6	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-16	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-9	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-2	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-11	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-17/18	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-1/2	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--	--
PC-92	BL01	3/29/2017	N	440-180937-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	BL02	7/12/2017	N	440-188247-6	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	FD	440-194204-5	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	FD	440-196786-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-9	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	FD	440-198571-8	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-7	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	FD	440-207137-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-5	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-17	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-1	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-19/20	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-3/4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--	--
PC-94	BL01	3/28/2017	N	440-180820-2	Qal	9.5 - 19.5	40	<0.010	1,100	11	<0.10	0.050	<0.10	0.044	<0.024	<0.50

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
PC-94	BL02	7/13/2017	N	440-188325-1	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-6	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-17	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-14	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-12	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-8	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-14	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-1	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-2	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM14	9/11/2018	N	440-219886-9	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-18	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-4	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-1	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-2	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-7	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-21/22	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-5/6	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--	--
PC-97	BL02	7/13/2017	N	440-188325-8	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	FD	440-194242-6	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-5	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-13	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-12	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-11	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-3	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-13	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-1	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-9	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--	--
SWFTS-IW01A	BL02	7/11/2017	N	440-188133-3	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW01B	BL02	7/11/2017	N	440-188133-13	Qal	26.9 - 36.7	--	--	--	--	--	--	--	--	--	--
SWFTS-IW02A	BL02	7/11/2017	N	440-188133-14	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW02B	BL02	7/11/2017	N	440-188133-2	Qal	26.3 - 36.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW03	BL02	7/11/2017	FD	440-188133-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW04	BL02	7/11/2017	FD	440-188133-12	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-11	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW05	BL02	7/11/2017	N	440-188133-16	Qal	14.6 - 34.4	--	--	--	--	--	--	--	--	--	--
SWFTS-IW06A	BL02	7/11/2017	N	440-188133-10	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW06B	BL02	7/11/2017	N	440-188133-6	Qal	28.8 - 33.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW07	BL02	7/11/2017	N	440-188133-7	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW08	BL02	7/12/2017	N	440-188247-7	Qal	17.5 - 37.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW09	BL02	7/12/2017	FD	440-188244-3	Qal	26.6 - 46.4	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-IW09	BL02	7/12/2017	N	440-188247-8	Qal	26.6 - 46.4	--	--	--	--	--	--	--	--	--	--
SWFTS-IW10	BL02	7/12/2017	N	440-188247-9	Qal	26.8 - 46.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW11	BL02	7/12/2017	N	440-188247-3	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW12	BL02	7/12/2017	N	440-188247-4	Qal	14.3 - 39.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13A	BL02	7/11/2017	N	440-188133-1	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW13B	BL02	7/11/2017	N	440-188133-15	Qal	27.8 - 37.6	--	--	--	--	--	--	--	--	--	--
SWFTS-IW14	BL02	7/12/2017	N	440-188247-1	Qal	16.2 - 36.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW15	BL02	7/12/2017	N	440-188247-2	Qal	16.4 - 36.2	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16A	BL02	7/11/2017	N	440-188133-9	Qal	17.3 - 27.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW16B	BL02	7/11/2017	N	440-188133-8	Qal	26.5 - 36.3	--	--	--	--	--	--	--	--	--	--
SWFTS-IW17	BL02	7/13/2017	N	440-188325-6	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW18	BL02	7/13/2017	N	440-188325-4	Qal	18.1 - 38.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW19	BL02	7/13/2017	N	440-188325-5	Qal	24.3 - 44.1	--	--	--	--	--	--	--	--	--	--
SWFTS-IW20	BL02	7/12/2017	N	440-188247-10	Qal	30.8 - 50.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW01	BL01	3/29/2017	N	440-180937-6	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-194094-2	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-4	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-12	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-2	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM14	9/10/2018	N	440-219797-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-12	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-14	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-3	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-5	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-11	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-17/18	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-19/20	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--	--
SWFTS-MW02	BL01	3/29/2017	N	440-180937-7	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-6	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-13	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM14	9/10/2018	N	440-219797-2	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-15	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-7	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-21/22	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-7/8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW03	BL01	3/30/2017	FD	440-181045-6	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	BL01	3/30/2017	N	440-181045-5	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-8	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-16	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-13	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-5	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-15	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-6	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-5	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-4	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM14	9/11/2018	N	440-219886-11	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-13	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-12	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-2	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-1	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-10	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-15/16	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-1/2	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--	--
SWFTS-MW04	BL01	3/31/2017	N	440-181122-1	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-7	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-12	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-4	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-9	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-11	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-6	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265412-1	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-12	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-23/24	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-3/4	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--	--
SWFTS-MW05A	BL01	3/30/2017	N	440-181045-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-2	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-1	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-3	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-5	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-8	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-14	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-14	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-17	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-1	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-2	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-9	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW05A	EM33	6/3/2021	N	550-164869-17/18	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
	EM36	11/29/2021	N	550-174897-3/4	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--	--
SWFTS-MW05B	BL01	3/30/2017	N	440-181045-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-1	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-4	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-6	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215585-10	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-14	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-18	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-1	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-19/20	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-15/16	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--	--
SWFTS-MW06A	BL01	3/30/2017	N	440-181045-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-4	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-19	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-3	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210284-10	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-9	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	FD	440-215585-3	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-2	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	FD	440-221975-10	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-8	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	FD	440-242015-2	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	N	440-242015-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	FD	440-254027-5	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-4	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	FD	440-265346-6	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-5	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	FD	440-273236-8	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-7	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	FD	550-164930-21/22	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-19/20	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	FD	550-175045-10/9	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-7/8	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--	--
SWFTS-MW06B	BL01	3/30/2017	N	440-181045-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-20	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW06B	EM09	3/28/2018	N	440-207497-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-8	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-4	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-9	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-6	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-4	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-6	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-23/24	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-11/12	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--	--
SWFTS-MW07A	BL01	3/30/2017	N	440-181045-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-7	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-2	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-7	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-11	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-5	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-5	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-1	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-25/26	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-3/4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--	--
SWFTS-MW07B	BL01	3/30/2017	N	440-181045-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-8	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-2	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-10	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-1	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-8	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-12	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-6	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-5	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-2	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-27/28	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-5/6	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--	--
SWFTS-MW08A	BL01	3/30/2017	N	440-181045-9	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-194094-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-8	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW08A	EM10	5/3/2018	N	440-210534-5	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-14	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-13	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-6	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-3	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-29/30	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-23/24	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--	--
SWFTS-MW08C	BL01	3/28/2017	N	440-180820-3	UMCf	49.9 - 69.5	--	--	--	--	--	--	--	--	--	--
SWFTS-MW09A	BL01	3/29/2017	N	440-180937-3	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-6	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-13	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-10	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-1	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-1	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-4	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-3	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM33	6/1/2021	N	550-164699-1/2	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-10/9	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--	--
SWFTS-MW09B	BL01	3/29/2017	FD	440-180937-5	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	BL01	3/29/2017	N	440-180937-4	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-5	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-15	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-7	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-13	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-6	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-11	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-9	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-8	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-2	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-3	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-3	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-4	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-1/2	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-11/12	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--	--
SWFTS-MW10A	BL01	3/31/2017	N	440-181122-2	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194242-10	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	FD	440-196786-6	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-5	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	FD	440-198371-11	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW10A	EM07	12/12/2017	N	440-198371-10	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-5	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-4	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	FD	440-207137-8	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-7	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-1	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-9	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM13	8/14/2018	N	440-218109-10	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM14	9/10/2018	N	440-219797-4	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-9	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-2	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-1	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-6	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-4	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-13/14	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-17/18	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--	--
SWFTS-MW10C	BL01	3/28/2017	N	440-180820-4	UMCf	43.5 - 63.1	--	--	--	--	--	--	--	--	--	--
SWFTS-MW11	BL02	7/12/2017	N	440-188244-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-13	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	FD	440-203937-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	FD	440-207497-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210367-1	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-18	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-17	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	FD	440-222092-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	FD	440-242200-4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	FD	440-254150-4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	FD	440-265383-5	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	FD	440-273433-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	FD	550-164930-10/9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-7/8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	FD	550-175222-10/9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-7/8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW12	BL02	7/13/2017	N	440-188324-6	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-1	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW12	EM07	12/14/2017	N	440-198571-15	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-4	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-16	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-12	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-7	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/26/2019	FD	440-255698-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/26/2019	N	440-255698-1	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-3	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-6	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-5/6	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-19/20	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW13	BL02	7/12/2017	N	440-188244-6	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-14	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-7	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-15	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-14	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-5	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-6	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-2	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-6	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-3/4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-17/18	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW14	BL02	7/12/2017	FD	440-188244-9	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	BL02	7/12/2017	N	440-188244-8	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-8	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-3	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-9	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-9	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-8	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM13	8/14/2018	N	440-218109-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM14	9/11/2018	N	440-219886-17	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-10	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-1	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265414-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-1/2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW14	EM36	12/3/2021	N	550-175222-1/2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW15	BL02	7/13/2017	N	440-188325-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-194094-1	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-13	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-10	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-1	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-11	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	N	440-242014-1	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-13/14	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-10/9	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW16	BL02	7/13/2017	N	440-188325-2	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-7	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-4	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-4	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-6	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-13	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-13	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-12	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-13	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM14	9/10/2018	N	440-219797-6	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-3	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	N	440-242014-3	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-5	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-1	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-1	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-11/12	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-11/12	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW17	BL02	7/12/2017	N	440-188244-1	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-3	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	FD	440-196659-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-5	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-7	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-3	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-13	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-4	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-1	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW17	EM26	4/30/2020	N	440-265383-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-5	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-10/9	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-21/22	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW18	BL02	7/11/2017	N	440-188133-17	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-194094-3	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196690-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	FD	440-207268-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-6	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-15	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-7/8	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-5/6	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW19	BL02	7/12/2017	N	440-188244-2	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-1	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-12	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-8	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-3	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	FD	440-210173-5	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	FD	440-215437-11	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-10	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	FD	440-221855-5	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	FD	440-242084-7	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	FD	440-253891-7	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	FD	440-265288-7	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	FD	440-273303-3	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-2	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	FD	550-164869-5/6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-3/4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	FD	550-175045-15/16	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-13/14	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--	--
SWFTS-MW20	BL02	7/12/2017	N	440-188244-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	FD	440-194202-2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW20	EM04	10/12/2017	N	440-194202-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-3	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-9	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-10	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-3	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-6	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-6	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-1/2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM36	11/29/2021	N	550-174897-1/2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW21	BL02	7/13/2017	N	440-188324-5	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-5	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-14	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-1	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-15/16	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-3/4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW22	BL02	7/13/2017	N	440-188324-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194242-9	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-18	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-17	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-6	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-9	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-2	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-4	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-4	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-5	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-11/12	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-1/2	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW23	BL02	7/13/2017	N	440-188325-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6010									Total Metals by SW6020
							Silicon	Silver	Sodium	Strontium	Tin	Titanium	Tungsten	Vanadium	Zinc	Antimony
							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
SWFTS-MW23	EM04	10/11/2017	N	440-194090-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-3	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-2	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-14	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-9	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-5	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-5	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-3	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-1	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-3/4	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-15/16	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW24	BL02	7/13/2017	N	440-188324-2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-12	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/12/2020	N	440-273153-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-7/8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-17/18	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--	--
SWFTS-MW25	BL02	7/13/2017	N	440-188324-4	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-1	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-1	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-7	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-13	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-12	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-10	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM14	9/12/2018	N	440-220031-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-6	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-6	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-4	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-5/6	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-19/20	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COH-2B1	BL02	8/9/2017	N	440-189933-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-2	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-2	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-11	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-6	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-5	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM26	4/27/2020	N	440-265243-1	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-9	Alluvium/UMCf	36.0 - 66.0	--	--	--	--	--	--	--	--	--
PC-58	BL01	3/28/2017	N	440-180820-1	Qal	7.8 - 32.8	91	50	<0.50	--	--	--	--	--	--
	BL02	7/13/2017	N	440-188324-3	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-6	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-11	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-9	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-13	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-6	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-10	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-7	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-19	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-7	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-1	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265414-3	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-5	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-23/24	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-11/12	Qal	7.8 - 32.8	--	--	--	--	--	--	--	--	--
PC-88	EM04	10/11/2017	FD	440-194090-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	FD	440-196690-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196690-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	FD	440-210430-9	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-8	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-12	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	FD	440-222092-16	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-15	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	FD	440-242201-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	FD	440-254148-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	FD	440-265412-3	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-88	EM26	5/1/2020	N	440-265412-2	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	FD	550-151259-11	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-10	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	FD	550-164869-27/28	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-25/26	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	FD	550-175153-7/8	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-5/6	Qal	40.0 - 50.0	--	--	--	--	--	--	--	--	--
PC-91	BL01	3/29/2017	N	440-180937-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	BL02	7/12/2017	FD	440-188244-4	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	BL02	7/12/2017	N	440-188247-5	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-8	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-9	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-1	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-6	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-16	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-9	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-3	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-2	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-11	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-17/18	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-1/2	Qal	11.5 - 21.5	--	--	--	--	--	--	--	--	--
PC-92	BL01	3/29/2017	N	440-180937-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	BL02	7/12/2017	N	440-188247-6	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	FD	440-194204-5	Qal	26.5 - 36.5	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<1.9
	EM04	10/12/2017	N	440-194204-4	Qal	26.5 - 36.5	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<1.9
	EM06	11/16/2017	FD	440-196786-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-9	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	FD	440-198571-8	Qal	26.5 - 36.5	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<1.9
	EM07	12/14/2017	N	440-198571-7	Qal	26.5 - 36.5	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<1.9
	EM08	2/20/2018	FD	440-203841-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	FD	440-207137-3	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-5	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-17	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-2	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-1	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-10	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-19/20	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-3/4	Qal	26.5 - 36.5	--	--	--	--	--	--	--	--	--
PC-94	BL01	3/28/2017	N	440-180820-2	Qal	9.5 - 19.5	66	26	<0.50	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PC-94	BL02	7/13/2017	N	440-188325-1	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-6	Qal	9.5 - 19.5	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7
	EM06	11/16/2017	N	440-196786-17	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-14	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-12	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-8	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-14	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-1	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-2	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM14	9/11/2018	N	440-219886-9	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-18	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-4	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-1	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-2	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-7	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-21/22	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-5/6	Qal	9.5 - 19.5	--	--	--	--	--	--	--	--	--
PC-97	BL02	7/13/2017	N	440-188325-8	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	FD	440-194242-6	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-5	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-13	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-12	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-11	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-4	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-3	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-13	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-1	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-7	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-9	Qal	23.0 - 33.0	--	--	--	--	--	--	--	--	--
SWFTS-IW01A	BL02	7/11/2017	N	440-188133-3	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--
SWFTS-IW01B	BL02	7/11/2017	N	440-188133-13	Qal	26.9 - 36.7	--	--	--	--	--	--	--	--	--
SWFTS-IW02A	BL02	7/11/2017	N	440-188133-14	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--
SWFTS-IW02B	BL02	7/11/2017	N	440-188133-2	Qal	26.3 - 36.1	--	--	--	--	--	--	--	--	--
SWFTS-IW03	BL02	7/11/2017	FD	440-188133-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
SWFTS-IW04	BL02	7/11/2017	FD	440-188133-12	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--
	BL02	7/11/2017	N	440-188133-11	Qal	19.8 - 34.6	--	--	--	--	--	--	--	--	--
SWFTS-IW05	BL02	7/11/2017	N	440-188133-16	Qal	14.6 - 34.4	--	--	--	--	--	--	--	--	--
SWFTS-IW06A	BL02	7/11/2017	N	440-188133-10	Qal	16.8 - 26.6	--	--	--	--	--	--	--	--	--
SWFTS-IW06B	BL02	7/11/2017	N	440-188133-6	Qal	28.8 - 33.6	--	--	--	--	--	--	--	--	--
SWFTS-IW07	BL02	7/11/2017	N	440-188133-7	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--
SWFTS-IW08	BL02	7/12/2017	N	440-188247-7	Qal	17.5 - 37.3	--	--	--	--	--	--	--	--	--
SWFTS-IW09	BL02	7/12/2017	FD	440-188244-3	Qal	26.6 - 46.4	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-IW09	BL02	7/12/2017	N	440-188247-8	Qal	26.6 - 46.4	--	--	--	--	--	--	--	--	--
SWFTS-IW10	BL02	7/12/2017	N	440-188247-9	Qal	26.8 - 46.6	--	--	--	--	--	--	--	--	--
SWFTS-IW11	BL02	7/12/2017	N	440-188247-3	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--
SWFTS-IW12	BL02	7/12/2017	N	440-188247-4	Qal	14.3 - 39.1	--	--	--	--	--	--	--	--	--
SWFTS-IW13A	BL02	7/11/2017	N	440-188133-1	Qal	15.8 - 25.6	--	--	--	--	--	--	--	--	--
SWFTS-IW13B	BL02	7/11/2017	N	440-188133-15	Qal	27.8 - 37.6	--	--	--	--	--	--	--	--	--
SWFTS-IW14	BL02	7/12/2017	N	440-188247-1	Qal	16.2 - 36.1	--	--	--	--	--	--	--	--	--
SWFTS-IW15	BL02	7/12/2017	N	440-188247-2	Qal	16.4 - 36.2	--	--	--	--	--	--	--	--	--
SWFTS-IW16A	BL02	7/11/2017	N	440-188133-9	Qal	17.3 - 27.1	--	--	--	--	--	--	--	--	--
SWFTS-IW16B	BL02	7/11/2017	N	440-188133-8	Qal	26.5 - 36.3	--	--	--	--	--	--	--	--	--
SWFTS-IW17	BL02	7/13/2017	N	440-188325-6	Qal	17.3 - 37.1	--	--	--	--	--	--	--	--	--
SWFTS-IW18	BL02	7/13/2017	N	440-188325-4	Qal	18.1 - 38.1	--	--	--	--	--	--	--	--	--
SWFTS-IW19	BL02	7/13/2017	N	440-188325-5	Qal	24.3 - 44.1	--	--	--	--	--	--	--	--	--
SWFTS-IW20	BL02	7/12/2017	N	440-188247-10	Qal	30.8 - 50.6	--	--	--	--	--	--	--	--	--
SWFTS-MW01	BL01	3/29/2017	N	440-180937-6	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-194094-2	Qal	24.2 - 38.9	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7
	EM06	11/15/2017	N	440-196665-4	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-12	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-10	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-2	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM14	9/10/2018	N	440-219797-1	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-12	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-14	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-3	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-5	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-11	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-17/18	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-19/20	Qal	24.2 - 38.9	--	--	--	--	--	--	--	--	--
SWFTS-MW02	BL01	3/29/2017	N	440-180937-7	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-6	Qal	18.4 - 33.1	--	--	--	<1.5	<1.3	<1.3	<1.6 UJ	<1.8 UJ	<19
	EM06	11/14/2017	N	440-196558-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-1	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-13	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM14	9/10/2018	N	440-219797-2	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-15	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-7	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-3	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-21/22	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-7/8	Qal	18.4 - 33.1	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW03	BL01	3/30/2017	FD	440-181045-6	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	BL01	3/30/2017	N	440-181045-5	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-8	Qal	27.2 - 42.1	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<19
	EM06	11/16/2017	N	440-196786-16	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-13	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-5	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-15	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-6	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-5	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-4	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM14	9/11/2018	N	440-219886-11	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-13	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-12	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-2	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-1	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-10	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-15/16	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-1/2	Qal	27.2 - 42.1	--	--	--	--	--	--	--	--	--
SWFTS-MW04	BL01	3/31/2017	N	440-181122-1	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-7	Qal	25.8 - 40.4	--	--	--	<0.29	<0.26	<0.26	<0.31	<0.35	<7.4
	EM06	11/15/2017	N	440-196659-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-12	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-2	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-5	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-4	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-9	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-11	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-6	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265412-1	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-12	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-23/24	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-3/4	Qal	25.8 - 40.4	--	--	--	--	--	--	--	--	--
SWFTS-MW05A	BL01	3/30/2017	N	440-181045-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-2	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-1	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-3	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-7	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-5	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-8	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-14	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-14	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-17	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-1	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-2	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-9	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW05A	EM33	6/3/2021	N	550-164869-17/18	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
	EM36	11/29/2021	N	550-174897-3/4	Qal	19.3 - 29.3	--	--	--	--	--	--	--	--	--
SWFTS-MW05B	BL01	3/30/2017	N	440-181045-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-1	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM06	11/14/2017	N	440-196558-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-4	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-6	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215585-10	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-14	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-18	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-2	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-1	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-8	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-19/20	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-15/16	Qal	32.3 - 42.0	--	--	--	--	--	--	--	--	--
SWFTS-MW06A	BL01	3/30/2017	N	440-181045-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-4	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-19	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-3	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210284-10	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-9	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	FD	440-215585-3	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-2	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	FD	440-221975-10	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-8	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	FD	440-242015-2	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	N	440-242015-1	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	FD	440-254027-5	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-4	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	FD	440-265346-6	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-5	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	FD	440-273236-8	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-7	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	FD	550-164930-21/22	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-19/20	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	FD	550-175045-10/9	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-7/8	Qal	11.8 - 21.4	--	--	--	--	--	--	--	--	--
SWFTS-MW06B	BL01	3/30/2017	N	440-181045-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-20	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW06B	EM09	3/28/2018	N	440-207497-2	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-8	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-4	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-9	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-5	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254027-6	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-4	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-6	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-23/24	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-11/12	Qal	25.9 - 35.5	--	--	--	--	--	--	--	--	--
SWFTS-MW07A	BL01	3/30/2017	N	440-181045-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-7	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-3	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-2	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-7	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-11	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-5	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-5	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-1	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-25/26	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-3/4	Qal	15.0 - 29.5	--	--	--	--	--	--	--	--	--
SWFTS-MW07B	BL01	3/30/2017	N	440-181045-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194242-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-8	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-2	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-10	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-1	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-8	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-12	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-6	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-5	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265382-4	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-2	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-27/28	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-5/6	Qal	33.8 - 38.3	--	--	--	--	--	--	--	--	--
SWFTS-MW08A	BL01	3/30/2017	N	440-181045-9	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-194094-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-8	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM09	3/29/2018	N	440-207586-1	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW08A	EM10	5/3/2018	N	440-210534-5	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-14	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-13	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254148-6	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265346-3	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-4	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-29/30	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-23/24	Qal	20.2 - 34.8	--	--	--	--	--	--	--	--	--
SWFTS-MW08C	BL01	3/28/2017	N	440-180820-3	UMCf	49.9 - 69.5	--	--	--	--	--	--	--	--	--
SWFTS-MW09A	BL01	3/29/2017	N	440-180937-3	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-6	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-14	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-13	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-10	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-7	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-1	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-1	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-4	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-3	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM33	6/1/2021	N	550-164699-1/2	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-10/9	Qal	19.3 - 28.9	--	--	--	--	--	--	--	--	--
SWFTS-MW09B	BL01	3/29/2017	FD	440-180937-5	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	BL01	3/29/2017	N	440-180937-4	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194094-5	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-15	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-7	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-13	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-6	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-11	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-9	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-8	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-2	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-3	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265289-3	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-4	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-1/2	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-11/12	Qal	34.4 - 39.0	--	--	--	--	--	--	--	--	--
SWFTS-MW10A	BL01	3/31/2017	N	440-181122-2	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194242-10	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	FD	440-196786-6	Qal	20.4 - 35.0	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<1.9
	EM06	11/16/2017	N	440-196786-5	Qal	20.4 - 35.0	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<1.9
	EM07	12/12/2017	FD	440-198371-11	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW10A	EM07	12/12/2017	N	440-198371-10	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	FD	440-203841-5	Qal	20.4 - 35.0	--	--	--	<2.9	<2.6	<2.6	5.3 J	<3.5	<3.7
	EM08	2/20/2018	N	440-203841-4	Qal	20.4 - 35.0	--	--	--	<2.9	<2.6	<2.6	5.8 J	<3.5	<3.7
	EM09	3/26/2018	FD	440-207137-8	Qal	20.4 - 35.0	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<1.9
	EM09	3/26/2018	N	440-207137-7	Qal	20.4 - 35.0	--	--	--	<1.5	<1.3	<1.3 UJ	<1.6 UJ	<1.8	<1.9
	EM10	5/1/2018	N	440-210284-1	Qal	20.4 - 35.0	--	--	--	<2.9 UJ	<2.6 UJ	<2.6 UJ	<3.1 UJ	<3.5 UJ	<3.7 UJ
	EM11	7/11/2018	N	440-215585-9	Qal	20.4 - 35.0	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<1.9 UJ
	EM13	8/14/2018	N	440-218109-10	Qal	20.4 - 35.0	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7
	EM14	9/10/2018	N	440-219797-4	Qal	20.4 - 35.0	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7
	EM15	10/9/2018	N	440-221855-9	Qal	20.4 - 35.0	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7 UJ
	EM19	5/21/2019	N	440-242084-2	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-1	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-6	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-4	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-13/14	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-17/18	Qal	20.4 - 35.0	--	--	--	--	--	--	--	--	--
SWFTS-MW10C	BL01	3/28/2017	N	440-180820-4	UMCf	43.5 - 63.1	--	--	--	--	--	--	--	--	--
SWFTS-MW11	BL02	7/12/2017	N	440-188244-7	Qal	14.8 - 39.6	--	--	--	<5.8	<5.2	<5.2 UJ	<6.2	<7.0	<7.4 UJ
	EM04	10/11/2017	N	440-194094-8	Qal	14.8 - 39.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7 UJ
	EM06	11/16/2017	N	440-196786-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-13	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	FD	440-203937-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	FD	440-207497-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	FD	440-210367-1	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-11	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	FD	440-215717-18	Qal	14.8 - 39.6	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<1.9
	EM11	7/12/2018	N	440-215717-17	Qal	14.8 - 39.6	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<1.9
	EM15	10/11/2018	FD	440-222092-11	Qal	14.8 - 39.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7
	EM15	10/11/2018	N	440-222092-10	Qal	14.8 - 39.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7 UJ
	EM19	5/22/2019	FD	440-242200-4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242200-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	FD	440-254150-4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	FD	440-265383-5	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	FD	440-273433-8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	FD	550-164930-10/9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-7/8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	FD	550-175222-10/9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM36	12/3/2021	N	550-175222-7/8	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
SWFTS-MW12	BL02	7/13/2017	N	440-188324-6	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM04	10/11/2017	N	440-194090-1	Qal	15.8 - 40.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7
	EM06	11/14/2017	N	440-196558-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW12	EM07	12/14/2017	N	440-198571-15	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-5	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-4	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-16	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-12	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-7	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM22	11/26/2019	FD	440-255698-2	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM22	11/26/2019	N	440-255698-1	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-3	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM29	10/16/2020	N	440-273433-6	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-5/6	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-19/20	Qal	15.8 - 40.6	--	--	--	--	--	--	--	--	--
SWFTS-MW13	BL02	7/12/2017	N	440-188244-6	Qal	17.8 - 47.6	--	--	--	<5.8	<5.2	<5.2	<6.2	<7.0	<7.4
	EM04	10/10/2017	N	440-193989-4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-14	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-7	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-1	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-15	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-14	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-5	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-6	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-2	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-6	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-3/4	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-17/18	Qal	17.8 - 47.6	--	--	--	--	--	--	--	--	--
SWFTS-MW14	BL02	7/12/2017	FD	440-188244-9	Qal	16.8 - 36.6	--	--	--	<5.8	<5.2	<5.2	<6.2	<7.0	<7.4
	BL02	7/12/2017	N	440-188244-8	Qal	16.8 - 36.6	--	--	--	<5.8	<5.2	<5.2	<6.2	<7.0	<7.4
	EM04	10/11/2017	N	440-194242-8	Qal	16.8 - 36.6	--	--	--	<0.29	<0.26	<0.26	<0.31	<0.35	<7.4
	EM06	11/15/2017	N	440-196659-3	Qal	16.8 - 36.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7 UJ
	EM07	12/12/2017	N	440-198371-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-11	Qal	16.8 - 36.6	--	--	--	1,400	<5.2	6.9 J	<6.2	100 J+	<7.4
	EM09	3/26/2018	N	440-207137-9	Qal	16.8 - 36.6	--	--	--	460	<13	<13	<16	<18	<19
	EM10	4/30/2018	N	440-210173-9	Qal	16.8 - 36.6	--	--	--	160	<13	<13	<16	<18	<19
	EM11	7/10/2018	N	440-215437-8	Qal	16.8 - 36.6	--	--	--	420	<13	<13	<16	<18	<19
	EM13	8/14/2018	N	440-218109-11	Qal	16.8 - 36.6	--	--	--	330	<13	<13	<16	<18	<19
	EM14	9/11/2018	N	440-219886-17	Qal	16.8 - 36.6	--	--	--	230	<2.6	<2.6	<3.1	<3.5	<3.7
	EM15	10/9/2018	N	440-221855-10	Qal	16.8 - 36.6	--	--	--	190	<2.6	<2.6	<3.1	<3.5	<3.7
	EM19	5/21/2019	N	440-242084-1	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM26	5/1/2020	N	440-265414-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM33	6/4/2021	N	550-164930-1/2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW14	EM36	12/3/2021	N	550-175222-1/2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
SWFTS-MW15	BL02	7/13/2017	N	440-188325-3	Qal	14.8 - 34.6	--	--	--	<5.8 UJ	<5.2 UJ	<5.2 UJ	<6.2 UJ	<7.0 UJ	<7.4 UJ
	EM04	10/10/2017	N	440-194094-1	Qal	14.8 - 34.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7
	EM06	11/14/2017	N	440-196558-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-13	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM09	3/26/2018	N	440-207137-10	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-1	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-11	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM19	5/20/2019	N	440-242014-1	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-3	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-4	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-13/14	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-10/9	Qal	14.8 - 34.6	--	--	--	--	--	--	--	--	--
SWFTS-MW16	BL02	7/13/2017	N	440-188325-2	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	N	440-194204-7	Qal	21.8 - 41.6	--	--	--	490	<5.2	<5.2	<6.2	<7.0	<7.4
	EM06	11/16/2017	N	440-196786-4	Qal	21.8 - 41.6	--	--	--	270	<2.6	<2.6	<3.1	<3.5	<3.7
	EM07	12/12/2017	N	440-198371-4	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-6	Qal	21.8 - 41.6	--	--	--	<2.9	<2.6	<2.6	7.0 J	<3.5	<3.7
	EM09	3/27/2018	N	440-207268-13	Qal	21.8 - 41.6	--	--	--	<0.29	<0.26	<0.26	<0.31	<0.35	<3.7
	EM10	5/2/2018	N	440-210430-13	Qal	21.8 - 41.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7 UJ
	EM11	7/11/2018	N	440-215585-12	Qal	21.8 - 41.6	--	--	--	8.2	<1.3	<1.3	<1.6	<1.8	<1.9
	EM13	8/15/2018	N	440-218208-13	Qal	21.8 - 41.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7 UJ
	EM14	9/10/2018	N	440-219797-6	Qal	21.8 - 41.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7 UJ
	EM15	10/11/2018	N	440-222092-3	Qal	21.8 - 41.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7
	EM19	5/20/2019	N	440-242014-3	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-5	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--
	EM26	4/30/2020	N	440-265383-1	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-1	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-11/12	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--
	EM36	11/30/2021	N	550-174968-11/12	Qal	21.8 - 41.6	--	--	--	--	--	--	--	--	--
SWFTS-MW17	BL02	7/12/2017	N	440-188244-1	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM04	10/10/2017	N	440-193989-3	Qal	22.8 - 52.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7 UJ
	EM06	11/15/2017	FD	440-196659-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196659-5	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	FD	440-198508-7	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM08	2/22/2018	N	440-204033-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-11	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-3	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215585-13	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-4	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM22	11/7/2019	N	440-254150-1	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW17	EM26	4/30/2020	N	440-265383-6	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-5	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-10/9	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-21/22	Qal	22.8 - 52.6	--	--	--	--	--	--	--	--	--
SWFTS-MW18	BL02	7/11/2017	N	440-188133-17	Qal	16.8 - 36.6	--	--	--	<5.8	<5.2	<5.2	<6.2	<7.0	<7.4
	EM04	10/10/2017	N	440-194094-3	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196690-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-5	Qal	16.8 - 36.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7
	EM08	2/22/2018	N	440-204033-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	FD	440-207268-12	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-11	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM10	5/1/2018	N	440-210284-6	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-5	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-15	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM22	11/6/2019	N	440-254051-4	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM29	10/15/2020	N	550-151259-2	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-7/8	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-5/6	Qal	16.8 - 36.6	--	--	--	--	--	--	--	--	--
SWFTS-MW19	BL02	7/12/2017	N	440-188244-2	Qal	11.3 - 31.1	--	--	--	<5.8	<5.2	<5.2	<6.2	<7.0	<7.4
	EM04	10/12/2017	N	440-194204-1	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-12	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-8	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-3	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	FD	440-210173-5	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	FD	440-215437-11	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-10	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	FD	440-221855-5	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	FD	440-242084-7	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	FD	440-253891-7	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	FD	440-265288-7	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	FD	440-273303-3	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-2	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	FD	550-164869-5/6	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-3/4	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	FD	550-175045-15/16	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-13/14	Qal	11.3 - 31.1	--	--	--	--	--	--	--	--	--
SWFTS-MW20	BL02	7/12/2017	N	440-188244-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM04	10/12/2017	FD	440-194202-2	Qal	12.8 - 37.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW20	EM04	10/12/2017	N	440-194202-1	Qal	12.8 - 37.6	--	--	--	<1.5	<1.3	<1.3	<1.6	<1.8	<19
	EM06	11/16/2017	N	440-196786-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-3	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM08	2/19/2018	N	440-203775-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-9	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-10	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM11	7/11/2018	N	440-215717-8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-3	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-6	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-6	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM33	6/3/2021	N	550-164869-1/2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM36	11/29/2021	N	550-174897-1/2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
SWFTS-MW21	BL02	7/13/2017	N	440-188324-5	Qal	14.8 - 39.6	--	--	--	<5.8 UJ	<5.2 UJ	<5.2 UJ	<6.2 UJ	<7.0 UJ	<7.4 UJ
	EM04	10/11/2017	N	440-194090-8	Qal	14.8 - 39.6	--	--	--	<2.9	<2.6	<2.6	10	36	<3.7
	EM06	11/15/2017	N	440-196665-5	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM07	12/13/2017	N	440-198508-10	Qal	14.8 - 39.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7 UJ
	EM08	2/20/2018	FD	440-203841-10	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM08	2/20/2018	N	440-203841-9	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM09	3/27/2018	N	440-207268-14	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM22	11/4/2019	N	440-253773-3	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM26	4/29/2020	N	440-265342-1	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-7	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-15/16	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-3/4	Qal	14.8 - 39.6	--	--	--	--	--	--	--	--	--
SWFTS-MW22	BL02	7/13/2017	N	440-188324-1	Qal	11.8 - 31.6	--	--	--	<5.8 UJ	<5.2 UJ	<5.2 UJ	<6.2 UJ	<7.0 UJ	<7.4 UJ
	EM04	10/12/2017	N	440-194242-9	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM06	11/16/2017	N	440-196786-18	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM07	12/14/2017	N	440-198571-17	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM10	4/30/2018	N	440-210173-6	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-9	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM15	10/9/2018	N	440-221855-2	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM19	5/21/2019	N	440-242084-4	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-4	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-5	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM29	10/14/2020	N	440-273303-1	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-11/12	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-1/2	Qal	11.8 - 31.6	--	--	--	--	--	--	--	--	--
SWFTS-MW23	BL02	7/13/2017	N	440-188325-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Lab SampleID	Screened Lithology	Screened Interval	Total Metals by SW6020			Volatile Fatty Acids (IC)					
							Arsenic	Selenium	Thallium	Acetic Acid	Butyric Acid	Formic Acid	Lactic Acid	Propionic Acid	Pyruvic Acid
							µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SWFTS-MW23	EM04	10/11/2017	N	440-194090-7	Qal	13.8 - 33.6	--	--	--	<2.9	<2.6	<2.6	<3.1	<3.5	<3.7
	EM06	11/15/2017	N	440-196665-3	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-2	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-14	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-9	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-5	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-7	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-5	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-3	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-1	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-3/4	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
	EM36	12/2/2021	N	550-175153-15/16	Qal	13.8 - 33.6	--	--	--	--	--	--	--	--	--
SWFTS-MW24	BL02	7/13/2017	N	440-188324-2	Qal	12.8 - 37.6	--	--	--	<5.8 UJ	<5.2 UJ	<5.2 UJ	<6.2 UJ	<7.0 UJ	<7.4 UJ
	EM04	10/11/2017	N	440-194242-2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-12	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM10	5/2/2018	N	440-210430-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM11	7/12/2018	N	440-215717-5	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM15	10/10/2018	N	440-221975-7	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242198-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253891-2	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM29	10/12/2020	N	440-273153-1	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-7/8	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-17/18	Qal	12.8 - 37.6	--	--	--	--	--	--	--	--	--
SWFTS-MW25	BL02	7/13/2017	N	440-188324-4	Qal	12.8 - 42.6	--	--	--	<5.8 UJ	<5.2 UJ	<5.2 UJ	<6.2 UJ	<7.0 UJ	<7.4 UJ
	EM04	10/11/2017	N	440-194242-1	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM06	11/15/2017	N	440-196665-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM07	12/12/2017	N	440-198371-1	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM08	2/21/2018	N	440-203937-7	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM09	3/28/2018	N	440-207497-13	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM10	5/3/2018	N	440-210534-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM11	7/10/2018	N	440-215437-12	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM13	8/15/2018	N	440-218208-10	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM14	9/12/2018	N	440-220031-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM15	10/11/2018	N	440-222092-6	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM19	5/22/2019	N	440-242201-6	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM22	11/5/2019	N	440-253918-4	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM26	4/28/2020	N	440-265288-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM29	10/13/2020	N	440-273236-2	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM33	6/2/2021	N	550-164872-5/6	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--
	EM36	12/1/2021	N	550-175045-19/20	Qal	12.8 - 42.6	--	--	--	--	--	--	--	--	--

Table E.2
Groundwater Analytical Results Summary - Secondary Parameters
Seep Well Field Bioremediation Treatability Study

Notes:

1. Lithology of monitoring well COH-2b1 was inferred from state records of well construction and generalized stratigraphy.

FD - Field duplicate

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

mg/L - milligrams per liter

µg/L - micrograms per liter

N - Normal field sample

R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

UMCf- Upper Muddy Creek Formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

-- Not tested.

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
COH-2B1	BL02	8/9/2017	N	Alluvium/UMCf	36.0 - 66.0	3.590	1.14	0.00 U	358	6.21	0.00 U	--	0.00
	EM01	9/22/2017	N	Alluvium/UMCf	36.0 - 66.0	3.555	1.19	--	30.4	7.01	--	--	294
	EM03	10/5/2017	N	Alluvium/UMCf	36.0 - 66.0	4.054	0.14	--	-6.3	6.93	--	--	13.87
	EM04	10/12/2017	N	Alluvium/UMCf	36.0 - 66.0	3.913	7.92	0.0 U	146.6	6.98	0.0 U	--	99.0
	EM05	10/26/2017	N	Alluvium/UMCf	36.0 - 66.0	4.260	0.40	--	97.5	7.08	--	--	8.43
	EM07	12/14/2017	N	Alluvium/UMCf	36.0 - 66.0	4.180	-0.06 E	0.00 U	-95.4	7.32	0.00 U	--	7.56
	EM08	2/22/2018	N	Alluvium/UMCf	36.0 - 66.0	4.046	0.34	0.00 U	-5.1	7.26	0.00 U	--	7.16
	EM09	3/29/2018	N	Alluvium/UMCf	36.0 - 66.0	3.974	0.41	--	96.9	7.21	--	--	20.9
	EM10	5/2/2018	N	Alluvium/UMCf	36.0 - 66.0	3.81	0.00	--	114	7.26	--	22.25	31.2
	EM11	7/10/2018	N	Alluvium/UMCf	36.0 - 66.0	4.627	0.47	0 U	-32.2	7.19	0 U	25.09	350
	EM13	8/16/2018	N	Alluvium/UMCf	36.0 - 66.0	4.033	0.50	--	-136	7.10	--	28.08 E	20.4
	EM14	9/11/2018	N	Alluvium/UMCf	36.0 - 66.0	4.710	2.18	--	57	7.29	--	19.41	182
	EM15	10/11/2018	N	Alluvium/UMCf	36.0 - 66.0	4.07	2.79	0 U	39	7.27	0 U	20.28	138
	EM16	1/3/2019	N	Alluvium/UMCf	36.0 - 66.0	4.624	0.97	--	93.7	7.24	--	21.51	179
	EM17	2/25/2019	N	Alluvium/UMCf	36.0 - 66.0	4.84	0.00	0.0 U	-44	8.05	0.0 U	22.22	200
	EM18	4/9/2019	N	Alluvium/UMCf	36.0 - 66.0	3.282	0.56	--	174.6	6.99	--	22.6	41.5
	EM19	5/22/2019	N	Alluvium/UMCf	36.0 - 66.0	3.507	0.12	0.0 U	219.5	7.13	0.0 U	20.5	7.7
	EM20	7/1/2019	N	Alluvium/UMCf	36.0 - 66.0	3.167	0.37	--	7.6	7.24	--	24.6	153.2
	EM21	8/15/2019	N	Alluvium/UMCf	36.0 - 66.0	3.635	0.43	0 U	80.2	7.29	0 U	23.9	20.3
	EM22	11/4/2019	N	Alluvium/UMCf	36.0 - 66.0	4.322	0.61	0 U	118.2	7.21	0 U	24.1	106.5
	EM23	12/18/2019	N	Alluvium/UMCf	36.0 - 66.0	3.386	0.91	--	-6.3	7.21	--	21.4	56.27
	EM24	1/28/2020	N	Alluvium/UMCf	36.0 - 66.0	4.766	5.11	0 U	114.3	7.32	0 U	21.8	124.6
	EM25	3/9/2020	N	Alluvium/UMCf	36.0 - 66.0	4.554	2.35	--	140.2	7.2	--	22.3	101.2
	EM26	4/27/2020	N	Alluvium/UMCf	36.0 - 66.0	3.595	3.28	0 U	70.1	7.14	0 U	24.1	21.6
	EM27	7/7/2020	N	Alluvium/UMCf	36.0 - 66.0	4.096	1.01	--	128.8	7.19	--	26.9	25.58
	EM29	10/13/2020	N	Alluvium/UMCf	36.0 - 66.0	3.631	0.55	0 U	79	7.19	0 U	23.5	97.2
LVWPS-MW101A	EM11	7/12/2018	N	Qal	23.3 - 33.0	5.82	2.10	0 U	210	7.4	0 U	26.2	72
LVWPS-MW104	EM11	7/12/2018	N	Qal	23.8 - 33.5	6.61	1.92	0 U	411	7.31	0 U	26.63	19.2
	EM13	8/15/2018	N	Qal	23.8 - 33.5	20.4 E	3.79	--	226	7.20	--	20.43	17.4
	EM14	9/13/2018	N	Qal	23.8 - 33.5	4.690	2.84	--	-21.9	7.56	--	23.93	20.9
	EM15	10/10/2018	N	Qal	23.8 - 33.5	6.79	4.3	0 U	143	7.82	0 U	20.39	16.7
LVWPS-MW107A	EM11	7/12/2018	N	Qal	24.8 - 34.5	6.6	4.00	0 U	144	7.51	0 U	19.77	0
LVWPS-MW108A	EM11	7/12/2018	N	Qal	20.8 - 40.7	6.48	3.86	0 U	253	7.39	0 U	20.42	0
	EM13	8/15/2018	N	Qal	20.8 - 40.7	20 E	2.73	--	105	6.94	--	20.32	8.8
	EM14	9/13/2018	N	Qal	20.8 - 40.7	6.210	3.08	--	237	7.29	--	20.81	24.7
	EM15	10/10/2018	N	Qal	20.8 - 40.7	6.37	2.96	0 U	167	7.18	0 U	23.63	24.8
LVWPS-MW109	EM11	7/12/2018	N	Qal	36.8 - 51.5	6.738	0.40	0 U	-11.6	6.73	0 U	25.69	128
	EM13	8/15/2018	N	Qal	36.8 - 51.5	19.6 E	2.30	--	236	7.05	--	20.79	0.9
	EM14	9/13/2018	N	Qal	36.8 - 51.5	5.965	0.59	--	173.5	6.99	--	24.60	13.33
	EM15	10/10/2018	N	Qal	36.8 - 51.5	6.4	2.71	0 U	163	7.38	0 U	21.18	4.1
LVWPS-MW111A	EM11	7/12/2018	N	Qal	20.8 - 40.5	6.54	3.34	0 U	177	7.31	0 U	26.55	1000
	EM13	8/15/2018	N	Qal	20.8 - 40.5	20.2 E	2.23	--	153	7.17	--	20.83	2.6
	EM14	9/13/2018	N	Qal	20.8 - 40.5	6.253	0.35	--	131	7.10	--	24.85	52.7
	EM15	10/10/2018	N	Qal	20.8 - 40.5	6.62	0.95	0 U	118	7.13	0 U	25.07	51.2
LVWPS-MW112A	EM11	7/12/2018	N	Qal	28.8 - 48.0	6.534	0.89	0 U	8	6.81	0 U	25.78	441
	EM15	10/10/2018	N	Qal	28.8 - 48.0	6.26	1.91	0 U	176	7.12	0 U	26.3	43.5
PC-58	BL01	3/28/2017	N	Qal	7.8 - 32.8	4.525	0.15	--	-112.6	7.06	--	--	1.35
	BL02	7/13/2017	N	Qal	7.8 - 32.8	4.560	0.00	0.0 U	92.0	7.40	0.00 U	--	2.20
	EM04	10/11/2017	N	Qal	7.8 - 32.8	3.738	3.40	0.0 U	107.1	7.14	0.0 U	--	8.17
	EM06	11/16/2017	N	Qal	7.8 - 32.8	4.250	0.65	0.0 U	7.4	7.25	0.00 U	--	46.10
	EM07	12/14/2017	N	Qal	7.8 - 32.8	4.602	0.29	0.0 U	-70.5	6.45	0.00 U	--	13.30

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
PC-58	EM08	2/21/2018	N	Qal	7.8 - 32.8	4.500	2.49	0.0 U	143.0	7.92	0.00 U	--	0.00
	EM09	3/28/2018	N	Qal	7.8 - 32.8	4.100	4.31	--	229	7.35	--	--	33.0
	EM10	5/2/2018	N	Qal	7.8 - 32.8	4.119	0.71	--	-168.4	7.59	--	22.83	4.25
	EM11	7/11/2018	N	Qal	7.8 - 32.8	4.69	1.17	0.00 U	-30.00	7.24	0.00 U	27.38 E	4.01
	EM13	8/15/2018	N	Qal	7.8 - 32.8	4.596	0.38	--	-145.3	7.11	--	26.24	6.22
	EM14	9/13/2018	N	Qal	7.8 - 32.8	3.970	2.74	--	160	7.51	--	20.99	3.6
	EM15	10/11/2018	N	Qal	7.8 - 32.8	3.51	0	0 U	131	7	0 U	24.61	17.6
	EM16	1/3/2019	N	Qal	7.8 - 32.8	3.607	0.83	--	103.9	7.29	--	22.06	4.32
	EM17	3/1/2019	N	Qal	7.8 - 32.8	4.129	0.41	0.0 U	29.5	7.22	0.0 U	21.92	1.27
	EM18	4/9/2019	N	Qal	7.8 - 32.8	3.761	3.68	--	131.2	7.39	--	24.2	36.3
	EM19	5/22/2019	N	Qal	7.8 - 32.8	4.270	1.68	0.0 U	87.7	7.27	0.0 U	21.4	38.9
	EM20	7/5/2019	N	Qal	7.8 - 32.8	3.772	0.43	--	147.6	7.16	--	23.5	14.1
	EM21	8/15/2019	N	Qal	7.8 - 32.8	3.714	0.47	0 U	97.8	7.36	0 U	24.5	9.3
	EM22	11/7/2019	N	Qal	7.8 - 32.8	3.531	0.64	0 U	201.3	7.32	0 U	21.4	5.6
	EM23	12/20/2019	N	Qal	7.8 - 32.8	3.688	1.00	--	52.5	7.24	--	21.8	1.15
	EM24	1/30/2020	N	Qal	7.8 - 32.8	2.755	2.79	0 U	111.4	7.30	0 U	20.9	0.0
	EM25	3/11/2020	N	Qal	7.8 - 32.8	4.058	1.69	--	132.2	7.16	--	21.5	1.4
	EM26	5/1/2020	N	Qal	7.8 - 32.8	3.21	3.13	0 U	77.3	7.22	0 U	22.9	30.1
	EM27	7/9/2020	N	Qal	7.8 - 32.8	4.673	1.08	--	106.6	8.16	--	26.3	13.05
	EM28	8/19/2020	N	Qal	7.8 - 32.8	3.333	0.64	0 U	258.1	7.33	0 U	25.3	40.3
	EM29	10/16/2020	N	Qal	7.8 - 32.8	3.532	1.28	0 U	78.3	7.47	0 U	24.6	22.37
	EM30	12/10/2020	N	Qal	7.8 - 32.8	2.399	0.4	--	137.7	7.45	--	21.3	9.66
	EM31	2/1/2021	N	Qal	7.8 - 32.8	2.864	0.6	0 U	350.7	7.79	0 U	22.9	75.2
	EM32	4/1/2021	N	Qal	7.8 - 32.8	2.864	0.60	--	350.7	7.79	--	22.9	75.2
	EM33	6/2/2021	N	Qal	7.8 - 32.8	2.274	0.20	0.0 U	46.0	7.33	0.0 U	26.1	49.3
	EM34	7/22/2021	N	Qal	7.8 - 32.8	3.080	0.48	0.0 U	133.7	7.21	0.0 U	24.5	7.7
	EM35	9/16/2021	N	Qal	7.8 - 32.8	3.712	0.08	0.0 U	-18.6	7.20	0.0 U	25.3	66.9
	EM36	12/3/2021	N	Qal	7.8 - 32.8	3.418	1.09	0.0 U	100.3	7.35	0.0 U	22.2	21.6
PC-88	EM01	9/22/2017	N	Qal	40.0 - 50.0	4.962	4.15	--	14.1	7.12	--	--	95.2
	EM02	9/28/2017	N	Qal	40.0 - 50.0	8.435	1.13	--	87.5	6.96	--	--	10.03
	EM03	10/4/2017	N	Qal	40.0 - 50.0	9.584	0.21	--	20.0	6.97	--	--	3.74
	EM04	10/11/2017	N	Qal	40.0 - 50.0	5.160	0.37	0.0 U	233	4.64 E	0.0 U	--	0.40
	EM05	10/25/2017	N	Qal	40.0 - 50.0	5.483	0.37	--	61.8	7.27	--	--	13.9
	EM06	11/15/2017	N	Qal	40.0 - 50.0	5.020	0.46	0.00 U	165.1	6.83	0.00 U	--	5.71
	EM07	12/14/2017	N	Qal	40.0 - 50.0	5.310	0.68	0.00 U	32.0	7.63	0.00 U	--	9.26
	EM08	2/22/2018	N	Qal	40.0 - 50.0	3.963	0.29	0.00 U	-43.2	6.82	0.00 U	--	5.35
	EM09	3/29/2018	N	Qal	40.0 - 50.0	3.784	0.45	--	-82.5	7.59	--	--	0.71
	EM10	5/2/2018	N	Qal	40.0 - 50.0	3.701	0.50	--	-192.8	7.81	--	24.21	3.45
	EM11	7/12/2018	N	Qal	40.0 - 50.0	4.99	0.89	0.00 U	-2.80	7.07	0.00 U	26.54	15.42
	EM13	8/16/2018	N	Qal	40.0 - 50.0	4.446	3.31	--	-133	7.23	--	27.27 E	8.8
	EM14	9/12/2018	N	Qal	40.0 - 50.0	4.930	2.28	--	146	7.35	--	21.15	3.9
	EM15	10/11/2018	N	Qal	40.0 - 50.0	4.83	0	0 U	125	7.02	0 U	23.51	30.2
	EM16	1/3/2019	N	Qal	40.0 - 50.0	4.026	0.93	--	105.2	7.35	--	21.63	4.03
	EM17	2/28/2019	N	Qal	40.0 - 50.0	3.812	0.35	0.0 U	86.5	7.31	0.0 U	22.90	3.95
	EM18	4/9/2019	N	Qal	40.0 - 50.0	3.706	0.54	--	147.9	7.23	--	24.1	8.7
	EM19	5/22/2019	N	Qal	40.0 - 50.0	3.674	0.05	0.0 U	213.5	7.22	0.0 U	23.6	4.9
	EM20	7/5/2019	N	Qal	40.0 - 50.0	3.475	0.39	--	138.9	7.24	--	24.7	4.9
	EM21	8/15/2019	N	Qal	40.0 - 50.0	3.505	0.39	0 U	100.1	7.43	0 U	25.7	12.8
	EM22	11/7/2019	N	Qal	40.0 - 50.0	4.149	0.64	0 U	194.9	7.34	0 U	23.0	2.8
	EM23	12/20/2019	N	Qal	40.0 - 50.0	3.724	0.83	--	45.3	7.31	--	22.1	9.17
	EM24	1/30/2020	N	Qal	40.0 - 50.0	2.742	2.65	0 U	144.7	7.38	0 U	21.8	10.5

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
PC-88	EM25	3/12/2020	N	Qal	40.0 - 50.0	3.648	1.6	--	110.2	7.3	--	22.5	2.4
	EM26	5/1/2020	N	Qal	40.0 - 50.0	3.627	0.26	0 U	166.3	7.29	0 U	23.2	7.3
	EM27	7/9/2020	N	Qal	40.0 - 50.0	4.439	0.74	--	98.9	8.64	--	26.2	10.79
	EM28	8/19/2020	N	Qal	40.0 - 50.0	3.824	0.63	0 U	254.5	7.29	0 U	26.6	11.8
	EM29	10/15/2020	N	Qal	40.0 - 50.0	4.22	0.49	0 U	101.8	7.26	0 U	24.1	7
	EM30	12/10/2020	N	Qal	40.0 - 50.0	3.102	0.3	--	125	7.4	--	21.1	22.46
	EM31	2/2/2021	N	Qal	40.0 - 50.0	2.679	0.51	0 U	211.1	7.13	0 U	21.1	6.5
	EM32	3/30/2021	N	Qal	40.0 - 50.0	2.679	0.51	--	211.1	7.13	--	21.1	6.5
	EM33	6/3/2021	N	Qal	40.0 - 50.0	1.898	0.07	0.0 U	55.6	7.44	0.0 U	26.2	16.0
	EM34	7/22/2021	N	Qal	40.0 - 50.0	2.417	0.38	0.0 U	32.3	7.42	0.0 U	24.4	18.7
	EM35	9/16/2021	N	Qal	40.0 - 50.0	3.501	-0.01	0.0 U	-52.9	7.23	0.0 U	24.4	45.7
	EM36	12/2/2021	N	Qal	40.0 - 50.0	2.909	1.58	0.0 U	92.4	7.31	0.0 U	21.2	7.5
PC-91	BL01	3/29/2017	N	Qal	11.5 - 21.5	3.855	0.25	--	-160.1	7.77	--	--	3.84
	BL02	7/12/2017	N	Qal	11.5 - 21.5	3.740	0.31	0.0 U	132.5	7.28	0.00 U	--	10.20
	EM01	9/21/2017	N	Qal	11.5 - 21.5	3.512	0.47	--	72.8	7.00	--	--	9.77
	EM02	9/27/2017	N	Qal	11.5 - 21.5	3.589	0.72	--	31.5	7.11	--	--	18.61
	EM03	10/4/2017	N	Qal	11.5 - 21.5	6.863	0.19	--	-13.3	6.98	--	--	1.82
	EM04	10/12/2017	N	Qal	11.5 - 21.5	3.810	0.38 E	0.0 U	214 E	4.58 E	0.0 U	--	0.0
	EM05	10/25/2017	N	Qal	11.5 - 21.5	3.868	0.55	--	10.6	7.52	--	--	2.00
	EM06	11/16/2017	N	Qal	11.5 - 21.5	3.700	0.82	0.0 U	-21.1	7.29	0.00 U	--	4.57
	EM07	12/13/2017	N	Qal	11.5 - 21.5	3.860	0.37	0.0 U	-72.9	7.20	0.00 U	--	3.91
	EM08	2/20/2018	N	Qal	11.5 - 21.5	3.989	0.82	0.0 U	74.9	7.15	0.00 U	--	4.49
	EM09	3/26/2018	N	Qal	11.5 - 21.5	4.343	1.02	0.0 U	66.8	6.96	0.0 U	22.67	4.69
	EM10	5/1/2018	N	Qal	11.5 - 21.5	4.077	0.64	--	-193.2	7.22	--	22.28	8.00
	EM11	7/11/2018	N	Qal	11.5 - 21.5	4.39	3.08	0 U	-29.6	6.75	0 U	25.53	7.06
	EM12	7/27/2018	N	Qal	11.5 - 21.5	4.02	0.77	--	31.8	6.95	--	24.55	5.01
	EM13	8/14/2018	N	Qal	11.5 - 21.5	3.849	1.08	--	312.3	4.42 E	--	24.09	30.3
	EM14	9/12/2018	N	Qal	11.5 - 21.5	4.070	3.12	--	64	6.83	--	20.05	4.4
	EM15	10/10/2018	N	Qal	11.5 - 21.5	4.26	0	--	127	7.05	--	26.07	14.2
	EM16	12/20/2018	N	Qal	11.5 - 21.5	4.702	0.68	--	-99.2	6.76	--	24.37	6.02
	EM17	2/26/2019	N	Qal	11.5 - 21.5	4.134	0.47	0.0 U	26.4	6.63	0.0 U	24.23	2.40
	EM18	4/10/2019	N	Qal	11.5 - 21.5	4.448	1.41	--	70.0	6.58	--	24.06	4.01
	EM19	5/21/2019	N	Qal	11.5 - 21.5	4.170	0.05	0.0 U	169.0	6.54	0.0 U	25.1	18.6
	EM20	7/1/2019	N	Qal	11.5 - 21.5	4.451	0.42	--	65.2	6.65	--	25.8	9.4
	EM21	8/12/2019	N	Qal	11.5 - 21.5	4.222	0.44	0 U	159.2	6.64	0 U	24.4	6.7
	EM22	11/6/2019	N	Qal	11.5 - 21.5	5.149	0.56	0 U	221.6	6.66	0 U	26.9	16.2
	EM23	12/17/2019	N	Qal	11.5 - 21.5	4.563	8.61	--	-59.4	6.55	--	25.0	29.22
	EM24	1/28/2020	N	Qal	11.5 - 21.5	3.802	5.81	0 U	139.1	6.93	0 U	24.0	5.5
	EM25	3/12/2020	N	Qal	11.5 - 21.5	3.995	1.49	--	50	6.65	--	24.7	10.1
	EM26	4/30/2020	N	Qal	11.5 - 21.5	3.531	0.37	0 U	108.3	6.7	0 U	26	2.1
	EM27	7/7/2020	N	Qal	11.5 - 21.5	5.472	0.65	--	-249.1	6.63	--	30.6	11.09
	EM28	8/17/2020	N	Qal	11.5 - 21.5	5.202	0.52	1	-63.6	6.49	0 U	29.3	17.2
	EM29	10/14/2020	N	Qal	11.5 - 21.5	4.421	0.43	1.25	-28	6.48	0 U	27.1	11.8
	EM30	12/9/2020	N	Qal	11.5 - 21.5	3.621	1.68	--	-153.3	6.57	--	26.1	29.8
	EM31	2/1/2021	N	Qal	11.5 - 21.5	4.267	0.83	1.5	-185.5	6.27	0 U	20.4	128.3
	EM32	3/29/2021	N	Qal	11.5 - 21.5	4.267	0.83	--	-185.5	6.27	--	20.4	128.3
	EM33	6/2/2021	N	Qal	11.5 - 21.5	3.394	0.04	4.0	-194.2	6.56	2.0	27.1	124.9
	EM34	7/20/2021	N	Qal	11.5 - 21.5	3.067	0.04	1.0	-161.6	6.58	4.0	27.7	16.6
	EM35	9/16/2021	N	Qal	11.5 - 21.5	4.007	-0.11	0.5	-320.9	6.61	0.6	28.8	3.6
	EM36	11/30/2021	N	Qal	11.5 - 21.5	3.283	1.78	1.5	-183.3	6.20	2.0	20.3	152.7
PC-92	BL01	3/29/2017	N	Qal	26.5 - 36.5	5.528	0.35	--	92.4	7.23	--	--	13.40

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
PC-92	BL02	7/12/2017	N	Qal	26.5 - 36.5	4.500	0.31	0.00 U	109.3	7.24	0.00 U	--	151.00
	EM01	9/21/2017	N	Qal	26.5 - 36.5	3.809	0.41	--	49.4	7.04	--	--	65.7
	EM02	9/27/2017	N	Qal	26.5 - 36.5	3.957	0.45	--	-10.3	7.12	--	--	32.70
	EM03	10/4/2017	N	Qal	26.5 - 36.5	7.421	0.12	--	-17.2	6.98	--	--	43.20
	EM04	10/12/2017	N	Qal	26.5 - 36.5	4.650	9.88 E	0.0 U	361 E	0 E	0.0 U	--	26.30
	EM05	10/25/2017	N	Qal	26.5 - 36.5	4.699	0.30	--	-77.9	7.45	--	--	19.66
	EM06	11/16/2017	N	Qal	26.5 - 36.5	3.750	0.42	0.00 U	-197.9	7.35	0.40	--	73.50
	EM07	12/14/2017	N	Qal	26.5 - 36.5	4.062	3.78	0.00 U	-214.2	7.46	0.00 U	--	22.60
	EM08	2/20/2018	N	Qal	26.5 - 36.5	4.013	4.60	0.00 U	52.5	7.52	0.00 U	--	16.89
	EM09	3/26/2018	N	Qal	26.5 - 36.5	4.900	0.51	--	63.4	7.12	--	22.19	14.32
	EM10	5/1/2018	N	Qal	26.5 - 36.5	5.014	0.70	--	-180.5	7.49	--	23.09	8.30
	EM11	7/11/2018	N	Qal	26.5 - 36.5	5.26	1.47	0 U	-31.3	7.1	0 U	27.1 E	50.2
	EM12	7/27/2018	N	Qal	26.5 - 36.5	4.47	0.28	--	40.1	7.35	--	24.22	4.68
	EM13	8/15/2018	N	Qal	26.5 - 36.5	4.109	0.98	--	-175.4	7.15	--	23.97	7.2
	EM14	9/12/2018	N	Qal	26.5 - 36.5	4.270	2.95	--	93	7.35	--	19.28	28.2
	EM15	10/11/2018	N	Qal	26.5 - 36.5	4.42	0	0 U	--	7.02	0 U	23.47	--
	EM16	12/20/2018	N	Qal	26.5 - 36.5	4.381	0.72	--	-76	7.24	--	22.08	45.6
	EM17	2/26/2019	N	Qal	26.5 - 36.5	3.560	0.56	0.0 U	-54.1	7.18	0.0 U	21.80	9.33
	EM18	4/10/2019	N	Qal	26.5 - 36.5	3.728	0.84	--	70.4	7.17	--	24.13	7.11
	EM19	5/21/2019	N	Qal	26.5 - 36.5	3.275	0.09	0.0 U	185.1	7.20	0.0 U	23.9	9.5
	EM20	7/1/2019	N	Qal	26.5 - 36.5	3.685	0.42	--	74.1	7.25	--	23.8	25.8
	EM21	8/12/2019	N	Qal	26.5 - 36.5	3.310	0.41	0 U	132.7	7.26	0 U	24.2	7.2
	EM22	11/6/2019	N	Qal	26.5 - 36.5	4.301	0.56	0 U	202.7	7.24	0 U	22.9	8.2
	EM23	12/17/2019	N	Qal	26.5 - 36.5	3.282	0.67	--	-60.0	7.18	--	21.9	9.03
	EM24	1/28/2020	N	Qal	26.5 - 36.5	4.302	4.93	0 U	164.5	7.31	0 U	22.4	92.0
	EM25	3/12/2020	N	Qal	26.5 - 36.5	5.051	1.63	--	156.3	7.07	--	22.7	18.4
	EM26	4/30/2020	N	Qal	26.5 - 36.5	3.228	5.37	0 U	151.2	7.53	0 U	24.7	3.5
	EM27	7/7/2020	N	Qal	26.5 - 36.5	5.106	0.72	--	-216.6	7.30	--	28.3	15.40
	EM28	8/17/2020	N	Qal	26.5 - 36.5	4.026	0.64	0 U	141.3	7.18	0 U	25	49.2
	EM29	10/14/2020	N	Qal	26.5 - 36.5	4.43	0.48	0 U	91.8	7.21	0 U	23.3	44.7
	EM30	12/9/2020	N	Qal	26.5 - 36.5	3.465	1.92	--	29.1	7.18	--	22.6	35.8
	EM31	2/1/2021	N	Qal	26.5 - 36.5	4.125	0.9	0 U	118	7.56	0 U	25.3	23.3
	EM32	3/29/2021	N	Qal	26.5 - 36.5	4.125	0.90	--	118.0	7.56	--	25.3	23.3
	EM33	6/2/2021	N	Qal	26.5 - 36.5	3.221	0.18	0.0 U	0.9	7.19	0.0 U	24.7	30.3
	EM34	7/20/2021	N	Qal	26.5 - 36.5	2.731	0.23	0.0 U	-5.4	7.22	0.0 U	24.8	16.6
	EM35	9/16/2021	N	Qal	26.5 - 36.5	4.890	0.19	0.0 U	8.6	7.05	0.0 U	24.2	21.0
	EM36	11/30/2021	N	Qal	26.5 - 36.5	5.077	1.58	0.0 U	-81.8	6.75	0.0 U	23.1	73.2
PC-94	BL01	3/28/2017	N	Qal	9.5 - 19.5	7.390	0.33	--	-30.5	6.93	--	--	11.40
	BL02	7/13/2017	N	Qal	9.5 - 19.5	7.210	0.41	0.0 U	113.9	7.07	0.0 U	--	120.00
	EM01	9/20/2017	N	Qal	9.5 - 19.5	7.409	0.15	--	38.2	7.11	--	--	47.2
	EM02	9/26/2017	N	Qal	9.5 - 19.5	8.264	0.19	--	-67.8	7.14	--	--	61.0
	EM03	10/5/2017	N	Qal	9.5 - 19.5	7.347	0.13	--	-162.2	6.61	--	--	27.5
	EM04	10/11/2017	N	Qal	9.5 - 19.5	7.232	0.55	0.50	-112.4	6.64	0.00 U	--	125
	EM05	10/26/2017	N	Qal	9.5 - 19.5	7.197	3.80	--	28.1	7.06	--	--	353
	EM06	11/16/2017	N	Qal	9.5 - 19.5	6.900	0.50	0.00 U	-63.2	6.94	0.00 U	--	298
	EM07	12/12/2017	N	Qal	9.5 - 19.5	7.086	0.19	0.00 U	-24.6	7.26	0.00 U	--	269
	EM08	2/21/2018	N	Qal	9.5 - 19.5	6.330	3.75	0.00 U	177	7.92	0.00 U	--	90.5
	EM09	3/27/2018	N	Qal	9.5 - 19.5	6.270	2.07	--	204	7.27	--	--	50.1
	EM10	5/1/2018	N	Qal	9.5 - 19.5	6.29	0.00	--	170	7.14	--	25.10	69.2
	EM11	7/10/2018	N	Qal	9.5 - 19.5	6.22	0.10	0 U	214	6.99	0 U	25.96	1000
	EM12	7/27/2018	N	Qal	9.5 - 19.5	7.10	0.25	--	31.6	7.08	--	30.4 E	143

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
PC-94	EM13	8/15/2018	N	Qal	9.5 - 19.5	6.458	1.53	--	-145.3	6.86	--	27.01 E	159
	EM14	9/11/2018	N	Qal	9.5 - 19.5	5.770	1.67	--	135	7.04	--	23.59	83.7
	EM15	10/11/2018	N	Qal	9.5 - 19.5	5.91	0	0 U	129	6.77	0 U	27.39 E	168
	EM16	12/28/2018	N	Qal	9.5 - 19.5	5.259	4.54	--	152	7.01	--	21.73	669
	EM17	2/27/2019	N	Qal	9.5 - 19.5	4.952	0.74	0.0 U	100.5	6.99	0.0 U	21.74	97
	EM18	4/11/2019	N	Qal	9.5 - 19.5	4.884	1.43	--	122.6	6.84	--	24.3	72.2
	EM19	5/22/2019	N	Qal	9.5 - 19.5	5.208	0.05	0.0 U	210.0	6.83	0.0 U	23.3	9.1
	EM20	7/5/2019	N	Qal	9.5 - 19.5	4.668	4.35	--	201.7	7.25	--	25.1	115.5
	EM21	8/12/2019	N	Qal	9.5 - 19.5	5.275	1.19	0 U	142.6	7.01	0 U	25.4	15
	EM22	11/6/2019	N	Qal	9.5 - 19.5	5.175	3.82	0 U	330.2	7.28	0 U	21.7	6.2
	EM23	12/19/2019	N	Qal	9.5 - 19.5	4.653	1.78	--	129.7	7.07	--	21.4	1000 >
	EM24	1/30/2020	N	Qal	9.5 - 19.5	3.621	4.11	0 U	174.6	7.20	0 U	22.1	57.9
	EM25	3/10/2020	N	Qal	9.5 - 19.5	4.627	2.62	--	195	6.97	--	22.3	30.4
	EM26	4/28/2020	N	Qal	9.5 - 19.5	5.692	0.31	0 U	139.4	7.02	0 U	25.8	47.2
	EM27	7/6/2020	N	Qal	9.5 - 19.5	6.543	1.04	--	80.2	6.86	--	29.3	40.08
	EM28	8/18/2020	N	Qal	9.5 - 19.5	5.277	0.71	0 U	231.2	6.98	0 U	25.9	85.4
	EM29	10/15/2020	N	Qal	9.5 - 19.5	5.039	0.74	0 U	100.8	6.99	0 U	24	14
	EM30	12/8/2020	N	Qal	9.5 - 19.5	4.101	1.85	--	23.2	7.1	--	23.1	27.2
	EM31	2/1/2021	N	Qal	9.5 - 19.5	4.613	0.53	0 U	172.5	7.29	0 U	23.9	68.6
	EM32	3/29/2021	N	Qal	9.5 - 19.5	4.613	0.53	--	172.5	7.29	--	23.9	68.6
	EM33	6/2/2021	N	Qal	9.5 - 19.5	3.922	0.23	0.0 U	57.9	6.96	0.0 U	26.9	78.6
	EM34	7/20/2021	N	Qal	9.5 - 19.5	3.961	0.38	0.0 U	96.4	6.97	0.0 U	24.7	15.1
	EM35	9/15/2021	N	Qal	9.5 - 19.5	5.539	0.07	0.0 U	57.6	6.84	0.0 U	25.7	32.0
	EM36	11/30/2021	N	Qal	9.5 - 19.5	6.119	1.58	0.0 U	-9.6	6.72	0.0 U	23.5	201.2
PC-97	BL02	7/13/2017	N	Qal	23.0 - 33.0	3.330	0.27	0.00 U	73.0	7.27	0.00 U	--	119.00
	EM01	9/22/2017	N	Qal	23.0 - 33.0	3.574	0.39	--	-4.2	7.01	--	--	135
	EM02	9/28/2017	N	Qal	23.0 - 33.0	6.338	4.28	--	92.6	7.05	--	--	98
	EM03	10/4/2017	N	Qal	23.0 - 33.0	7.059	0.19	--	-10.2	6.94	--	--	36.7
	EM04	10/11/2017	N	Qal	23.0 - 33.0	3.910	0.48	0.0 U	5.0	5.04 E	0.0 U	--	32.5
	EM05	10/25/2017	N	Qal	23.0 - 33.0	4.267	0.39	--	-130.5	7.21	--	--	85.6
	EM06	11/16/2017	N	Qal	23.0 - 33.0	3.940	0.48	0.00 U	-161.4	7.33	0.80	--	13.8
	EM07	12/13/2017	N	Qal	23.0 - 33.0	3.350	0.79	--	-20.0	7.75	--	--	43.0
	EM08	2/21/2018	N	Qal	23.0 - 33.0	3.142	2.47	0.00 U	-6.3	7.36	0.00 U	--	5.33
	EM09	3/27/2018	N	Qal	23.0 - 33.0	2.918	1.68	--	48.6	7.27	--	--	9.86
	EM10	5/1/2018	N	Qal	23.0 - 33.0	2.867	2.10	--	-122.8	7.40	--	22.92	8.91
	EM11	7/10/2018	N	Qal	23.0 - 33.0	3.03	3.45	0 U	144	7.27	0 U	27.14 E	128
	EM13	8/16/2018	N	Qal	23.0 - 33.0	3.087	2.94	--	-140	7.18	--	24.51	25
	EM14	9/12/2018	N	Qal	23.0 - 33.0	3.220	1.74	--	30	7.31	--	21.23	79.8
	EM15	10/11/2018	N	Qal	23.0 - 33.0	2.675	0.71	0 U	-41.2	8.35 E	0 U	22.69	9.54
	EM16	1/3/2019	N	Qal	23.0 - 33.0	2.934	1.07	--	115.2	7.29	--	20.05	60.9
	EM17	2/28/2019	N	Qal	23.0 - 33.0	2.909	0.44	0.0 U	85.8	7.24	0.0 U	21.12	36.0
	EM18	4/9/2019	N	Qal	23.0 - 33.0	2.701	0.53	--	125.6	7.22	--	22.7	45.3
	EM19	5/22/2019	N	Qal	23.0 - 33.0	3.182	0.07	0.0 U	264.5	7.12	0.0 U	21.8	8.1
	EM20	7/5/2019	N	Qal	23.0 - 33.0	3.185	0.41	--	135.2	7.12	--	22.3	9.0
	EM21	8/14/2019	N	Qal	23.0 - 33.0	3.45	0.39	0 U	58.9	7.28	0 U	24.0	9
	EM22	11/6/2019	N	Qal	23.0 - 33.0	3.211	0.56	0 U	192.0	7.28	0 U	22.2	5.8
	EM23	12/20/2019	N	Qal	23.0 - 33.0	2.693	0.81	--	25.4	7.28	--	21.0	92.22
	EM24	1/30/2020	N	Qal	23.0 - 33.0	1.838	4.31	0 U	120.1	7.48	0 U	20.8	66.9
	EM25	3/12/2020	N	Qal	23.0 - 33.0	2.709	1.65	--	61.5	7.25	--	20.9	7.2
	EM26	4/30/2020	N	Qal	23.0 - 33.0	2.351	4.82	0 U	85.1	7.33	0 U	22.7	8.8
	EM27	7/9/2020	N	Qal	23.0 - 33.0	2.957	0.95	--	79.3	8.79	--	22.9	60.08

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
PC-97	EM29	10/15/2020	N	Qal	23.0 - 33.0	2.863	0.52	0 U	52.7	7.32	0 U	22.7	694
SWFTS-IW01A	BL02	7/11/2017	N	Qal	15.8 - 25.6	7.960	0.55	--	116.8	7.18	--	--	16.1
	EM06	11/14/2017	N	Qal	15.8 - 25.6	6.470	0.09	0.5	-306.6	6.74	0.60	--	739.00
SWFTS-IW01B	BL02	7/11/2017	N	Qal	26.9 - 36.7	8.060	0.61	--	155	7.02	--	--	101
	EM06	11/15/2017	N	Qal	26.9 - 36.7	6.470	0.17	0.5	-272.8	7.04	2.0 U	--	31.60
SWFTS-IW02A	BL02	7/11/2017	N	Qal	16.8 - 26.6	8.570	0.57	--	166.3	7.05	--	--	1000 >
SWFTS-IW02B	BL02	7/11/2017	N	Qal	26.3 - 36.1	8.110	0.46	--	179.8	7.15	--	--	752
SWFTS-IW03	BL02	7/11/2017	N	Qal	16.8 - 36.6	7.780	0.48	--	112.5	7.20	--	--	137
SWFTS-IW04	BL02	7/11/2017	N	Qal	19.8 - 34.6	7.350	0.42	--	159.9	7.02	--	--	1000 >
SWFTS-IW05	BL02	7/11/2017	N	Qal	14.6 - 34.4	7.250	0.53	--	98.3	7.02	--	--	1000 >
SWFTS-IW06A	BL02	7/11/2017	N	Qal	16.8 - 26.6	7.420	2.02	--	116.6	7.12	--	--	1000 >
	EM06	11/15/2017	N	Qal	16.8 - 26.6	6.340	0.16	0.5	-292.7	6.80	2.0 U	--	0.00 E
SWFTS-IW06B	BL02	7/11/2017	N	Qal	28.8 - 33.6	6.910	0.38	--	98.4	7.16	--	--	1000 >
	EM06	11/15/2017	N	Qal	28.8 - 33.6	6.780	0.36	1.5	-330.0	6.30	2.0	--	-15 E
SWFTS-IW07	BL02	7/11/2017	N	Qal	17.3 - 37.1	6.890	0.55	--	77	7.19	--	--	1000 >
SWFTS-IW08	BL02	7/12/2017	N	Qal	17.5 - 37.3	7.420	0.79	--	124.2	7.03	--	--	1000 >
SWFTS-IW09	BL02	7/12/2017	N	Qal	26.6 - 46.4	6.820	0.47	--	77.1	7.10	--	--	1000 >
SWFTS-IW10	BL02	7/12/2017	N	Qal	26.8 - 46.6	6.520	0.30	--	82.1	7.11	--	--	74
SWFTS-IW11	BL02	7/12/2017	N	Qal	17.3 - 37.1	4.880	0.38	--	124.6	7.18	--	--	150.0
SWFTS-IW12	BL02	7/12/2017	N	Qal	14.3 - 39.1	5.220	0.51	--	146.8	7.26	--	--	1000 >
SWFTS-IW13A	BL02	7/11/2017	N	Qal	15.8 - 25.6	8.070	0.54	--	203.1	7.13	--	--	85.7
SWFTS-IW13B	BL02	7/11/2017	N	Qal	27.8 - 37.6	8.410	0.46	--	133.0	6.99	--	--	1000 >
SWFTS-IW14	BL02	7/12/2017	N	Qal	16.2 - 36.1	8.500	0.49	--	156.8	6.92	--	--	1000 >
SWFTS-IW15	BL02	7/12/2017	N	Qal	16.4 - 36.2	7.300	0.32	--	193.3	7.08	--	--	1000 >
SWFTS-IW16A	BL02	7/11/2017	N	Qal	17.3 - 27.1	7.300	0.86	--	108.7	7.05	--	--	1000 >
SWFTS-IW16B	BL02	7/11/2017	N	Qal	26.5 - 36.3	6.900	0.42	--	32.0	7.19	--	--	1000 >
SWFTS-IW17	BL02	7/13/2017	N	Qal	17.3 - 37.1	7.330	0.41	--	129.1	7.14	--	--	1000 >
	EM06	11/15/2017	N	Qal	17.3 - 37.1	9.930	0.36	7.0	-205.4	5.15 E	0.2	--	1502 E
SWFTS-IW18	BL02	7/13/2017	N	Qal	18.1 - 38.1	7.100	0.30	--	112.7	7.02	--	--	29.8
SWFTS-IW19	BL02	7/13/2017	N	Qal	24.3 - 44.1	7.820	3.30	--	168.2	7.16	--	--	35.1
SWFTS-IW20	BL02	7/12/2017	N	Qal	30.8 - 50.6	6.280	4.23	--	80.6	7.27	--	--	148
SWFTS-MW01	BL01	3/29/2017	N	Qal	24.2 - 38.9	7.604	1.07	--	-118.7	7.70	--	--	8.02
	EM01	9/19/2017	N	Qal	24.2 - 38.9	6.548	1.38	--	-115.3	7.18	--	--	7.32
	EM02	9/26/2017	N	Qal	24.2 - 38.9	7.216	0.23	--	17.6	5.09 E	--	--	3.71
	EM03	10/4/2017	N	Qal	24.2 - 38.9	7.228	0.20	--	-194.3	6.98	--	--	1.01
	EM04	10/10/2017	N	Qal	24.2 - 38.9	7.340	0.47	0.0 U	45.0	5.80 E	0.0 U	--	4.10
	EM05	10/25/2017	N	Qal	24.2 - 38.9	8.078	0.89	--	-33.0	7.37	--	--	8.11
	EM06	11/15/2017	N	Qal	24.2 - 38.9	7.079	0.81	--	-10.5	6.98	0.00 U	--	6.10
	EM07	12/14/2017	N	Qal	24.2 - 38.9	7.321	0.20	0.00 U	-104.2	7.07	0.00 U	--	2.26
	EM08	2/20/2018	N	Qal	24.2 - 38.9	6.540	2.85	0.00 U	-96.0	7.00	0.00 U	--	24.50
	EM09	3/27/2018	N	Qal	24.2 - 38.9	6.560	2.42	--	223	7.12	--	--	19.0
	EM10	4/30/2018	N	Qal	24.2 - 38.9	6.656	0.15	--	38.0	6.95	--	23.85	7.58
	EM11	7/10/2018	N	Qal	24.2 - 38.9	6.49	0.04	0 U	-32	6.96	0 U	25.61	11.7
	EM12	7/27/2018	N	Qal	24.2 - 38.9	7.01	0.29	--	30.5	7.13	--	26.33	7.78
	EM13	8/16/2018	N	Qal	24.2 - 38.9	6.37	0.80	--	-135.4	7.05	--	24.80	7.55
	EM14	9/10/2018	N	Qal	24.2 - 38.9	6.230	6.07	--	87	7.65	--	21.58	41.9
	EM15	10/9/2018	N	Qal	24.2 - 38.9	6.09	0.09	0 U	85	7.49	0 U	24.98	0
	EM16	12/27/2018	N	Qal	24.2 - 38.9	6.478	0.51	--	-11.3	6.89	--	23.84	5.19
	EM17	2/26/2019	N	Qal	24.2 - 38.9	4.816	0.50	0.0 U	-182.5	7.09	0.0 U	23.44	1.64
	EM18	4/10/2019	N	Qal	24.2 - 38.9	4.776	0.59	--	-26.3	7.06	--	23.5	45.8
	EM19	5/21/2019	N	Qal	24.2 - 38.9	4.948	0.75	0.0 U	12.6	8.22	0.0 U	24.0	22.1

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW01	EM20	7/1/2019	N	Qal	24.2 - 38.9	4.802	0.29	--	2.1	7.01	--	25.7	120.3
	EM21	8/12/2019	N	Qal	24.2 - 38.9	5.502	0.36	0 U	92.0	6.98	0 U	25.6	13.8
	EM22	11/5/2019	N	Qal	24.2 - 38.9	5.219	0.49	0 U	66.6	6.95	0.0 U	24.7	73.8
	EM23	12/18/2019	N	Qal	24.2 - 38.9	4.998	0.89	--	-111.1	7.02	--	23.9	87.33
	EM24	1/29/2020	N	Qal	24.2 - 38.9	3.979	4.25	0 U	29.2	7.21	0 U	24.1	26.7
	EM25	3/11/2020	N	Qal	24.2 - 38.9	5.747	2.34	--	218.3	6.9	--	23.8	8.6
	EM26	4/28/2020	N	Qal	24.2 - 38.9	5.971	0.5	0 U	156.6	6.91	0 U	26.9	9.6
	EM27	7/8/2020	N	Qal	24.2 - 38.9	6.430	2.49	--	74.8	7.96	--	26.9	39.22
	EM28	8/18/2020	N	Qal	24.2 - 38.9	5.577	0.61	0 U	218.7	6.91	0 U	25.2	9.3
	EM29	10/13/2020	N	Qal	24.2 - 38.9	4.283	0.98	0 U	108.8	6.84	0 U	25	17.3
	EM30	12/9/2020	N	Qal	24.2 - 38.9	4.358	1.91	--	70.5	6.87	--	23.1	1.9
	EM31	2/2/2021	N	Qal	24.2 - 38.9	5.226	0.56	0 U	294.6	6.57	0 U	22.6	5.5
	EM32	3/30/2021	N	Qal	24.2 - 38.9	5.226	0.56	--	294.6	6.57	--	22.6	5.5
	EM33	6/4/2021	N	Qal	24.2 - 38.9	3.867	0.17	0.0 U	81.5	6.82	0.0 U	25.1	59.9
	EM34	7/20/2021	N	Qal	24.2 - 38.9	4.131	0.36	0.0 U	87.3	6.90	0.0 U	25.4	3.9
	EM35	9/15/2021	N	Qal	24.2 - 38.9	5.704	0.08	0.0 U	38.1	6.74	0.0 U	25.8	3.3
	EM36	11/30/2021	N	Qal	24.2 - 38.9	5.987	4.32	0.0 U	135.0	6.92	0.0 U	23.7	46.1
SWFTS-MW02	BL01	3/29/2017	N	Qal	18.4 - 33.1	8.814	0.33	--	65.1	7.22	--	--	45.20
	EM01	9/21/2017	N	Qal	18.4 - 33.1	8.024	0.16	--	24.8	6.78	--	--	259
	EM02	9/27/2017	N	Qal	18.4 - 33.1	8.520	0.14	--	59.1	6.78	--	--	30.9
	EM03	10/4/2017	N	Qal	18.4 - 33.1	16.565 E	1.76	--	-1.3	6.87	--	--	86.3
	EM04	10/12/2017	N	Qal	18.4 - 33.1	9.110	0.25	0.0 U	108.0	5.77 E	0.0 U	--	9.30
	EM05	10/26/2017	N	Qal	18.4 - 33.1	9.338	2.11	--	98.5	6.90	--	--	80.1
	EM06	11/14/2017	N	Qal	18.4 - 33.1	8.760	0.90	0.0 U	42.5	7.10	0.00 U	--	197
	EM07	12/13/2017	N	Qal	18.4 - 33.1	8.990	0.01	0.0 U	-82.1	6.78	0.00 U	--	139
	EM08	2/19/2018	N	Qal	18.4 - 33.1	8.259	2.59	0.0 U	44.8	7.08	0.00 U	--	54
	EM09	3/27/2018	N	Qal	18.4 - 33.1	7.732	1.76	--	80.9	6.87	--	--	55.2
	EM10	4/30/2018	N	Qal	18.4 - 33.1	8.154	1.59	--	-22.5	6.60	--	24.59	157
	EM11	7/11/2018	N	Qal	18.4 - 33.1	7.89	1.86	0 U	56	7.05	0 U	21.56	0
	EM12	7/27/2018	N	Qal	18.4 - 33.1	8.06	0.24	--	26.1	6.94	--	26.46	111
	EM13	8/15/2018	N	Qal	18.4 - 33.1	7.814	2.35	--	-132	6.83	--	25.00	518
	EM14	9/10/2018	N	Qal	18.4 - 33.1	7.210	5.31	--	75	7.71	--	22.01	112
	EM15	10/10/2018	N	Qal	18.4 - 33.1	7.42	0	0 U	115	7.09	0 U	24.91	148
	EM16	12/20/2018	N	Qal	18.4 - 33.1	8.462	2.95	--	-220.3	6.9	--	23.66	65.3
	EM17	2/25/2019	N	Qal	18.4 - 33.1	7.479	0.33	0.0 U	36.9	6.74	0.0 U	24.87	26.5
	EM18	4/9/2019	N	Qal	18.4 - 33.1	7.705	0.40	--	70.8	6.72	--	26.16	55.1
	EM19	5/21/2019	N	Qal	18.4 - 33.1	6.788	6.97	0.0 U	206.8	6.90	0.0 U	25.9	27.7
	EM20	7/2/2019	N	Qal	18.4 - 33.1	6.545	0.34	--	-139.9	6.79	--	26.1	16.3
	EM21	8/14/2019	N	Qal	18.4 - 33.1	6.901	0.36	0 U	103.9	6.92	0 U	25.6	11.9
	EM22	11/7/2019	N	Qal	18.4 - 33.1	7.031	0.49	0 U	119.9	6.76	0 U	26.1	9.8
	EM23	12/17/2019	N	Qal	18.4 - 33.1	5.987	0.60	--	-197.9	6.79	--	25.0	319.18
	EM24	1/28/2020	N	Qal	18.4 - 33.1	6.138	4.00	0 U	161.3	6.99	0 U	24.4	60.8
	EM25	3/12/2020	N	Qal	18.4 - 33.1	6.79	1.4	--	103.9	6.8	--	25.2	23.1
	EM26	4/30/2020	N	Qal	18.4 - 33.1	6.146	0.49	0 U	186.5	6.92	0 U	27.3	57.5
	EM27	7/8/2020	N	Qal	18.4 - 33.1	7.399	0.86	--	66.4	7.19	--	27.7	39.90
	EM28	8/17/2020	N	Qal	18.4 - 33.1	6.276	0.6	0 U	185.2	6.86	0 U	27.4	41.2
	EM29	10/15/2020	N	Qal	18.4 - 33.1	6.49	0.46	0 U	91.4	6.83	0 U	25.6	19.8
	EM30	12/10/2020	N	Qal	18.4 - 33.1	6.109	1.95	--	45.8	6.89	--	24	49.7
	EM31	2/2/2021	N	Qal	18.4 - 33.1	6.807	0.58	0 U	330.3	6.55	0 U	24	48.3
	EM32	3/30/2021	N	Qal	18.4 - 33.1	6.807	0.58	--	330.3	6.55	--	24.0	48.3
	EM33	6/3/2021	N	Qal	18.4 - 33.1	4.824	0.20	0.0 U	89.1	6.81	0.0 U	28.4	160.5

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW02	EM34	7/21/2021	N	Qal	18.4 - 33.1	7.011	0.66	0.0 U	32.7	6.65	0.0 U	27.7	21.0
	EM35	9/16/2021	N	Qal	18.4 - 33.1	6.317	0.47	0.0 U	176.2	6.79	0.0 U	26.8	33.0
	EM36	11/30/2021	N	Qal	18.4 - 33.1	6.926	1.49	0.0 U	-33.6	6.67	0.0 U	26.1	58.6
SWFTS-MW03	BL01	3/30/2017	N	Qal	27.2 - 42.1	7.087	1.64	--	90.2	6.92	--	--	1000 >
	EM01	9/21/2017	N	Qal	27.2 - 42.1	6.645	0.19	--	-19.2	7.03	--	--	291
	EM02	9/27/2017	N	Qal	27.2 - 42.1	6.915	0.11	--	-66.4	6.92	--	--	212
	EM03	10/4/2017	N	Qal	27.2 - 42.1	6.686	1.02	--	17.4	6.94	--	--	16.21
	EM04	10/12/2017	N	Qal	27.2 - 42.1	7.104	0.14	0.0 U	-55.6	6.68	0.0 U	--	55.2
	EM05	10/26/2017	N	Qal	27.2 - 42.1	7.339	1.59	--	92.0	6.79	--	--	51.7
	EM06	11/16/2017	N	Qal	27.2 - 42.1	6.618	0.64	0.00 U	-46.0	6.83	0.00 U	--	130.00
	EM07	12/12/2017	N	Qal	27.2 - 42.1	7.060	2.21	0.00 U	23.5	7.50	0.00 U	--	47.0
	EM08	2/21/2018	N	Qal	27.2 - 42.1	6.717	0.30	0.00 U	1.9	6.36	0.00 U	--	68.4
	EM09	3/27/2018	N	Qal	27.2 - 42.1	6.020	0.62	--	-43.9	6.98	--	--	72.4
	EM10	5/2/2018	N	Qal	27.2 - 42.1	6.03	0.45	--	88	6.93	--	23.19	123
	EM11	7/10/2018	N	Qal	27.2 - 42.1	6.82	0.79	0 U	-176.6	6.89	0 U	26.13	76
	EM12	7/27/2018	N	Qal	27.2 - 42.1	6.80	0.23	--	-34.6	6.9	--	26.94	110
	EM13	8/15/2018	N	Qal	27.2 - 42.1	6.79	0.48	--	-193.4	7.18	--	26.86	79.5
	EM14	9/11/2018	N	Qal	27.2 - 42.1	6.050	1.84	--	12	6.96	--	21.31	65.3
	EM15	10/9/2018	N	Qal	27.2 - 42.1	6.01	0	0 U	-63	7.51	0 U	26.13	0
	EM16	1/2/2019	N	Qal	27.2 - 42.1	5.871	0.8	--	76	6.89	--	21.17	211
	EM17	2/27/2019	N	Qal	27.2 - 42.1	5.394	0.95	0.0 U	-26.6	6.97	0.0 U	23.04	42.5
	EM18	4/10/2019	N	Qal	27.2 - 42.1	5.363	0.95	--	115.5	6.93	--	24.1	21.2
	EM19	5/21/2019	N	Qal	27.2 - 42.1	5.495	0.57	0.0 U	199.3	7.87	0.0 U	23.4	9.1
	EM20	7/1/2019	N	Qal	27.2 - 42.1	5.334	0.34	--	107.5	6.95	--	27.0	190.3
	EM21	8/14/2019	N	Qal	27.2 - 42.1	6.081	0.40	0 U	142.8	7.02	0 U	24.5	17.4
	EM22	11/4/2019	N	Qal	27.2 - 42.1	5.704	0.52	0 U	188.0	6.93	0 U	24.2	25.3
	EM23	12/19/2019	N	Qal	27.2 - 42.1	5.322	0.95	--	108.9	6.95	--	22.5	140.39
	EM24	1/30/2020	N	Qal	27.2 - 42.1	4.124	2.58	0 U	166.7	6.99	0 U	23.5	0.2
	EM25	3/9/2020	N	Qal	27.2 - 42.1	5.513	2.24	--	140.9	6.93	--	23.3	70
	EM26	4/28/2020	N	Qal	27.2 - 42.1	5.743	0.58	0 U	121.9	6.97	0 U	23.6	14.9
	EM27	7/6/2020	N	Qal	27.2 - 42.1	6.445	0.84	--	128.8	6.80	--	26.9	38.79
	EM28	8/18/2020	N	Qal	27.2 - 42.1	5.764	0.66	0 U	248.1	6.92	0 U	26.1	60.3
	EM29	10/13/2020	N	Qal	27.2 - 42.1	4.456	0.48	0 U	137.7	6.88	0 U	24.9	30.3
	EM30	12/8/2020	N	Qal	27.2 - 42.1	4.559	1.97	--	64.6	7.02	--	21.8	9.2
	EM31	2/2/2021	N	Qal	27.2 - 42.1	5.828	0.51	0 U	354.2	6.62	0 U	23.2	22.7
	EM32	3/30/2021	N	Qal	27.2 - 42.1	5.828	0.51	--	354.2	6.62	--	23.2	22.7
	EM33	6/3/2021	N	Qal	27.2 - 42.1	3.967	0.16	0.0 U	76.3	6.84	0.0 U	24.7	119.5
	EM34	7/19/2021	N	Qal	27.2 - 42.1	5.765	0.31	0.0 U	113.6	6.79	0.0 U	25.6	20.0
	EM35	9/15/2021	N	Qal	27.2 - 42.1	5.634	0.38	0.0 U	90.4	6.81	0.0 U	25.0	38.6
	EM36	12/1/2021	N	Qal	27.2 - 42.1	6.105	1.53	0.0 U	82.7	6.75	0.0 U	22.5	53.8
SWFTS-MW04	BL01	3/31/2017	N	Qal	25.8 - 40.4	6.64	7.02	--	147.9	6.75	--	--	82.6
	EM01	9/20/2017	N	Qal	25.8 - 40.4	3.835	0.85	--	18.1	7.16	--	--	79.0
	EM02	9/27/2017	N	Qal	25.8 - 40.4	3.656	2.73	--	121.1	7.23	--	--	296
	EM03	10/4/2017	N	Qal	25.8 - 40.4	7.346	0.11	--	-12.1	7.05	--	--	25.9
	EM04	10/11/2017	N	Qal	25.8 - 40.4	3.850	1.39	0.0 U	155	4.97 E	0.0 U	--	0.0
	EM05	10/24/2017	N	Qal	25.8 - 40.4	4.270	0.28	--	-74.1	7.43	--	--	33.8
	EM06	11/15/2017	N	Qal	25.8 - 40.4	3.900	0.89	0.0 U	12.9	7.22	0.00 U	--	84.00
	EM07	12/14/2017	N	Qal	25.8 - 40.4	3.600	0.45	--	19.0	7.67	--	--	25.70
	EM08	2/21/2018	N	Qal	25.8 - 40.4	4.085	0.37	0.0 U	21.8	7.35	0.00 U	--	18.40
	EM09	3/27/2018	N	Qal	25.8 - 40.4	4.377	0.43	--	50.9	7.22	--	--	4.23
	EM10	5/1/2018	N	Qal	25.8 - 40.4	3.915	2.80	--	-126.1	7.73	--	24.78	3.25

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW04	EM11	7/10/2018	N	Qal	25.8 - 40.4	4.4	0.00	0 U	160	7.23	0 U	25.52	116
	EM13	8/16/2018	N	Qal	25.8 - 40.4	4.075	0.91	--	-12.2	7.42	--	25.00	118
	EM14	9/12/2018	N	Qal	25.8 - 40.4	3.810	2.64	--	132	7.34	--	20.45	37.9
	EM15	10/11/2018	N	Qal	25.8 - 40.4	3.22	0.84	0 U	-16.7	8.04 E	0 U	21.88	35.6
	EM16	1/3/2019	N	Qal	25.8 - 40.4	3.414	1.11	--	116.1	7.3	--	20.72	90.8
	EM17	3/1/2019	N	Qal	25.8 - 40.4	3.825	0.55	0.0 U	125.9	7.24	0.0 U	22.47	78.7
	EM18	4/9/2019	N	Qal	25.8 - 40.4	3.764	0.70	--	65.6	7.14	--	24.37	33.1
	EM19	5/21/2019	N	Qal	25.8 - 40.4	3.173	0.05	0.0 U	197.4	7.20	0.0 U	23.8	19.7
	EM20	7/5/2019	N	Qal	25.8 - 40.4	3.008	0.40	--	161.1	7.16	--	22.3	9.3
	EM21	8/14/2019	N	Qal	25.8 - 40.4	3.445	0.39	0 U	59.1	7.31	0 U	24.5	13.9
	EM22	11/7/2019	N	Qal	25.8 - 40.4	3.455	0.36	0 U	-7.2	7.23	0 U	24.9	12.9
	EM23	12/19/2019	N	Qal	25.8 - 40.4	3.486	0.89	--	84.0	7.23	--	22.5	120.34
	EM24	1/29/2020	N	Qal	25.8 - 40.4	3.108	2.89	0 U	169.9	7.24	0 U	21.5	33.3
	EM25	3/12/2020	N	Qal	25.8 - 40.4	4.799	1.64	--	169.5	7.1	--	22.7	17.1
	EM26	5/1/2020	N	Qal	25.8 - 40.4	4.235	0.11	0 U	152.8	7.14	0 U	22.7	22.6
	EM27	7/7/2020	N	Qal	25.8 - 40.4	4.801	0.85	--	148.2	7.71	--	28.1	31.80
	EM28	8/18/2020	N	Qal	25.8 - 40.4	3.817	0.63	0 U	158.6	7.28	0 U	24.6	53.4
	EM29	10/14/2020	N	Qal	25.8 - 40.4	4.019	0.47	0 U	80.1	7.22	0 U	24.1	43.7
	EM30	12/10/2020	N	Qal	25.8 - 40.4	3.544	1.89	--	32.3	7.2	--	21.8	27.8
	EM31	2/2/2021	N	Qal	25.8 - 40.4	4.005	0.64	0 U	354.9	7.02	0 U	22.8	53.3
	EM32	3/30/2021	N	Qal	25.8 - 40.4	4.005	0.64	--	354.9	7.02	--	22.8	53.3
	EM33	6/3/2021	N	Qal	25.8 - 40.4	2.810	1.12	0.0 U	76.6	7.20	0.0 U	26.5	104.1
	EM34	7/21/2021	N	Qal	25.8 - 40.4	3.681	0.11	0.0 U	25.5	7.14	0.0 U	24.6	34.3
	EM35	9/16/2021	N	Qal	25.8 - 40.4	4.312	0.48	0.0 U	171.8	7.13	0.0 U	23.9	21.1
	EM36	12/2/2021	N	Qal	25.8 - 40.4	4.331	1.57	0.0 U	101.3	7.11	0.0 U	21.9	63.9
SWFTS-MW05A	BL01	3/30/2017	N	Qal	19.3 - 29.3	7.879	4.28	--	104.0	7.00	--	--	33
	EM01	9/20/2017	N	Qal	19.3 - 29.3	7.062	4.18	--	48.5	7.01	--	--	74.5
	EM02	9/27/2017	N	Qal	19.3 - 29.3	7.072	3.30	--	44.1	6.97	--	--	44.0
	EM03	10/3/2017	N	Qal	19.3 - 29.3	7.282	5.46	--	133.5	7.16	--	--	9.42
	EM04	10/10/2017	N	Qal	19.3 - 29.3	7.160	3.41	0.0 U	272.0	4.34 E	0.0 U	--	11.0
	EM05	10/23/2017	N	Qal	19.3 - 29.3	8.087	2.96	--	24.6	7.29	--	--	288
	EM06	11/14/2017	N	Qal	19.3 - 29.3	7.290	2.27	0.00 U	159.2	6.76	0.00 U	--	31.40
	EM07	12/13/2017	N	Qal	19.3 - 29.3	7.315	2.10	0.00 U	-77.3	7.15	0.00 U	--	10.80
	EM08	2/20/2018	N	Qal	19.3 - 29.3	7.820	2.78	0.00 U	52.9	6.12	0.00 U	--	49.70
	EM09	3/26/2018	N	Qal	19.3 - 29.3	7.353	0.99	--	-44.5	7.01	--	23.70	23.8
	EM10	4/30/2018	N	Qal	19.3 - 29.3	7.26	2.16	--	235	7.24	--	25.51	88.1
	EM11	7/11/2018	N	Qal	19.3 - 29.3	6.86	2.65	0 U	35	7.28	0 U	22.48	33
	EM12	7/27/2018	N	Qal	19.3 - 29.3	6.55	3.46	--	-35.9	6.4	--	26.31	30
	EM13	8/14/2018	N	Qal	19.3 - 29.3	7.286	0.93	--	9.7	7.15	--	26.00	28.9
	EM14	9/11/2018	N	Qal	19.3 - 29.3	6.460	2.59	--	210	7.07	--	19.81	23.2
	EM15	10/10/2018	N	Qal	19.3 - 29.3	6.75	2.08	0 U	195	7.22	0 U	24.12	116
	EM16	12/20/2018	N	Qal	19.3 - 29.3	8.279	0.68	--	-51	6.9	--	24.4	7.05
	EM17	2/27/2019	N	Qal	19.3 - 29.3	6.150	0.51	0.0 U	-30.7	6.81	0.0 U	23.94	0.91
	EM18	4/10/2019	N	Qal	19.3 - 29.3	6.093	0.70	--	119.3	6.79	--	24.7	7.3
	EM19	5/21/2019	N	Qal	19.3 - 29.3	6.048	0.65	0.0 U	127.6	9.22	0.0 U	24.7	8.0
	EM20	7/1/2019	N	Qal	19.3 - 29.3	5.743	0.44	--	58.2	6.87	--	26.1	16.8
	EM21	8/13/2019	N	Qal	19.3 - 29.3	6.575	0.3	0 U	-207.5	6.92	0 U	26.1	3.3
	EM22	11/5/2019	N	Qal	19.3 - 29.3	6.723	0.60	0 U	226.6	6.91	0 U	23.9	4.9
	EM23	12/18/2019	N	Qal	19.3 - 29.3	6.733	0.83	--	74.5	6.88	--	23.9	17.55
	EM24	1/29/2020	N	Qal	19.3 - 29.3	5.389	2.55	0 U	164.9	6.90	0 U	23.9	23.0
	EM25	3/11/2020	N	Qal	19.3 - 29.3	7.554	2.24	--	185.1	6.87	--	23.6	4

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW05A	EM26	4/29/2020	N	Qal	19.3 - 29.3	7.519	0.57	0 U	127.6	6.88	0 U	24.1	2.6
	EM27	7/8/2020	N	Qal	19.3 - 29.3	8.131	0.79	--	75.3	7.19	--	26.4	8.63
	EM28	8/18/2020	N	Qal	19.3 - 29.3	7.268	0.64	0 U	177.5	6.82	0 U	25.1	3.8
	EM29	10/14/2020	N	Qal	19.3 - 29.3	7.552	0.53	0 U	111.6	6.72	0 U	24.9	4.6
	EM30	12/8/2020	N	Qal	19.3 - 29.3	6.162	1.76	--	14.9	6.81	--	24.7	2.1
	EM31	2/2/2021	N	Qal	19.3 - 29.3	7.754	0.59	0 U	218.5	6.73	0 U	24.7	5.7
	EM32	3/30/2021	N	Qal	19.3 - 29.3	7.754	0.59	--	218.5	6.73	--	24.7	5.7
	EM33	6/3/2021	N	Qal	19.3 - 29.3	5.155	0.33	0.0 U	104.3	6.75	0.0 U	25.2	27.4
	EM34	7/20/2021	N	Qal	19.3 - 29.3	5.633	0.38	0.0 U	96.2	6.77	0.0 U	26.0	4.2
	EM35	9/17/2021	N	Qal	19.3 - 29.3	6.697	0.38	0.0 U	52.5	6.71	0.0 U	24.8	7.9
	EM36	11/29/2021	N	Qal	19.3 - 29.3	5.250	1.08	0.0 U	203.3	6.84	0.0 U	24.3	9.1
SWFTS-MW05B	BL01	3/30/2017	N	Qal	32.3 - 42.0	6.922	0.70	--	-0.8	7.00	--	--	112.00
	EM01	9/22/2017	N	Qal	32.3 - 42.0	6.092	0.24	--	-179.1	6.64	--	--	5.00
	EM02	9/27/2017	N	Qal	32.3 - 42.0	6.634	0.10	--	-182.3	6.61	--	--	29.7
	EM03	10/3/2017	N	Qal	32.3 - 42.0	6.198	0.10	--	-236.3	6.59	--	--	27.2
	EM04	10/10/2017	N	Qal	32.3 - 42.0	6.653	0.08	0.5	-235.9	6.67	0.04	--	12.10
	EM05	10/23/2017	N	Qal	32.3 - 42.0	7.361	0.34	--	-346.9	6.86	--	--	352
	EM06	11/14/2017	N	Qal	32.3 - 42.0	6.420	0.46	0.50	-186.2	6.83	0.50	--	46.00
	EM07	12/13/2017	N	Qal	32.3 - 42.0	6.617	0.30	0.00 U	-268.9	7.02	0.00 U	--	3.42
	EM08	2/20/2018	N	Qal	32.3 - 42.0	6.680	0.34	0.00 U	-202.4	6.17	0.04	--	5.47
	EM09	3/26/2018	N	Qal	32.3 - 42.0	6.364	0.49	--	-199.4	6.69	--	23.60	2.01
	EM10	4/30/2018	N	Qal	32.3 - 42.0	5.61	0.00	--	138	7.07	--	25.47	29.6
	EM11	7/10/2018	N	Qal	32.3 - 42.0	5.81	1.45	2.5	-135	6.83	0 U	26.74	21.2
	EM12	7/27/2018	N	Qal	32.3 - 42.0	5.86	4.21	--	70	3.38 E	--	27.46 E	3.38
	EM13	8/14/2018	N	Qal	32.3 - 42.0	6.429	0.80	--	-31.8	6.88	--	26.79	7.67
	EM14	9/11/2018	N	Qal	32.3 - 42.0	5.590	2.37	--	73	6.85	--	20.29	19.3
	EM15	10/9/2018	N	Qal	32.3 - 42.0	5.65	0	0 U	36	7.36	0 U	27.26 E	12.3
	EM16	12/20/2018	N	Qal	32.3 - 42.0	7.214	0.62	--	-109.2	6.86	--	24.1	4.23
	EM17	2/27/2019	N	Qal	32.3 - 42.0	5.334	0.61	0.0 U	-64.3	6.71	0.0 U	23.33	9.31
	EM18	4/10/2019	N	Qal	32.3 - 42.0	5.079	0.63	--	26.6	6.68	--	24.6	53.9
	EM19	5/21/2019	N	Qal	32.3 - 42.0	5.089	0.81	0.0 U	93.5	9.24	0.0 U	24.6	60.0
	EM20	7/1/2019	N	Qal	32.3 - 42.0	4.951	0.21	--	22.1	6.77	--	26.4	193.3
	EM21	8/13/2019	N	Qal	32.3 - 42.0	5.699	0.38	0 U	-93.2	6.81	0 U	26.6	9.0
	EM22	11/5/2019	N	Qal	32.3 - 42.0	5.626	0.48	0.0 U	162.8	6.76	0 U	24.3	160.1
	EM23	12/18/2019	N	Qal	32.3 - 42.0	5.646	0.72	--	-7.2	6.78	--	23.3	54.34
	EM24	1/29/2020	N	Qal	32.3 - 42.0	4.420	2.43	0 U	30.0	6.76	0 U	22.9	21.3
	EM25	3/11/2020	N	Qal	32.3 - 42.0	6.489	2.15	--	152.8	6.73	--	23.3	69.8
	EM26	4/29/2020	N	Qal	32.3 - 42.0	6.406	0.65	0 U	96.2	6.73	0 U	23.6	117.6
	EM27	7/8/2020	N	Qal	32.3 - 42.0	6.828	0.93	--	81.0	6.92	--	27.5	54.99
	EM28	8/18/2020	N	Qal	32.3 - 42.0	5.732	0.91	0 U	185.9	6.71	0 U	25.3	31.9
	EM29	10/14/2020	N	Qal	32.3 - 42.0	6.013	0.51	0 U	122.2	6.59	0 U	24.4	31.7
	EM30	12/8/2020	N	Qal	32.3 - 42.0	4.915	1.79	--	-0.9	6.73	--	24	1.4
	EM31	2/2/2021	N	Qal	32.3 - 42.0	6.335	0.46	0 U	-41.5	6.47	0 U	24.1	41.3
	EM32	3/30/2021	N	Qal	32.3 - 42.0	6.335	0.46	--	-41.5	6.47	--	24.1	41.3
	EM33	6/3/2021	N	Qal	32.3 - 42.0	4.283	0.02	1.0	-45.7	6.57	0.0 U	25.4	326.1
	EM34	7/21/2021	N	Qal	32.3 - 42.0	5.509	0.35	0.0 U	71.4	6.62	0.0 U	25.2	36.3
	EM35	9/16/2021	N	Qal	32.3 - 42.0	6.060	0.38	0.0 U	-4.3	6.64	0.0 U	25.3	16.8
	EM36	11/30/2021	N	Qal	32.3 - 42.0	6.108	1.15	0.0 U	63.6	6.54	0.0 U	22.6	73.5
SWFTS-MW06A	BL01	3/30/2017	N	Qal	11.8 - 21.4	2.874	0.38	--	-85.9	7.19	--	--	14.20
	EM01	9/21/2017	N	Qal	11.8 - 21.4	3.318	0.16	--	-46.1	6.98	--	--	82.0
	EM02	9/27/2017	N	Qal	11.8 - 21.4	3.537	0.30	--	-10.2	7.04	--	--	147

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW06A	EM03	10/3/2017	N	Qal	11.8 - 21.4	3.509	0.12	--	-62.1	7.02	--	--	30.9
	EM04	10/11/2017	N	Qal	11.8 - 21.4	3.800	0.37	0.0 U	-23.0	4.94 E	0.0 U	--	15.7
	EM05	10/23/2017	N	Qal	11.8 - 21.4	4.338	2.52	--	-211.5	7.26	--	--	268.00
	EM06	11/16/2017	N	Qal	11.8 - 21.4	3.881	0.42	0.0 U	-57.7	7.07	0.0 U	--	45.4
	EM07	12/13/2017	N	Qal	11.8 - 21.4	3.975	0.17	0.00 U	-135.6	7.17	0.00 U	--	25.40
	EM08	2/22/2018	N	Qal	11.8 - 21.4	3.276	0.37	0.00 U	-19.7	7.30	0.00 U	--	8.26
	EM09	3/28/2018	N	Qal	11.8 - 21.4	3.143	0.44	--	146.6	7.18	--	--	8.74
	EM10	5/1/2018	N	Qal	11.8 - 21.4	3.063	0.27	--	58.3	7.32	--	24.23	24.4
	EM11	7/11/2018	N	Qal	11.8 - 21.4	3.116	2.40	0 U	-83	7.19	0 U	23.71	34
	EM13	8/14/2018	N	Qal	11.8 - 21.4	33.46 E	0.69	--	-150.2	7.30	--	25.60	4.41
	EM14	9/11/2018	N	Qal	11.8 - 21.4	2.370	0.49	--	-273	8.90 E	--	25.04	188
	EM15	10/10/2018	N	Qal	11.8 - 21.4	2.969	0.2	0 U	-196.5	9.09 E	0 U	24.58	3.95
	EM16	12/28/2018	N	Qal	11.8 - 21.4	3.024	0.98	--	19.2	7.18	--	22.05	7.53
	EM17	2/27/2019	N	Qal	11.8 - 21.4	2.804	0.05	0.0 U	-17.4	7.17	0.0 U	21.89	9.23
	EM18	4/10/2019	N	Qal	11.8 - 21.4	2.967	0.61	--	40.8	7.17	--	21.30	56.9
	EM19	5/20/2019	N	Qal	11.8 - 21.4	3.029	0.09	0.0 U	170.2	7.21	0.0 U	22.1	5.4
	EM20	7/1/2019	N	Qal	11.8 - 21.4	3.553	0.40	--	-23.3	7.23	--	24.4	8.9
	EM21	8/14/2019	N	Qal	11.8 - 21.4	3.545	0.37	0 U	-13.8	7.26	0 U	24.4	12.5
	EM22	11/6/2019	N	Qal	11.8 - 21.4	3.522	0.62	0 U	88.4	7.23	0 U	23.8	7.4
	EM23	12/19/2019	N	Qal	11.8 - 21.4	2.974	0.80	--	28.6	7.24	--	21.8	99.90
	EM24	1/29/2020	N	Qal	11.8 - 21.4	1.997	4.31	0 U	112.0	7.38	0 U	21.2	47.8
	EM25	3/11/2020	N	Qal	11.8 - 21.4	2.814	2.6	--	67	7.22	--	20.7	19.5
	EM26	4/29/2020	N	Qal	11.8 - 21.4	3.027	0.84	0 U	81.3	7.27	0 U	30.6	29.9
	EM27	7/7/2020	N	Qal	11.8 - 21.4	3.031	0.99	--	126.3	7.20	--	26.0	60.18
	EM28	8/19/2020	N	Qal	11.8 - 21.4	2.891	0.6	0 U	135.5	7.27	0 U	24.5	169.8
	EM29	10/13/2020	N	Qal	11.8 - 21.4	2.343	0.46	0 U	69.8	7.23	0 U	23.4	37.2
	EM30	12/8/2020	N	Qal	11.8 - 21.4	2.549	1.9	--	-11.2	7.31	--	22.4	19.3
	EM31	2/3/2021	N	Qal	11.8 - 21.4	3.029	0.55	0 U	211.3	7.06	0 U	20	18.4
	EM32	3/31/2021	N	Qal	11.8 - 21.4	3.029	0.55	--	211.3	7.06	--	20.0	18.4
	EM33	6/4/2021	N	Qal	11.8 - 21.4	2.229	0.03	0.0 U	94.9	7.21	0.0 U	23.1	16.1
	EM34	7/19/2021	N	Qal	11.8 - 21.4	3.067	0.18	0.0 U	38.6	7.17	0.0 U	25.5	46.1
	EM35	9/16/2021	N	Qal	11.8 - 21.4	2.822	0.45	0.0 U	180.5	7.19	0.0 U	23.4	31.4
	EM36	12/1/2021	N	Qal	11.8 - 21.4	3.104	1.38	0.0 U	-57.3	7.14	0.0 U	23.6	57.0
SWFTS-MW06B	BL01	3/30/2017	N	Qal	25.9 - 35.5	2.814	0.06	--	8.7	7.04	--	--	68.00
	EM01	9/21/2017	N	Qal	25.9 - 35.5	3.158	0.18	--	10.1	7.00	--	--	237
	EM02	9/27/2017	N	Qal	25.9 - 35.5	3.240	0.78	--	-76.2	7.09	--	--	492
	EM03	10/3/2017	N	Qal	25.9 - 35.5	3.191	0.11	--	-93.8	7.05	--	--	467
	EM04	10/11/2017	N	Qal	25.9 - 35.5	3.520	0.45	0.0 U	-36.0	4.70 E	0.0 U	--	455
	EM05	10/23/2017	N	Qal	25.9 - 35.5	3.811	1.14	--	-150.7	7.31	--	--	70.9
	EM06	11/16/2017	N	Qal	25.9 - 35.5	3.548	0.44	0.00 U	-133.5	7.10	0.00 U	--	68.80
	EM07	12/13/2017	N	Qal	25.9 - 35.5	3.795	0.91	0.00 U	-119.3	7.21	0.00 U	--	85.80
	EM08	2/22/2018	N	Qal	25.9 - 35.5	3.660	0.47	0.00 U	-29.7	7.22	0.00 U	--	4.39
	EM09	3/28/2018	N	Qal	25.9 - 35.5	3.455	0.59	--	166.8	7.15	--	--	8.38
	EM10	5/1/2018	N	Qal	25.9 - 35.5	3.251	1.31	--	79.9	7.31	--	23.0	205
	EM11	7/11/2018	N	Qal	25.9 - 35.5	3.271	2.05	0 U	-45.8	7.21	0 U	25.74	9.98
	EM13	8/14/2018	N	Qal	25.9 - 35.5	3.311	0.57	--	-67.2	7.30	--	26.27	38.7
	EM14	9/11/2018	N	Qal	25.9 - 35.5	2.240	0.71	--	-344	10.26 E	--	23.16	2.53
	EM15	10/10/2018	N	Qal	25.9 - 35.5	2.927	0.17	0 U	-100.4	8.39 E	0 U	23.74	84.6
	EM16	12/28/2018	N	Qal	25.9 - 35.5	3.083	0.7	--	20.9	7.18	--	21.18	294
	EM17	2/28/2019	N	Qal	25.9 - 35.5	3.006	0.45	0.0 U	87.9	7.21	0.0 U	21.41	69.4
	EM18	4/10/2019	N	Qal	25.9 - 35.5	2.984	0.54	--	61.1	7.17	--	21.74	255

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW06B	EM19	5/21/2019	N	Qal	25.9 - 35.5	2.920	0.09	0.0 U	259.0	7.18	0.0 U	21.7	58.2
	EM20	7/1/2019	N	Qal	25.9 - 35.5	3.348	0.43	--	70.3	7.25	--	25.0	9.2
	EM21	8/14/2019	N	Qal	25.9 - 35.5	3.402	0.39	0 U	19.6	7.27	0 U	24.9	11.4
	EM22	11/6/2019	N	Qal	25.9 - 35.5	3.634	0.59	0 U	171.6	7.22	0 U	23.4	51.9
	EM23	12/19/2019	N	Qal	25.9 - 35.5	3.155	0.82	--	83.4	7.22	--	21.6	99.97
	EM24	1/29/2020	N	Qal	25.9 - 35.5	2.196	3.56	0 U	142.5	7.38	0 U	21.3	38.1
	EM25	3/11/2020	N	Qal	25.9 - 35.5	3.054	1.54	--	134.9	7.18	--	21.3	44.6
	EM26	4/29/2020	N	Qal	25.9 - 35.5	2.777	0.73	0 U	131	7.22	0 U	24.5	86.7
	EM27	7/7/2020	N	Qal	25.9 - 35.5	2.966	0.79	--	139.7	7.19	--	26.4	30.90
	EM28	8/19/2020	N	Qal	25.9 - 35.5	2.725	0.58	0 U	209.6	7.27	0 U	24.3	93.2
	EM29	10/13/2020	N	Qal	25.9 - 35.5	2.217	0.48	0 U	101.5	7.23	0 U	22.5	87.4
	EM30	12/8/2020	N	Qal	25.9 - 35.5	0.028	6.39	--	19.6	7.5	--	36.3	2.9
	EM31	2/3/2021	N	Qal	25.9 - 35.5	3.083	0.68	0 U	281.6	7.13	0 U	20.9	97
	EM32	3/31/2021	N	Qal	25.9 - 35.5	3.083	0.68	--	281.6	7.13	--	20.9	97.0
	EM33	6/4/2021	N	Qal	25.9 - 35.5	2.236	0.20	0.0 U	102.9	7.21	0.0 U	23.5	77.8
	EM34	7/19/2021	N	Qal	25.9 - 35.5	3.216	0.35	0.0 U	88.8	7.15	0.0 U	28.4	54.4
	EM35	9/16/2021	N	Qal	25.9 - 35.5	2.919	0.43	0.0 U	146.4	7.19	0.0 U	23.3	58.7
	EM36	12/1/2021	N	Qal	25.9 - 35.5	3.058	1.39	0.0 U	-19.8	7.14	0.0 U	22.4	59.1
SWFTS-MW07A	BL01	3/30/2017	N	Qal	15.0 - 29.5	6.980	0.16	--	291.7	6.60	--	--	2.28
	EM01	9/20/2017	N	Qal	15.0 - 29.5	7.179	0.20	--	52.3	6.90	--	--	1.62
	EM02	9/26/2017	N	Qal	15.0 - 29.5	6.884	0.49	--	95.8	6.80	--	--	1.78
	EM03	10/3/2017	N	Qal	15.0 - 29.5	6.982	0.22	--	-23.9	6.81	--	--	0.10
	EM04	10/11/2017	N	Qal	15.0 - 29.5	7.272	0.11	0.0 U	-16.3	6.55	0.0 U	--	1.43
	EM05	10/24/2017	N	Qal	15.0 - 29.5	8.189	0.43	--	-71.5	6.99	--	--	0.12
	EM06	11/15/2017	N	Qal	15.0 - 29.5	7.300	0.35	0.0 U	117.3	7.03	0.00 U	--	2.44
	EM07	12/14/2017	N	Qal	15.0 - 29.5	7.345	-0.02 E	0.0 U	-83.4	6.99	0.00 U	--	6.98
	EM08	2/19/2018	N	Qal	15.0 - 29.5	7.002	0.72	0.0 U	62.8	7.05	--	--	0.65
	EM09	3/28/2018	N	Qal	15.0 - 29.5	6.465	3.29	--	142.5	7.05	--	--	1.83
	EM10	5/2/2018	N	Qal	15.0 - 29.5	6.230	1.02	--	-186.7	7.44	--	23.72	1.98
	EM11	7/11/2018	N	Qal	15.0 - 29.5	6.5	1.42	--	201	7.28	0 U	25.35	0
	EM13	8/16/2018	N	Qal	15.0 - 29.5	6.604	0.58	--	-11.8	7.18	--	25.70	4.9
	EM14	9/12/2018	N	Qal	15.0 - 29.5	5.670	1.30	--	-34.6	7.50	--	24.36	1.94
	EM15	10/10/2018	N	Qal	15.0 - 29.5	5.48	0.08	0 U	-62.3	8.25 E	0 U	25.1	0.11
	EM16	1/2/2019	N	Qal	15.0 - 29.5	5.204	0.99	--	108.2	7.07	--	23.33	0.49
	EM17	2/28/2019	N	Qal	15.0 - 29.5	5.190	0.62	0.0 U	90.1	7.09	0.0 U	24.35	0.52
	EM18	4/12/2019	N	Qal	15.0 - 29.5	5.220	0.72	--	168.2	7.02	--	23.6	1.8
	EM19	5/22/2019	N	Qal	15.0 - 29.5	5.035	1.03	0.0 U	50.7	7.10	0.0 U	22.4	0.1
	EM20	7/3/2019	N	Qal	15.0 - 29.5	4.685	0.41	--	159.1	6.99	--	25.0	3.4
	EM21	8/15/2019	N	Qal	15.0 - 29.5	4.924	0.43	0 U	165.8	7.2	0 U	24.0	4.2
	EM22	11/7/2019	N	Qal	15.0 - 29.5	4.969	0.62	0 U	200.9	7.14	0 U	24.2	1.4
	EM23	12/20/2019	N	Qal	15.0 - 29.5	4.359	0.73	--	-11.8	7.16	--	23.5	1.74
	EM24	1/28/2020	N	Qal	15.0 - 29.5	4.555	0.59	0 U	109.7	7.16	0 U	23.7	2.24
	EM25	3/12/2020	N	Qal	15.0 - 29.5	4.888	2.25	--	131.8	7.07	--	23.2	0.4
	EM26	4/30/2020	N	Qal	15.0 - 29.5	4.944	0.3	0 U	145.7	7.13	0 U	25.6	1.6
	EM27	7/9/2020	N	Qal	15.0 - 29.5	5.798	0.75	--	119.7	8.41	--	25.4	4.71
	EM28	8/19/2020	N	Qal	15.0 - 29.5	5.144	0.61	0 U	240.8	7.09	0 U	24.8	7.6
	EM29	10/16/2020	N	Qal	15.0 - 29.5	6.482	0.6	0 U	159.5	7.16	0 U	24	2.42
	EM30	12/9/2020	N	Qal	15.0 - 29.5	4.052	2.09	--	-15.7	7.07	--	23.4	4.2
	EM31	2/3/2021	N	Qal	15.0 - 29.5	4.888	1	0 U	328.5	7.11	0 U	24.6	4.2
	EM32	3/31/2021	N	Qal	15.0 - 29.5	4.888	1.00	--	328.5	7.11	--	24.6	4.2
	EM33	6/4/2021	N	Qal	15.0 - 29.5	3.399	1.00	0.0 U	100.2	7.08	0.0 U	24.5	4.4

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW07A	EM34	7/22/2021	N	Qal	15.0 - 29.5	4.901	0.90	0.0 U	52.9	6.99	0.0 U	24.7	2.2
	EM35	9/16/2021	N	Qal	15.0 - 29.5	5.278	0.93	0.0 U	135.8	6.99	0.0 U	24.1	-3.1
	EM36	12/3/2021	N	Qal	15.0 - 29.5	5.409	2.83	0.0 U	37.4	7.06	0.0 U	21.3	2.0
SWFTS-MW07B	BL01	3/30/2017	N	Qal	33.8 - 38.3	7.033	1.29	--	83.8	6.89	--	--	40.30
	EM01	9/20/2017	N	Qal	33.8 - 38.3	6.425	0.35	--	49.1	6.95	--	--	17.01
	EM02	9/26/2017	N	Qal	33.8 - 38.3	6.153	0.60	--	67.4	6.86	--	--	9.38
	EM03	10/3/2017	N	Qal	33.8 - 38.3	6.134	1.38	--	-19.8	7.00	--	--	38.7
	EM04	10/11/2017	N	Qal	33.8 - 38.3	6.394	0.13	0.0 U	-29.8	6.68	0.0 U	--	7.99
	EM05	10/24/2017	N	Qal	33.8 - 38.3	7.044	0.33	--	-92.6	7.06	--	--	22.40
	EM06	11/15/2017	N	Qal	33.8 - 38.3	6.210	0.42	0.0 U	116.2	7.09	0.00 U	--	35.10
	EM07	12/14/2017	N	Qal	33.8 - 38.3	6.253	-0.09 E	0.0 U	-96.5	7.04	0.00 U	--	19.80
	EM08	2/19/2018	N	Qal	33.8 - 38.3	5.667	1.23	0.0 U	40.4	7.16	0.00 U	--	5.62
	EM09	3/28/2018	N	Qal	33.8 - 38.3	6.378	0.30	--	-162.9	6.93	--	--	8.31
	EM10	5/2/2018	N	Qal	33.8 - 38.3	5.517	4.67	--	-131.6	7.65	--	21.95	4.98
	EM11	7/11/2018	N	Qal	33.8 - 38.3	6.04	1.60	0 U	189	7.3	0 U	25.41	0
	EM13	8/16/2018	N	Qal	33.8 - 38.3	5.82	0.49	--	-16.1	7.23	--	26.01	5.8
	EM14	9/12/2018	N	Qal	33.8 - 38.3	5.130	1.69	--	-33	7.60	--	27.53 E	4.48
	EM15	10/10/2018	N	Qal	33.8 - 38.3	4.603	0.09	0 U	-48.2	8.29 E	0 U	25.6	2.31
	EM16	1/3/2019	N	Qal	33.8 - 38.3	4.399	1.35	--	128.8	7.22	--	21.73	4.73
	EM17	2/28/2019	N	Qal	33.8 - 38.3	4.968	0.40	0.0 U	91.7	7.11	0.0 U	24.28	3.80
	EM18	4/12/2019	N	Qal	33.8 - 38.3	5.031	0.52	--	201.0	7.06	--	22.8	2.2
	EM19	5/22/2019	N	Qal	33.8 - 38.3	4.671	0.87	0.0 U	83.8	7.12	0.0 U	22.2	9.7
	EM20	7/3/2019	N	Qal	33.8 - 38.3	4.176	0.47	--	169.2	7.02	--	24.6	3.4
	EM21	8/15/2019	N	Qal	33.8 - 38.3	4.314	0.42	0 U	194.9	7.22	0 U	23.8	4.8
	EM22	11/7/2019	N	Qal	33.8 - 38.3	4.347	0.59	--	192.2	7.18	--	24.1	3.2
	EM23	12/20/2019	N	Qal	33.8 - 38.3	4.260	0.81	--	-5.0	7.16	--	22.7	8.97
	EM24	1/28/2020	N	Qal	33.8 - 38.3	5.006	0.55	0 U	107.8	7.11	0 U	23.2	14.13
	EM25	3/12/2020	N	Qal	33.8 - 38.3	5.391	2.3	--	174.4	7.01	--	23	4.9
	EM26	4/30/2020	N	Qal	33.8 - 38.3	5.222	0.49	0 U	171	7.09	0 U	26.8	3.6
	EM27	7/9/2020	N	Qal	33.8 - 38.3	5.541	0.79	--	123.1	8.65	--	27.8	8.72
	EM28	8/19/2020	N	Qal	33.8 - 38.3	4.454	0.65	0 U	234.6	7.09	0 U	25.5	4.9
	EM29	10/16/2020	N	Qal	33.8 - 38.3	5.074	0.55	0 U	95.1	7.18	0 U	23.7	5.9
	EM30	12/9/2020	N	Qal	33.8 - 38.3	3.263	5.59	--	56.3	7.31	--	23.2	9.1
	EM31	2/3/2021	N	Qal	33.8 - 38.3	4.823	0.89	0 U	288	7.26	0 U	25.3	14.9
	EM32	3/31/2021	N	Qal	33.8 - 38.3	4.823	0.89	--	288.0	7.26	--	25.3	14.9
	EM33	6/4/2021	N	Qal	33.8 - 38.3	3.869	0.12	0.0 U	102.6	7.02	0.0 U	27.4	6.6
	EM34	7/22/2021	N	Qal	33.8 - 38.3	6.037	0.21	0.0 U	30.7	6.87	0.0 U	27.8	4.7
	EM35	9/16/2021	N	Qal	33.8 - 38.3	6.245	0.25	0.0 U	162.1	6.90	0.0 U	25.1	17.3
	EM36	12/3/2021	N	Qal	33.8 - 38.3	6.129	1.00	0.0 U	52.1	6.91	0.0 U	22.1	9.5
SWFTS-MW08A	BL01	3/30/2017	N	Qal	20.2 - 34.8	7.384	0.25	--	54.3	6.93	--	--	9.21
	EM01	9/20/2017	N	Qal	20.2 - 34.8	6.764	0.41	--	43.4	7.01	--	--	1.40
	EM02	9/26/2017	N	Qal	20.2 - 34.8	6.454	0.27	--	-243.7	6.88	--	--	0.31
	EM03	10/5/2017	N	Qal	20.2 - 34.8	6.493	4.16	--	110.1	6.90	--	--	0.68
	EM04	10/10/2017	N	Qal	20.2 - 34.8	6.660	44.01 E	0.0 U	403	1.17 E	0.0 U	--	0.3
	EM05	10/23/2017	N	Qal	20.2 - 34.8	7.298	1.49	--	63.3	7.28	--	--	0.0
	EM06	11/15/2017	N	Qal	20.2 - 34.8	6.490	0.60	0.0 U	92.8	7.16	0.00 U	--	10.98
	EM07	12/14/2017	N	Qal	20.2 - 34.8	6.694	0.11	0.0 U	-92.1	7.87	0.00 U	--	1.91
	EM08	2/22/2018	N	Qal	20.2 - 34.8	6.260	5.05	0.0 U	184.0	8.15 E	0.0 U	--	0.0
	EM09	3/29/2018	N	Qal	20.2 - 34.8	6.350	2.61	--	308.0	7.24	--	--	0.10
	EM10	5/3/2018	N	Qal	20.2 - 34.8	6.752	0.37	--	112.1	7.04	--	23.31	4.65
	EM11	7/11/2018	N	Qal	20.2 - 34.8	5.84	1.54	0 U	71	7.23	0 U	24.12	0

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW08A	EM13	8/16/2018	N	Qal	20.2 - 34.8	6.039	0.63	--	-15.2	7.23	--	26.15	5.01
	EM14	9/12/2018	N	Qal	20.2 - 34.8	5.210	0.77	--	-51.1	7.63	--	25.91	0.43
	EM15	10/10/2018	N	Qal	20.2 - 34.8	4.892	0.09	0 U	-36.4	8.33 E	0 U	25.44	0
	EM16	1/2/2019	N	Qal	20.2 - 34.8	5.114	1.23	--	101.4	7.08	--	20.01	3.03
	EM17	2/28/2019	N	Qal	20.2 - 34.8	5.300	0.40	0.0 U	-17.7	7.10	0.0 U	23.27	0.05
	EM18	4/12/2019	N	Qal	20.2 - 34.8	4.549	0.74	--	119.1	7.03	--	21.94	0.41
	EM19	5/22/2019	N	Qal	20.2 - 34.8	4.812	1.30	0.0 U	146.9	7.04	0.0 U	23.5	9.2
	EM20	7/1/2019	N	Qal	20.2 - 34.8	4.319	0.55	--	121.3	7.15	--	27.3	9.5
	EM21	8/15/2019	N	Qal	20.2 - 34.8	4.783	0.45	0 U	102.5	7.22	0 U	25.6	7.5
	EM22	11/7/2019	N	Qal	20.2 - 34.8	5.026	0.76	0 U	203.8	7.17	0 U	23.9	1.6
	EM23	12/19/2019	N	Qal	20.2 - 34.8	4.849	1.09	--	91.0	7.15	--	22.7	0.83
	EM24	1/28/2020	N	Qal	20.2 - 34.8	5.374	0.76	0 U	119.7	7.15	0 U	22.9	1.78
	EM25	3/12/2020	N	Qal	20.2 - 34.8	5.577	2.52	--	121.7	7.04	--	22.7	0
	EM26	4/29/2020	N	Qal	20.2 - 34.8	5.849	0.73	0 U	106.1	7.09	0 U	25.6	4.7
	EM27	7/8/2020	N	Qal	20.2 - 34.8	5.742	0.93	--	59.1	7.28	--	25.9	5.06
	EM28	8/17/2020	N	Qal	20.2 - 34.8	4.993	0.63	0 U	62.7	6.96	0 U	26.3	5.5
	EM29	10/16/2020	N	Qal	20.2 - 34.8	5.945	1.35	0 U	191.7	7.21	0 U	24.3	4.4
	EM30	12/9/2020	N	Qal	20.2 - 34.8	3.808	1.99	--	66.3	7.12	--	22.6	0
	EM31	2/3/2021	N	Qal	20.2 - 34.8	5.277	1	0 U	271.5	7.13	0 U	23.4	5.7
	EM32	3/31/2021	N	Qal	20.2 - 34.8	5.277	1.00	--	271.5	7.13	--	23.4	5.7
	EM33	6/4/2021	N	Qal	20.2 - 34.8	4.142	0.56	0.0 U	455.1	7.20	0.0 U	24.5	1.8
	EM34	7/22/2021	N	Qal	20.2 - 34.8	4.891	0.54	0.0 U	89.2	7.08	0.0 U	24.4	2.6
	EM35	9/16/2021	N	Qal	20.2 - 34.8	6.484	0.58	0.0 U	213.8	6.97	0.0 U	25.2	-1.2
	EM36	12/2/2021	N	Qal	20.2 - 34.8	5.151	0.93	0.0 U	150.9	6.99	0.0 U	22.6	3.0
SWFTS-MW08C	BL01	3/28/2017	N	UMCf	49.9 - 69.5	8.322	0.08	--	-119.4	7.05	--	--	72.60
	EM07	12/14/2017	N	UMCf	49.9 - 69.5	8.915	-0.06 E	0.0 U	-120.8	7.31	0.00 U	--	45.30
	EM26	4/29/2020	N	UMCf	49.9 - 69.5	6.64	2.1	--	181.3	7.09	--	23.8	0.5
SWFTS-MW09A	BL01	3/29/2017	N	Qal	19.3 - 28.9	7.233	0.33	--	-161.2	7.65	--	--	12.00
	EM01	9/21/2017	N	Qal	19.3 - 28.9	7.206	0.57	--	-202.7	7.03	--	--	10.51
	EM02	9/28/2017	N	Qal	19.3 - 28.9	7.384	0.26	--	-150.4	7.19	--	--	1.16
	EM03	10/4/2017	N	Qal	19.3 - 28.9	6.996	4.54	--	-125.1	7.42	--	--	26.30
	EM04	10/11/2017	N	Qal	19.3 - 28.9	7.039	0.12	0.0 U	-187.5	6.81	0.0 U	--	1.72
	EM05	10/25/2017	N	Qal	19.3 - 28.9	7.496	0.31	--	-99.3	7.38	--	--	1.49
	EM06	11/16/2017	N	Qal	19.3 - 28.9	6.104	1.88	0.00 U	11.8	7.03	0.00 U	--	1.50
	EM07	12/12/2017	N	Qal	19.3 - 28.9	7.030	0.29	0.00 U	-10.1	6.94	0.00 U	--	5.00
	EM08	2/20/2018	N	Qal	19.3 - 28.9	6.260	4.16	0.00 U	85.0	7.50	0.00 U	--	0.90
	EM09	3/27/2018	N	Qal	19.3 - 28.9	6.270	2.12	--	209	7.14	--	--	4.2
	EM10	5/1/2018	N	Qal	19.3 - 28.9	6.34	0.00	--	221	6.95	--	25.04	3.0
	EM11	7/12/2018	N	Qal	19.3 - 28.9	6.442	1.86	0 U	21.6	6.73	0 U	25.79	1.59
	EM12	7/27/2018	N	Qal	19.3 - 28.9	5.93	5.97	--	-80.10	6.96	--	26.77	4.27
	EM13	8/14/2018	N	Qal	19.3 - 28.9	18.2 E	2.83	--	131	6.99	--	21.51	3.7
	EM14	9/11/2018	N	Qal	19.3 - 28.9	4.520	1.72	--	2.6	7.54	--	24.53	2.62
	EM15	10/9/2018	N	Qal	19.3 - 28.9	5.558	1.3	0 U	-125.2	7.64	0 U	20.97	0.01
	EM16	12/27/2018	N	Qal	19.3 - 28.9	6.213	0.83	--	-18.4	6.99	--	22.58	0.83
	EM17	2/26/2019	N	Qal	19.3 - 28.9	4.885	0.43	0.0 U	-69.8	7.00	0.0 U	23.20	0.02
	EM18	4/10/2019	N	Qal	19.3 - 28.9	4.529	0.72	--	101.3	6.92	--	23.1	7.3
	EM19	5/22/2019	N	Qal	19.3 - 28.9	5.431	0.47	0.0 U	132.7	6.89	0.0 U	23.6	13.1
	EM20	7/2/2019	N	Qal	19.3 - 28.9	5.027	0.45	--	-13.8	6.87	--	25.4	9.5
	EM21	8/12/2019	N	Qal	19.3 - 28.9	5.195	0.44	0 U	88.3	6.98	0 U	25.4	7.8
	EM22	11/5/2019	N	Qal	19.3 - 28.9	4.888	0.70	0 U	203.5	6.99	0.0 U	23.6	4.1
	EM23	12/18/2019	N	Qal	19.3 - 28.9	4.716	0.76	--	51.9	7.03	--	22.9	9.50

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW09A	EM24	1/28/2020	N	Qal	19.3 - 28.9	5.015	0.84	0 U	117.3	7.06	0 U	22.9	9.95
	EM25	3/10/2020	N	Qal	19.3 - 28.9	4.74	2.34	--	199.9	6.96	--	23	1
	EM26	4/28/2020	N	Qal	19.3 - 28.9	5.809	0.36	0 U	151	7.01	0 U	26.6	25.7
	EM27	7/6/2020	N	Qal	19.3 - 28.9	5.953	0.7	--	219.3	6.89	--	27.0	35.3
	EM28	8/18/2020	N	Qal	19.3 - 28.9	5.226	0.84	0 U	84.4	6.81	0 U	24.9	5.1
	EM29	10/13/2020	N	Qal	19.3 - 28.9	4.2	0.28	0 U	118.9	7.35	0.01	24.6	7.61
	EM30	12/9/2020	N	Qal	19.3 - 28.9	4.099	1.96	--	102.8	7.01	--	22.2	0.2
	EM31	2/3/2021	N	Qal	19.3 - 28.9	5.072	0.65	0 U	257.3	7.36	0 U	21.9	7.2
	EM32	4/1/2021	N	Qal	19.3 - 28.9	5.072	0.65	--	257.3	7.36	--	21.9	7.2
	EM33	6/1/2021	N	Qal	19.3 - 28.9	4.804	1.05	0.0 U	103.8	6.91	0.0 U	26.7	5.1
	EM34	7/20/2021	N	Qal	19.3 - 28.9	4.050	0.39	0.0 U	194.6	6.97	0.0 U	25.2	9.0
	EM35	9/15/2021	N	Qal	19.3 - 28.9	5.793	0.29	0.0 U	164.8	6.81	0.0 U	25.6	9.4
	EM36	12/2/2021	N	Qal	19.3 - 28.9	6.468	1.54	0.0 U	119.4	6.81	0.0 U	24.0	21.3
SWFTS-MW09B	BL01	3/29/2017	N	Qal	34.4 - 39.0	7.167	0.31	--	77.4	7.18	--	--	23.00
	EM01	9/21/2017	N	Qal	34.4 - 39.0	7.053	1.81	--	-79.0	7.20	--	--	15.73
	EM02	9/28/2017	N	Qal	34.4 - 39.0	12.265 E	0.38	--	-229.0	6.85	--	--	26.40
	EM03	10/4/2017	N	Qal	34.4 - 39.0	6.907	3.71	--	-149.6	7.06	--	--	5.53
	EM04	10/11/2017	N	Qal	34.4 - 39.0	6.878	0.12	0.5	-193.0	6.64	0.0 U	--	2.79
	EM05	10/25/2017	N	Qal	34.4 - 39.0	7.369	0.38	--	-144.1	7.07	--	--	1.60
	EM06	11/16/2017	N	Qal	34.4 - 39.0	6.381	0.77	0.00 U	-75.4	6.74	0.00 U	--	4.98
	EM07	12/12/2017	N	Qal	34.4 - 39.0	6.989	0.07	0.00 U	-63.1	6.75	0.00 U	--	4.70
	EM08	2/20/2018	N	Qal	34.4 - 39.0	6.230	5.47	0.00 U	7.0	6.96	0.00 U	--	4.40
	EM09	3/27/2018	N	Qal	34.4 - 39.0	6.380	2.09	--	204	7.17	--	--	0.80
	EM10	4/30/2018	N	Qal	34.4 - 39.0	6.18	0.00	--	103	7.20	--	26.18	83.2
	EM11	7/12/2018	N	Qal	34.4 - 39.0	6.648	1.58	0 U	14.4	6.78	0 U	25.11	3.18
	EM12	7/26/2018	N	Qal	34.4 - 39.0	5.87	1.16	--	152.00	4.30	--	26.21	1.72
	EM13	8/14/2018	N	Qal	34.4 - 39.0	18.7 E	2.99	--	117	6.84	--	21.48	9.8
	EM14	9/11/2018	N	Qal	34.4 - 39.0	4.720	1.12	--	-23.9	7.64	--	26.62	2.21
	EM15	10/9/2018	N	Qal	34.4 - 39.0	5.963	0.58	0 U	-130.6	7.72	0 U	24.08	0
	EM16	12/28/2018	N	Qal	34.4 - 39.0	5.242	1.3	--	178.9	6.99	--	21.62	7.02
	EM17	2/28/2019	N	Qal	34.4 - 39.0	5.307	0.50	0.0 U	56.6	6.99	0.0 U	22.80	0.53
	EM18	4/10/2019	N	Qal	34.4 - 39.0	4.667	2.69	--	118.1	7.11	--	23.6	8.6
	EM19	5/22/2019	N	Qal	34.4 - 39.0	5.461	0.70	0.0 U	143.2	7.04	0.0 U	23.7	7.3
	EM20	7/2/2019	N	Qal	34.4 - 39.0	5.039	0.70	--	7.8	7.00	--	26.2	7.0
	EM21	8/12/2019	N	Qal	34.4 - 39.0	5.237	0.53	0 U	188.4	7.07	0 U	25.8	7.7
	EM22	11/5/2019	N	Qal	34.4 - 39.0	4.938	1.48	0.0 U	221.5	7.07	0 U	23.9	2.7
	EM23	12/18/2019	N	Qal	34.4 - 39.0	4.789	0.87	--	58.9	7.12	--	22.9	3.20
	EM24	1/28/2020	N	Qal	34.4 - 39.0	5.174	0.54	0 U	98.8	7.11	0 U	23.2	5.61
	EM25	3/10/2020	N	Qal	34.4 - 39.0	4.853	2.33	--	197.4	7.02	--	22.8	9.3
	EM26	4/28/2020	N	Qal	34.4 - 39.0	6.238	0.85	0 U	157.3	7.07	0 U	29	11.9
	EM27	7/7/2020	N	Qal	34.4 - 39.0	6.102	0.7	--	169.8	7.10	--	24.8	12.5
	EM28	8/18/2020	N	Qal	34.4 - 39.0	5.586	0.71	0 U	83.7	6.91	0 U	26.4	4.9
	EM29	10/13/2020	N	Qal	34.4 - 39.0	4.284	0.71	0 U	106.5	7.4	0 U	24.8	4.13
	EM30	12/8/2020	N	Qal	34.4 - 39.0	4.123	0.34	--	151.5	7.16	--	20.9	0.57
	EM31	2/1/2021	N	Qal	34.4 - 39.0	5.233	0.55	0 U	316.1	7.48	0 U	22.8	3
	EM32	4/1/2021	N	Qal	34.4 - 39.0	5.233	0.55	--	316.1	7.48	--	22.8	3.0
	EM33	6/2/2021	N	Qal	34.4 - 39.0	3.913	0.77	0.0 U	112.4	7.15	0.0 U	24.3	4.9
	EM34	7/20/2021	N	Qal	34.4 - 39.0	4.170	0.46	0.0 U	80.1	7.06	0.0 U	25.5	4.5
	EM35	9/15/2021	N	Qal	34.4 - 39.0	5.962	0.25	0.0 U	168.9	6.89	0.0 U	25.8	3.7
	EM36	12/2/2021	N	Qal	34.4 - 39.0	6.661	1.84	0.0 U	65.2	6.90	0.0 U	24.0	7.6
SWFTS-MW10A	BL01	3/31/2017	N	Qal	20.4 - 35.0	6.348	2.70	--	174.4	6.64	--	--	10.05

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW10A	EM01	9/21/2017	N	Qal	20.4 - 35.0	4.561	0.42	--	-264.1	6.98	--	--	11.31
	EM02	9/27/2017	N	Qal	20.4 - 35.0	4.504	5.10	--	-182.8	7.14	--	--	162
	EM03	10/4/2017	N	Qal	20.4 - 35.0	4.599	4.56	--	-208.2	7.03	--	--	28.1
	EM04	10/12/2017	N	Qal	20.4 - 35.0	4.869	0.15	0.00 U	-263.0	6.72	0.12	--	8.40
	EM05	10/24/2017	N	Qal	20.4 - 35.0	5.301	1.38	--	-268.8	7.20	--	--	4.00
	EM06	11/16/2017	N	Qal	20.4 - 35.0	4.790	0.60	0.00 U	-236.1	7.12	1.60	--	3.54
	EM07	12/12/2017	N	Qal	20.4 - 35.0	4.720	0.53	0.00 U	-258.0	8.35 E	0.16	--	1.45
	EM08	2/20/2018	N	Qal	20.4 - 35.0	6.569	0.44	0.50	-262.0	6.96	0.00 U	--	2.30
	EM09	3/26/2018	N	Qal	20.4 - 35.0	7.166	1.15	--	59.3	6.86	--	23.48	2.99
	EM10	5/1/2018	N	Qal	20.4 - 35.0	6.617	0.83	--	-154.9	7.10	--	21.39	1.73
	EM11	7/11/2018	N	Qal	20.4 - 35.0	6.94	2.42	0 U	75	7.09	0 U	25.95	0
	EM12	7/26/2018	N	Qal	20.4 - 35.0	5.97	0.55	--	7.20	6.81	--	25.22	0.60
	EM13	8/14/2018	N	Qal	20.4 - 35.0	19.1 E	2.59	--	-5	7.01	--	21.41	37.8
	EM14	9/10/2018	N	Qal	20.4 - 35.0	6.710	0.37	--	-177.5	7.08	--	28.43 E	1.33
	EM15	10/9/2018	N	Qal	20.4 - 35.0	6.333	0.86	0 U	-126.1	7.64	0 U	25.24	0
	EM16	12/20/2018	N	Qal	20.4 - 35.0	7.198	0.7	--	-86.4	6.95	--	23.16	2.53
	EM17	2/26/2019	N	Qal	20.4 - 35.0	5.705	0.37	0.0 U	31.1	6.89	0.0 U	23.58	1.62
	EM18	4/10/2019	N	Qal	20.4 - 35.0	5.825	0.61	--	68.5	6.85	--	23.09	3.97
	EM19	5/21/2019	N	Qal	20.4 - 35.0	5.558	0.46	0.0 U	-107.7	6.86	0.0 U	24.4	8.3
	EM20	7/1/2019	N	Qal	20.4 - 35.0	5.602	5.15	--	59.8	7.13	--	25.5	20.0
	EM21	8/12/2019	N	Qal	20.4 - 35.0	5.110	0.38	0 U	30.0	6.92	0 U	25.3	8.8
	EM22	11/6/2019	N	Qal	20.4 - 35.0	5.802	0.49	0 U	67.2	6.81	0 U	23.5	33.5
	EM23	12/17/2019	N	Qal	20.4 - 35.0	5.436	0.69	--	-38.8	6.84	--	23.6	174.62
	EM24	1/28/2020	N	Qal	20.4 - 35.0	5.997	0.55	0 U	82.1	6.93	0 U	24.1	4.57
	EM25	3/13/2020	N	Qal	20.4 - 35.0	6.665	1.55	--	129.9	6.9	--	23.4	3.4
	EM26	4/29/2020	N	Qal	20.4 - 35.0	5.357	2.04	0 U	146	6.88	0 U	25.1	5.9
	EM27	7/7/2020	N	Qal	20.4 - 35.0	6.745	0.7	--	174.7	6.94	--	26.1	151.6
	EM28	8/18/2020	N	Qal	20.4 - 35.0	6.234	0.56	0 U	79.4	6.8	0 U	26.8	3.8
	EM29	10/14/2020	N	Qal	20.4 - 35.0	6.412	0.36	0 U	172.4	7.42	0 U	24.7	7.48
	EM30	12/8/2020	N	Qal	20.4 - 35.0	4.973	0.36	--	184.5	7	--	23.1	0.64
	EM31	2/1/2021	N	Qal	20.4 - 35.0	6.521	0.57	0 U	332.1	7.4	0 U	23.8	6
	EM32	4/1/2021	N	Qal	20.4 - 35.0	6.521	0.57	--	332.1	7.40	--	23.8	6.0
	EM33	6/4/2021	N	Qal	20.4 - 35.0	4.587	0.73	0.0 U	121.4	6.94	0.0 U	26.7	9.5
	EM34	7/20/2021	N	Qal	20.4 - 35.0	4.743	0.16	0.0 U	82.2	6.94	0.0 U	26.3	7.0
	EM35	9/15/2021	N	Qal	20.4 - 35.0	6.239	0.18	0.0 U	167.3	6.89	0.0 U	26.7	9.6
	EM36	11/30/2021	N	Qal	20.4 - 35.0	5.838	1.10	0.0 U	99.6	6.89	0.0 U	23.6	4.4
SWFTS-MW10C	BL01	3/28/2017	N	UMCf	43.5 - 63.1	8.249	0.09	--	-140.6	7.08	--	--	56.60
	EM07	12/12/2017	N	UMCf	43.5 - 63.1	7.62	0.51	0.0 U	-61	7.82	0.0 U	--	163
	EM26	5/1/2020	N	UMCf	43.5 - 63.1	7.128	2.11	--	92.2	7.04	--	23.5	65.2
SWFTS-MW11	BL02	7/12/2017	N	Qal	14.8 - 39.6	6.340	4.30	0.0 U	168	7.27	0.00 U	--	0.70
	EM01	9/20/2017	N	Qal	14.8 - 39.6	7.346	1.86	--	39.6	6.92	--	--	4.05
	EM02	9/26/2017	N	Qal	14.8 - 39.6	7.207	1.47	--	14.0	6.87	--	--	2.51
	EM03	10/3/2017	N	Qal	14.8 - 39.6	7.063	0.93	--	-59.7	6.89	--	--	4.91
	EM04	10/11/2017	N	Qal	14.8 - 39.6	7.494	1.15	0.0 U	67.4	6.86	0.0 U	--	1.71
	EM05	10/24/2017	N	Qal	14.8 - 39.6	8.177	2.32	--	-170.6	7.34	--	--	2.95
	EM06	11/16/2017	N	Qal	14.8 - 39.6	7.480	0.95	0.0 U	129.2	7.17	0.00 U	--	33.10
	EM07	12/14/2017	N	Qal	14.8 - 39.6	6.770	1.78	0.0 U	31.0	7.62	0.00 U	--	5.60
	EM08	2/21/2018	N	Qal	14.8 - 39.6	8.080	7.35	0.0 U	163.0	7.93	0.00 U	--	19.60
	EM09	3/28/2018	N	Qal	14.8 - 39.6	6.950	4.05	--	282	7.34	--	--	5.5
	EM10	5/1/2018	N	Qal	14.8 - 39.6	7.307	5.35	--	-75.5	7.56	--	24.41	4.05
	EM11	7/12/2018	N	Qal	14.8 - 39.6	6.79	5.48	0 U	125	7.58	0 U	22.94	0

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW11	EM13	8/16/2018	N	Qal	14.8 - 39.6	6.85	2.83	--	168	7.65	--	20.79	4.9
	EM14	9/12/2018	N	Qal	14.8 - 39.6	6.800	4.18	--	-24.3	7.69	--	27.70 E	18.33
	EM15	10/11/2018	N	Qal	14.8 - 39.6	5.71	3.59	0 U	-40.4	8.3 E	0 U	25.14	2.27
	EM16	1/2/2019	N	Qal	14.8 - 39.6	5.954	7.08	--	112.5	7.19	--	21.19	3.22
	EM17	3/1/2019	N	Qal	14.8 - 39.6	5.998	5.23	0.0 U	143.3	7.24	0.0 U	23.87	1.17
	EM18	4/12/2019	N	Qal	14.8 - 39.6	5.809	5.50	--	202.5	7.18	--	23.5	2.7
	EM19	5/22/2019	N	Qal	14.8 - 39.6	5.598	5.09	0.0 U	79.0	7.22	0.0 U	24.5	2.3
	EM20	7/3/2019	N	Qal	14.8 - 39.6	5.19	5.03	--	175.2	7.15	--	25.1	3.8
	EM21	8/15/2019	N	Qal	14.8 - 39.6	5.471	4.95	0 U	157.4	7.35	0 U	25.3	4.7
	EM22	11/7/2019	N	Qal	14.8 - 39.6	5.266	5.79	0 U	-23.4	7.29	0 U	24.7	5.1
	EM23	12/17/2019	N	Qal	14.8 - 39.6	5.242	5.91	--	199.2	7.27	--	23.1	1.34
	EM24	1/28/2020	N	Qal	14.8 - 39.6	5.527	6.54	0 U	142.9	7.29	0 U	24.1	3.47
	EM25	3/13/2020	N	Qal	14.8 - 39.6	5.989	6.44	--	190.8	7.18	--	21.5	1.6
	EM26	4/30/2020	N	Qal	14.8 - 39.6	5.836	5.03	0 U	90.9	7.24	0 U	24.7	4.4
	EM27	7/7/2020	N	Qal	14.8 - 39.6	6.642	4.6	--	184.6	7.33	--	30.4	4.0
	EM28	8/18/2020	N	Qal	14.8 - 39.6	6.129	4.38	0 U	116.3	7.17	0 U	27.3	1.8
	EM29	10/16/2020	N	Qal	14.8 - 39.6	6.07	5.04	0 U	56.2	7.66	0 U	25	2.93
	EM30	12/8/2020	N	Qal	14.8 - 39.6	4.537	5.1	--	163.9	7.39	--	23.2	0.21
	EM31	2/1/2021	N	Qal	14.8 - 39.6	5.78	5.84	0 U	339	7.77	0 U	24.8	2.2
	EM32	4/1/2021	N	Qal	14.8 - 39.6	5.780	5.84	--	339.0	7.77	--	24.8	2.2
	EM33	6/4/2021	N	Qal	14.8 - 39.6	4.026	5.26	0.0 U	83.8	8.09	0.0 U	26.9	2.8
	EM34	7/22/2021	N	Qal	14.8 - 39.6	5.557	5.55	0.0 U	89.3	7.17	0.0 U	26.3	1.4
	EM35	9/16/2021	N	Qal	14.8 - 39.6	6.247	5.26	0.0 U	166.6	7.24	0.0 U	26.5	-1.5
	EM36	12/3/2021	N	Qal	14.8 - 39.6	6.405	5.81	0.0 U	94.8	7.24	0.0 U	23.4	2.6
SWFTS-MW12	BL02	7/13/2017	N	Qal	15.8 - 40.6	6.850	7.81	0.0 U	181	7.24	0.0 U	--	0.90
	EM01	9/19/2017	N	Qal	15.8 - 40.6	6.890	4.36	--	81.0	7.22	--	--	21.00
	EM02	9/26/2017	N	Qal	15.8 - 40.6	8.544	2.98	--	43.9	7.29	--	--	1.35
	EM03	10/3/2017	N	Qal	15.8 - 40.6	7.361	2.77	--	45.8	7.04	--	--	0.00
	EM04	10/11/2017	N	Qal	15.8 - 40.6	7.349	1.59	0.0 U	-32.1	6.80	0.0 U	--	1.58
	EM05	10/24/2017	N	Qal	15.8 - 40.6	7.887	5.09	--	24.0	7.50	--	--	0.69
	EM06	11/14/2017	N	Qal	15.8 - 40.6	7.330	2.52	0.0 U	93.9	7.19	0.00 U	--	5.22
	EM07	12/14/2017	N	Qal	15.8 - 40.6	6.400	4.37	0.0 U	42.0	7.70	0.00 U	--	0.27
	EM08	2/22/2018	N	Qal	15.8 - 40.6	6.450	5.95	0.0 U	233.0	8.14 E	0.00 U	--	6.10
	EM09	3/28/2018	N	Qal	15.8 - 40.6	5.880	4.30	--	275	7.43	--	--	15.4
	EM10	5/3/2018	N	Qal	15.8 - 40.6	7.274	2.24	--	83.7	7.21	--	23.84	1.07
	EM11	7/12/2018	N	Qal	15.8 - 40.6	6.57	5.35	0 U	135	7.61	0 U	21.64	0
	EM13	8/16/2018	N	Qal	15.8 - 40.6	6.8	2.75	--	156	7.90	--	20.38	0.2
	EM14	9/12/2018	N	Qal	15.8 - 40.6	6.350	3.46	--	-29.5	7.73	--	26.06	3.46
	EM15	10/11/2018	N	Qal	15.8 - 40.6	5.484	5.11	0 U	-42.6	8.49 E	0 U	24.44	91.2
	EM16	1/2/2019	N	Qal	15.8 - 40.6	6.394	4.35	--	110	7.16	--	22.92	6.98
	EM17	2/28/2019	N	Qal	15.8 - 40.6	6.127	3.64	0.0 U	23.3	7.18	0.0 U	23.71	20.3
	EM18	4/12/2019	N	Qal	15.8 - 40.6	5.895	3.50	--	117.1	7.10	--	23.64	18.15
	EM19	5/22/2019	N	Qal	15.8 - 40.6	6.361	3.81	0.0 U	153.0	7.08	0.0 U	23.3	10.6
	EM20	7/5/2019	N	Qal	15.8 - 40.6	5.875	3.56	--	203.5	7.23	--	25.8	9.5
	EM21	8/16/2019	N	Qal	15.8 - 40.6	6.712	3.35	0 U	207.2	7.31	0 U	24.3	7.9
	EM22	11/7/2019	N	Qal	15.8 - 40.6	6.425	0.29	2.0	-293.6	6.29	1.4	23.6	20.5
	EM23	12/20/2019	N	Qal	15.8 - 40.6	5.150	0.84	--	-227.1	6.83	--	22.9	61.23
	EM24	1/29/2020	N	Qal	15.8 - 40.6	4.870	0.46	0 U	-225.6	6.83	0.44	22.6	42.46
	EM25	3/12/2020	N	Qal	15.8 - 40.6	5.046	2.19	--	-85.9	6.36	--	22.8	34.9
	EM26	4/30/2020	N	Qal	15.8 - 40.6	4.568	1.83	0.5	-253.4	6.52	0.02	25.2	9
	EM27	7/7/2020	N	Qal	15.8 - 40.6	5.563	0.4	--	-333.7	6.66	--	26.8	90.0

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW12	EM28	8/18/2020	N	Qal	15.8 - 40.6	5.67	0.43	0.5 U	-330	6.5	0.56	28.6	8.6
	EM29	10/16/2020	N	Qal	15.8 - 40.6	5.836	0.31	0.2	-125.9	6.88	0.56	23.6	56.17
	EM30	12/8/2020	N	Qal	15.8 - 40.6	4.886	0.25	--	-216.9	6.58	--	23.6	8.32
	EM31	2/2/2021	N	Qal	15.8 - 40.6	5.943	0.51	1	-79.1	7.16	0 U	24.2	30.6
	EM32	4/1/2021	N	Qal	15.8 - 40.6	5.943	0.51	--	-79.1	7.16	--	24.2	30.6
	EM33	6/4/2021	N	Qal	15.8 - 40.6	4.468	0.67	0.0 U	61.7	6.86	0.0 U	26.2	54.1
	EM34	7/22/2021	N	Qal	15.8 - 40.6	5.379	0.35	0.0 U	77.9	6.57	0.0 U	26.3	6.6
	EM35	9/15/2021	N	Qal	15.8 - 40.6	5.668	0.55	0.0 U	45.1	6.57	0.0 U	26.3	7.1
	EM36	12/2/2021	N	Qal	15.8 - 40.6	5.122	1.44	0.0 U	-3.1	6.82	0.0 U	22.7	27.1
SWFTS-MW13	BL02	7/12/2017	N	Qal	17.8 - 47.6	6.280	4.72	0.0 U	140	7.39	0.00 U	--	5.80
	EM01	9/20/2017	N	Qal	17.8 - 47.6	7.337	5.20	--	65.5	7.11	--	--	18.62
	EM02	9/26/2017	N	Qal	17.8 - 47.6	9.197	3.17	--	72.5	7.25	--	--	4.90
	EM03	10/3/2017	N	Qal	17.8 - 47.6	7.749	5.57	--	93.9	7.11	--	--	4.55
	EM04	10/10/2017	N	Qal	17.8 - 47.6	7.938	2.40	0.0 U	-42.6	7.12	0.0 U	--	0.86
	EM05	10/24/2017	N	Qal	17.8 - 47.6	8.340	6.62	--	54.4	7.51	--	--	34.1
	EM06	11/15/2017	N	Qal	17.8 - 47.6	7.790	3.22	0.0 U	100.4	7.32	0.0 U	--	31.5
	EM07	12/14/2017	N	Qal	17.8 - 47.6	6.980	3.79	0.0 U	45.0	7.56	0.00 U	--	1.81
	EM08	2/22/2018	N	Qal	17.8 - 47.6	7.280	4.95	0.0 U	192.0	8.18 E	0.00 U	--	24.80
	EM09	3/26/2018	N	Qal	17.8 - 47.6	7.300	2.98	0 U	-20.1	7.08	0 U	22.89	9.51
	EM10	5/3/2018	N	Qal	17.8 - 47.6	6.556	8.17 E	--	10.5	7.50	--	23.57	26.4
	EM11	7/12/2018	N	Qal	17.8 - 47.6	7.03	6.45	0 U	153	7.55	0 U	20.92	0
	EM13	8/16/2018	N	Qal	17.8 - 47.6	7.1	2.95	--	156	7.96	--	21.22	0.2
	EM14	9/13/2018	N	Qal	17.8 - 47.6	5.390	3.44	--	-20	7.63	--	25.55	7.72
	EM15	10/11/2018	N	Qal	17.8 - 47.6	5.998	3.49	0 U	-36.2	8.29 E	0 U	24.33	5.42
	EM16	1/2/2019	N	Qal	17.8 - 47.6	6.945	6.89	--	111.2	7.19	--	20.92	4.87
	EM17	2/28/2019	N	Qal	17.8 - 47.6	6.729	4.02	0.0 U	38.1	7.15	0.0 U	23.32	2.29
	EM18	4/12/2019	N	Qal	17.8 - 47.6	5.703	5.30	--	117.1	7.18	--	21.70	4.61
	EM19	5/22/2019	N	Qal	17.8 - 47.6	6.520	5.32	0.0 U	158.1	7.14	0.0 U	23.0	18.6
	EM20	7/5/2019	N	Qal	17.8 - 47.6	6.104	5.15	--	199.3	7.25	--	26.6	9.3
	EM21	8/16/2019	N	Qal	17.8 - 47.6	7.248	4.55	0 U	189.9	7.31	0 U	24.8	7.0
	EM22	11/6/2019	N	Qal	17.8 - 47.6	7.562	3.81	0 U	36.3	7.13	0.0 U	25.1	5.4
	EM23	12/20/2019	N	Qal	17.8 - 47.6	6.760	4.20	--	31.8	7.25	--	22.1	4.49
	EM24	1/29/2020	N	Qal	17.8 - 47.6	7.069	3.83	0 U	-0.4	7.29	0 U	22.3	2.36
	EM25	3/12/2020	N	Qal	17.8 - 47.6	7.149	5.14	--	182	7.16	--	23.1	2.4
	EM26	4/30/2020	N	Qal	17.8 - 47.6	6.837	4.78	0 U	130.3	7.14	0 U	24.1	1.2
	EM27	7/10/2020	N	Qal	17.8 - 47.6	7.964	4.2	--	120.3	7.23	--	27.4	6.0
	EM28	8/18/2020	N	Qal	17.8 - 47.6	7.666	4.25	0 U	77	7.11	0 U	27.3	2.1
	EM29	10/15/2020	N	Qal	17.8 - 47.6	7.841	4.43	0 U	111.1	7.51	0 U	25.9	3.97
	EM30	12/8/2020	N	Qal	17.8 - 47.6	6.231	5.42	--	28.9	7.33	--	21.7	0.66
	EM31	2/2/2021	N	Qal	17.8 - 47.6	6.226	5.53	0 U	51.3	7.2	0 U	23.6	1.6
	EM32	3/31/2021	N	Qal	17.8 - 47.6	6.226	5.53	--	51.3	7.20	--	23.6	1.6
	EM33	6/4/2021	N	Qal	17.8 - 47.6	5.595	5.04	0.0 U	92.8	7.30	0.0 U	25.4	6.0
	EM34	7/22/2021	N	Qal	17.8 - 47.6	6.550	4.64	0.0 U	147.6	7.24	0.0 U	25.7	2.7
	EM35	9/15/2021	N	Qal	17.8 - 47.6	7.644	5.27	0.0 U	92.1	7.15	0.0 U	25.9	4.3
	EM36	12/2/2021	N	Qal	17.8 - 47.6	6.021	5.70	0.0 U	217.9	7.13	0.0 U	21.7	5.0
SWFTS-MW14	BL02	7/12/2017	N	Qal	16.8 - 36.6	8.300	0.65	0.0 U	166	7.08	0.00 U	--	0.00
	EM01	9/20/2017	N	Qal	16.8 - 36.6	8.357	0.39	--	-249.3	6.72	--	--	132
	EM02	9/26/2017	N	Qal	16.8 - 36.6	9.387	0.17	--	-220.7	6.82	--	--	58.2
	EM03	10/3/2017	N	Qal	16.8 - 36.6	7.104	0.19	--	-249.0	6.66	--	--	12.10
	EM04	10/11/2017	N	Qal	16.8 - 36.6	7.500	0.39	0.0 U	-77.0	4.24 E	0.0 U	--	70.3
	EM05	10/27/2017	N	Qal	16.8 - 36.6	7.623	0.60	--	-64.5	6.58	--	--	18.8

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW14	EM06	11/15/2017	N	Qal	16.8 - 36.6	7.510	0.83	1.0	-81.8	6.79	0.00 U	--	82.40
	EM07	12/12/2017	N	Qal	16.8 - 36.6	6.800	6.49	0.5	-65.0	7.86	0.08	--	17.20
	EM08	2/20/2018	N	Qal	16.8 - 36.6	7.980	3.12	1.0	-85.0	4.40 E	0.40	--	23.20
	EM09	3/26/2018	N	Qal	16.8 - 36.6	6.61	4.03	--	-194	7.24	--	19.66	32.3
	EM10	4/30/2018	N	Qal	16.8 - 36.6	7.256	0.45	--	-461.3	6.38	--	27.63 E	4.14
	EM11	7/10/2018	N	Qal	16.8 - 36.6	7.72	0.90	0 U	-364.6	6.62	0.1	31.22 E	25
	EM12	7/26/2018	N	Qal	16.8 - 36.6	6.78	2.26	--	-399.1	7.9	--	28.1 E	17.25
	EM13	8/14/2018	N	Qal	16.8 - 36.6	20.6 E	0.47	--	-366	6.81	--	22.30	27.5
	EM14	9/11/2018	N	Qal	16.8 - 36.6	5.300	0.25	--	-341	7.94	--	27.67 E	33.4
	EM15	10/9/2018	N	Qal	16.8 - 36.6	6.767	0.81	0 U	-396.4	8.5 E	0.2	25.77	5.32
	EM16	12/20/2018	N	Qal	16.8 - 36.6	7.142	0.46	--	-422.5	6.78	--	22.84	2.51
	EM17	2/26/2019	N	Qal	16.8 - 36.6	5.728	0.67	0.08	-309.9	6.76	0.0 U	22.96	5.19
	EM18	4/9/2019	N	Qal	16.8 - 36.6	6.016	0.65	--	-333.2	6.67	--	26.04	7.77
	EM19	5/21/2019	N	Qal	16.8 - 36.6	5.735	0.35	0.0 U	-327.1	6.70	0.44	24.8	89.0
	EM20	7/2/2019	N	Qal	16.8 - 36.6	5.448	0.35	--	-338.9	6.60	--	26.0	9.6
	EM21	8/13/2019	N	Qal	16.8 - 36.6	5.919	0.22	0 U	-331.5	6.64	0.08	26.9	2.9
	EM22	11/6/2019	N	Qal	16.8 - 36.6	5.932	0.21	0 U	-341.6	6.63	0.24	25.4	5.5
	EM23	12/17/2019	N	Qal	16.8 - 36.6	5.220	0.47	--	-291.7	6.74	--	23.9	69.23
	EM24	1/29/2020	N	Qal	16.8 - 36.6	5.300	0.55	0 U	-291.6	6.83	0.48	24.0	14.75
	EM25	3/13/2020	N	Qal	16.8 - 36.6	5.919	1.25	--	-280.6	6.75	--	23.4	9.9
	EM26	5/1/2020	N	Qal	16.8 - 36.6	5.211	1.94	0 U	-275.6	6.71	0 U	24.5	5
	EM27	7/7/2020	N	Qal	16.8 - 36.6	6.128	0.3	--	-313.8	6.73	--	27.3	159.3
	EM28	8/19/2020	N	Qal	16.8 - 36.6	5.613	0.58	0.5 U	-265.5	6.71	0.32	25.5	14
	EM29	10/14/2020	N	Qal	16.8 - 36.6	6.062	0.23	0.25	-268.8	7.26	0.56	25.9	55.49
	EM30	12/8/2020	N	Qal	16.8 - 36.6	4.623	0.39	--	-207	6.91	--	24	13.56
	EM31	2/2/2021	N	Qal	16.8 - 36.6	4.725	0.62	0 U	-102.5	6.86	0 U	24.2	4.6
	EM32	3/31/2021	N	Qal	16.8 - 36.6	4.725	0.62	--	-102.5	6.86	--	24.2	4.6
	EM33	6/4/2021	N	Qal	16.8 - 36.6	3.984	0.65	0.0 U	16.0	7.11	0.0 U	25.1	42.2
	EM34	7/21/2021	N	Qal	16.8 - 36.6	5.827	0.11	0.0 U	-78.6	6.90	0.0 U	26.7	6.0
	EM35	9/16/2021	N	Qal	16.8 - 36.6	5.581	0.51	0.0 U	-15.3	6.83	0.0 U	26.3	8.8
	EM36	12/3/2021	N	Qal	16.8 - 36.6	5.629	1.10	2.5	-83.7	6.90	0.2	22.5	92.0
SWFTS-MW15	BL02	7/13/2017	N	Qal	14.8 - 34.6	7.310	0.47	0.0 U	113.2	7.09	0.00 U	--	1000 >
	EM01	9/20/2017	N	Qal	14.8 - 34.6	7.231	0.27	--	46.0	7.01	--	--	39.1
	EM02	9/26/2017	N	Qal	14.8 - 34.6	8.523	0.30	--	14.8	7.14	--	--	119
	EM03	10/4/2017	N	Qal	14.8 - 34.6	6.648	0.38	--	-181.6	6.91	--	--	145
	EM04	10/10/2017	N	Qal	14.8 - 34.6	6.918	0.21	0.0 U	-33.1	7.06	0.0 U	--	103
	EM05	10/27/2017	N	Qal	14.8 - 34.6	6.980	0.78	--	155.3	6.96	--	--	377
	EM06	11/14/2017	N	Qal	14.8 - 34.6	6.870	1.08	0.0 U	61.6	7.06	0.20	--	1000 >
	EM07	12/13/2017	N	Qal	14.8 - 34.6	6.460	3.83	0.0 U	35.0	7.72	0.0 U	--	30.2
	EM08	2/19/2018	N	Qal	14.8 - 34.6	6.580	3.24	0.0 U	215	7.54	0.00 U	--	12.6
	EM09	3/26/2018	N	Qal	14.8 - 34.6	6.68	5.95	--	428	7.32	--	17.97	3.1
	EM10	5/2/2018	N	Qal	14.8 - 34.6	5.758	1.09	--	89.4	7.17	--	22.20	313
	EM11	7/11/2018	N	Qal	14.8 - 34.6	6.81	6.10	0 U	-65	7.27	0 U	26.9	67
	EM12	7/26/2018	N	Qal	14.8 - 34.6	6.59	2.73	--	-228.5	6.89	--	27.22 E	136
	EM13	8/15/2018	N	Qal	14.8 - 34.6	6.897	0.97	--	-135.9	7.18	--	27.38 E	331
	EM14	9/11/2018	N	Qal	14.8 - 34.6	5.539	0.73	--	62.8	7.11	--	26.03	41.5
	EM15	10/9/2018	N	Qal	14.8 - 34.6	6.494	1.09	0 U	-230.3	7.54	0 U	26.98	67.8
	EM16	12/20/2018	N	Qal	14.8 - 34.6	6.311	0.91	--	-50.4	6.99	--	24.07	57.3
	EM17	2/25/2019	N	Qal	14.8 - 34.6	5.41	0.00	0.0 U	-208	7.93	0.5	23.01	53.9
	EM18	4/9/2019	N	Qal	14.8 - 34.6	4.972	1.14	--	59.2	7.13	--	24.9	7.1
	EM19	5/20/2019	N	Qal	14.8 - 34.6	5.346	0.65	0.0 U	131.5	6.80	0.0 U	24.1	186.2

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW15	EM20	7/2/2019	N	Qal	14.8 - 34.6	5.137	0.59	--	-47.5	7.06	--	25.6	17.9
	EM21	8/13/2019	N	Qal	14.8 - 34.6	5.34	0.56	0 U	55.7	7.17	0 U	25.3	11.5
	EM22	11/6/2019	N	Qal	14.8 - 34.6	5.356	1.99	0 U	-145.4	7.17	0 U	23.9	9.3
	EM23	12/17/2019	N	Qal	14.8 - 34.6	4.982	0.80	--	186.2	6.78	--	23.6	47.53
	EM24	1/29/2020	N	Qal	14.8 - 34.6	5.491	0.70	0 U	-70.5	6.86	0 U	22.6	17.93
	EM25	3/13/2020	N	Qal	14.8 - 34.6	6.009	1.7	--	26.5	6.8	--	22.1	1.2
	EM26	4/29/2020	N	Qal	14.8 - 34.6	4.657	5.51	0 U	210.3	6.8	0 U	23.6	0
	EM27	7/7/2020	N	Qal	14.8 - 34.6	6.085	0.3	--	-339.0	6.93	--	26.8	65.4
	EM28	8/19/2020	N	Qal	14.8 - 34.6	5.444	0.33	0 U	-312.1	6.86	2	25.6	74.8
	EM29	10/15/2020	N	Qal	14.8 - 34.6	5.368	0.33	0.8	-178.6	7.23	0.3	25.1	23.45
	EM30	12/8/2020	N	Qal	14.8 - 34.6	4.152	0.95	--	-80.4	7.14	--	24.7	97.82
	EM31	2/2/2021	N	Qal	14.8 - 34.6	4.343	0.54	0 U	-169.7	7.01	0 U	23.2	29
	EM32	3/31/2021	N	Qal	14.8 - 34.6	4.343	0.54	--	-169.7	7.01	--	23.2	29.0
	EM33	6/3/2021	N	Qal	14.8 - 34.6	3.972	0.72	0.0 U	-31.1	7.72	0.0 U	26.5	16.1
	EM34	7/21/2021	N	Qal	14.8 - 34.6	5.060	0.44	1.5	-76.7	6.84	0.0 U	26.7	6.3
	EM35	9/16/2021	N	Qal	14.8 - 34.6	5.943	0.71	0.0 U	-36.4	6.85	0.0 U	24.9	6.9
	EM36	11/30/2021	N	Qal	14.8 - 34.6	6.836	1.82	0.0 U	-25.1	6.82	0.0 U	24.5	10.6
SWFTS-MW16	BL02	7/13/2017	N	Qal	21.8 - 41.6	6.600	0.93	0.0 U	109.1	7.07	0.00 U	--	1000 >
	EM01	9/22/2017	N	Qal	21.8 - 41.6	6.718	0.71	--	-224.6	6.28	--	--	96.0
	EM02	9/26/2017	N	Qal	21.8 - 41.6	6.362	1.54	--	-138.6	6.63	--	--	188
	EM03	10/3/2017	N	Qal	21.8 - 41.6	6.905	1.30	--	-198.9	6.49	--	--	49.1
	EM04	10/12/2017	N	Qal	21.8 - 41.6	6.534	1.32	0.0 U	-198.2	6.31	2.00	--	10.04
	EM05	10/24/2017	N	Qal	21.8 - 41.6	6.614	1.03	--	-407.8	6.81	--	--	77.9
	EM06	11/16/2017	N	Qal	21.8 - 41.6	5.450	0.49	0.0 U	-248.1	6.99	2.00	--	1000 >
	EM07	12/12/2017	N	Qal	21.8 - 41.6	5.759	0.56	0.00 U	-339.7	7.06	0.26	--	78.70
	EM08	2/21/2018	N	Qal	21.8 - 41.6	6.213	0.49	1.8	-315.0	6.20	0.20	--	25.50
	EM09	3/27/2018	N	Qal	21.8 - 41.6	6.290	0.49	--	-27.9	7.11	--	--	45.8
	EM10	5/2/2018	N	Qal	21.8 - 41.6	5.281	0.15	--	-86.2	6.91	--	23.53	11.8
	EM11	7/11/2018	N	Qal	21.8 - 41.6	5.62	5.38	0.8	-228	6.95	2	22.35	0
	EM12	7/26/2018	N	Qal	21.8 - 41.6	5.60	1.99	--	-296.8	7.27	--	28.14 E	5.8
	EM13	8/15/2018	N	Qal	21.8 - 41.6	5.865	0.98	--	-202.1	6.94	--	26.48	59.3
	EM14	9/10/2018	N	Qal	21.8 - 41.6	6.110	0.78	--	-99.0	6.89	--	27.15 E	38.1
	EM15	10/11/2018	N	Qal	21.8 - 41.6	5.78	3.73	2	-113	6.97	0 U	22.9	50.6
	EM16	12/19/2018	N	Qal	21.8 - 41.6	6.375	0.4	--	-175.8	6.85	--	23.51	43.2
	EM17	2/26/2019	N	Qal	21.8 - 41.6	5.58	0.00	4.5	-122	6.77	0.0 U	23.70	112
	EM18	4/9/2019	N	Qal	21.8 - 41.6	4.495	0.47	--	-175.6	6.75	--	26.2	130.2
	EM19	5/20/2019	N	Qal	21.8 - 41.6	4.959	0.53	2.5	-53.5	6.75	0.0 U	24.9	233.7
	EM20	7/1/2019	N	Qal	21.8 - 41.6	4.442	0.20	--	-179.8	6.91	--	25.8	179.3
	EM21	8/13/2019	N	Qal	21.8 - 41.6	5.278	0.35	1.5	-94.5	6.89	0.04	25.6	9.9
	EM22	11/6/2019	N	Qal	21.8 - 41.6	4.731	0.21	3.0	-228.3	6.77	0.04	25.7	19.8
	EM23	12/17/2019	N	Qal	21.8 - 41.6	4.566	2.00	--	-72.9	6.89	--	22.1	43.60
	EM24	1/29/2020	N	Qal	21.8 - 41.6	4.909	0.53	3	-113.4	6.91	0 U	23.3	33.48
	EM25	3/13/2020	N	Qal	21.8 - 41.6	5.366	2.24	--	-83.2	6.78	--	22.8	84.9
	EM26	4/30/2020	N	Qal	21.8 - 41.6	4.421	2.25	2	-75.6	6.86	0 U	24.2	40.1
	EM27	7/9/2020	N	Qal	21.8 - 41.6	5.064	1.2	--	-91.5	6.70	--	26.9	73.5
	EM28	8/19/2020	N	Qal	21.8 - 41.6	5.005	0.46	3	-126	6.6	0 U	26.8	8
	EM29	10/15/2020	N	Qal	21.8 - 41.6	4.666	0.38	4.5	-28.9	7.05	0 U	23.8	73.54
	EM30	12/8/2020	N	Qal	21.8 - 41.6	3.825	0.27	--	-125.9	6.8	--	24.7	49.85
	EM31	2/2/2021	N	Qal	21.8 - 41.6	4.048	0.63	0 U	-53	6.79	0 U	24	44
	EM32	3/31/2021	N	Qal	21.8 - 41.6	4.048	0.63	--	-53.0	6.79	--	24.0	44.0
	EM33	6/3/2021	N	Qal	21.8 - 41.6	3.667	0.65	1.0	-50.3	9.55	0.0 U	28.0	128.0

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW16	EM34	7/21/2021	N	Qal	21.8 - 41.6	4.537	0.37	0.5	11.2	6.86	0.0 U	26.1	51.3
	EM35	9/16/2021	N	Qal	21.8 - 41.6	5.388	2.88	0.0 U	15.6	6.90	0.0 U	25.7	67.4
	EM36	11/30/2021	N	Qal	21.8 - 41.6	5.958	1.42	0.5	-91.7	6.67	0.0 U	24.6	119.7
SWFTS-MW17	BL02	7/12/2017	N	Qal	22.8 - 52.6	6.000	4.30	0.00 U	166	7.35	0.00 U	--	3.60
	EM01	9/19/2017	N	Qal	22.8 - 52.6	4.915	5.07	--	47.0	7.21	--	--	1.65
	EM02	9/26/2017	N	Qal	22.8 - 52.6	6.502	4.04	--	100.2	7.25	--	--	3.56
	EM03	10/3/2017	N	Qal	22.8 - 52.6	6.029	6.87	--	52.7	7.30	--	--	48.30
	EM04	10/10/2017	N	Qal	22.8 - 52.6	5.590	3.90	0.0 U	228	5.02 E	0.0 U	--	0.40
	EM05	10/24/2017	N	Qal	22.8 - 52.6	6.262	5.28	--	58.3	7.24	--	--	3.84
	EM06	11/15/2017	N	Qal	22.8 - 52.6	5.490	4.91	0.0 U	116.7	7.34	0.00 U	--	9.21
	EM07	12/13/2017	N	Qal	22.8 - 52.6	5.540	5.54	0.0 U	3.1	7.09	0.00 U	--	23.80
	EM08	2/22/2018	N	Qal	22.8 - 52.6	5.374	3.65	0.0 U	5.1	6.75	0.06	--	17.85
	EM09	3/28/2018	N	Qal	22.8 - 52.6	4.938	3.49	--	-73.2	7.25	--	--	7.00
	EM10	5/3/2018	N	Qal	22.8 - 52.6	4.424	4.08	--	-37.6	7.33	--	24.10	8.50
	EM11	7/11/2018	N	Qal	22.8 - 52.6	4.74	4.35	0 U	20	7.41	0 U	24.11	0
	EM13	8/16/2018	N	Qal	22.8 - 52.6	5.379	4.56	--	-4.6	7.37	--	27.20 E	5.04
	EM14	9/12/2018	N	Qal	22.8 - 52.6	4.799	3.49	--	112.8	7.32	--	26.21	5.51
	EM15	10/11/2018	N	Qal	22.8 - 52.6	5.15	3.33	0 U	76	7.39	0 U	23.88	1.7
	EM16	1/2/2019	N	Qal	22.8 - 52.6	4.548	6.18	--	108.7	7.23	--	20.05	3.29
	EM17	2/28/2019	N	Qal	22.8 - 52.6	4.578	4.83	0.0 U	40.7	7.24	0.0 U	22.97	5.96
	EM18	4/11/2019	N	Qal	22.8 - 52.6	4.295	4.74	--	168.2	7.19	--	24.0	2.2
	EM19	5/22/2019	N	Qal	22.8 - 52.6	4.499	4.85	0.0 U	156.0	7.16	0.0 U	23.5	10.7
	EM20	7/5/2019	N	Qal	22.8 - 52.6	4.155	4.91	--	210.5	7.31	--	26.2	7.7
	EM21	8/16/2019	N	Qal	22.8 - 52.6	4.889	5.02	0 U	255.1	7.34	0 U	24.9	6.8
	EM22	11/7/2019	N	Qal	22.8 - 52.6	5.046	5.25	0 U	115.1	7.23	0 U	23.3	11.1
	EM23	12/20/2019	N	Qal	22.8 - 52.6	4.701	5.71	--	10.3	7.29	--	22.4	19.26
	EM24	1/30/2020	N	Qal	22.8 - 52.6	4.920	4.77	0 U	92.2	7.37	0 U	23.2	3.60
	EM25	3/13/2020	N	Qal	22.8 - 52.6	5.019	6.02	--	162.5	7.13	--	21.9	3.5
	EM26	4/30/2020	N	Qal	22.8 - 52.6	4.904	5.11	0 U	92.4	7.22	0 U	26.5	0.8
	EM27	7/9/2020	N	Qal	22.8 - 52.6	5.198	3.9	--	48.9	7.25	--	27.9	23.0
	EM28	8/19/2020	N	Qal	22.8 - 52.6	5.254	4.39	0 U	58.6	7.13	0 U	28.4	5.1
	EM29	10/15/2020	N	Qal	22.8 - 52.6	5.203	4.75	0.25	94.1	7.59	0 U	25.5	4.75
	EM30	12/9/2020	N	Qal	22.8 - 52.6	4.554	4.66	--	115.3	7.19	--	22.1	0.2
	EM31	2/2/2021	N	Qal	22.8 - 52.6	4.213	4.84	0 U	124.2	7.25	0 U	23.9	4
	EM32	3/31/2021	N	Qal	22.8 - 52.6	4.213	4.84	--	124.2	7.25	--	23.9	4.0
	EM33	6/3/2021	N	Qal	22.8 - 52.6	3.705	4.56	0.0 U	83.8	8.32	0.0 U	27.4	4.3
	EM34	7/21/2021	N	Qal	22.8 - 52.6	4.488	4.89	0.0 U	98.5	7.29	0.0 U	26.3	2.9
	EM35	9/16/2021	N	Qal	22.8 - 52.6	5.129	4.93	0.0 U	87.1	7.13	0.0 U	27.2	1.5
	EM36	12/2/2021	N	Qal	22.8 - 52.6	4.380	5.23	0.0 U	150.0	7.42	0.0 U	23.5	24.3
SWFTS-MW18	BL02	7/11/2017	N	Qal	16.8 - 36.6	6.150	2.68	0.00 U	157	7.30	0.00 U	--	278
	EM01	9/21/2017	N	Qal	16.8 - 36.6	6.469	0.59	--	69.1	6.92	--	--	46.9
	EM02	9/27/2017	N	Qal	16.8 - 36.6	6.864	0.40	--	-80.9	6.87	--	--	122
	EM03	10/3/2017	N	Qal	16.8 - 36.6	7.125	2.22	--	114.5	7.02	--	--	5.44
	EM04	10/10/2017	N	Qal	16.8 - 36.6	6.873	0.31	0.0 U	-25.1	7.14	0.0 U	--	19.5
	EM05	10/23/2017	N	Qal	16.8 - 36.6	7.761	0.98	--	58.6	7.14	--	--	28.10
	EM06	11/15/2017	N	Qal	16.8 - 36.6	6.030	1.37	0.00 U	-202.9	7.13	0.00 U	--	98.40
	EM07	12/13/2017	N	Qal	16.8 - 36.6	6.930	0.40	0.00 U	-73.0	7.49	0.00 U	--	139.00
	EM08	2/22/2018	N	Qal	16.8 - 36.6	6.401	0.51	0.00 U	14.3	6.60	0.00 U	--	20.24
	EM09	3/27/2018	N	Qal	16.8 - 36.6	5.873	0.25	--	-240.3	6.81	--	--	27.8
	EM10	5/1/2018	N	Qal	16.8 - 36.6	6.321	0.43	--	144.2	7.10	--	23.91	14.47
	EM11	7/11/2018	N	Qal	16.8 - 36.6	6.32	0.01	0 U	68	7.39	0 U	26.65	29.5

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW18	EM12	7/26/2018	N	Qal	16.8 - 36.6	5.98	2.81	--	-131.7	7	--	25.64	8
	EM13	8/15/2018	N	Qal	16.8 - 36.6	6.553	0.58	--	-33.3	7.26	--	26.51	20.2
	EM14	9/11/2018	N	Qal	16.8 - 36.6	5.207	0.79	--	114.5	7.17	--	24.44	7.77
	EM15	10/11/2018	N	Qal	16.8 - 36.6	5.74	1.88	0 U	127	7.33	0 U	23.73	10
	EM16	12/20/2018	N	Qal	16.8 - 36.6	6.341	0.67	--	-57.9	7.08	--	24.38	153
	EM17	2/26/2019	N	Qal	16.8 - 36.6	6.08	0.00	0.0 U	45	6.78	0.0 U	24.06	19.6
	EM18	4/9/2019	N	Qal	16.8 - 36.6	4.972	0.48	--	37.0	6.99	--	25.0	117.6
	EM19	5/21/2019	N	Qal	16.8 - 36.6	4.871	0.65	0.0 U	149.3	8.25	0.0 U	24.4	73.4
	EM20	7/1/2019	N	Qal	16.8 - 36.6	4.613	0.41	--	18.1	7.10	--	25.4	145.6
	EM21	8/13/2019	N	Qal	16.8 - 36.6	5.194	0.39	0 U	129.8	7.09	0 U	24.5	12.4
	EM22	11/6/2019	N	Qal	16.8 - 36.6	5.751	0.30	0 U	-2.2	6.72	0 U	25.8	13.5
	EM23	12/17/2019	N	Qal	16.8 - 36.6	4.861	0.64	--	13.1	6.87	--	23.6	142.21
	EM24	1/29/2020	N	Qal	16.8 - 36.6	5.233	0.53	0 U	5.6	6.94	0 U	24.8	90.10
	EM25	3/11/2020	N	Qal	16.8 - 36.6	5.582	2.18	--	219.7	6.91	--	23.9	74
	EM26	4/29/2020	N	Qal	16.8 - 36.6	4.497	2.07	--	210.8	6.8	--	24	13.8
	EM27	7/9/2020	N	Qal	16.8 - 36.6	5.940	0.7	--	67.0	6.78	--	25.7	178.3
	EM28	8/19/2020	N	Qal	16.8 - 36.6	5.564	0.64	0 U	57.2	6.72	0 U	26.9	39
	EM29	10/15/2020	N	Qal	16.8 - 36.6	5.331	0.4	0 U	82.9	7.19	0 U	24.9	18.91
	EM30	12/9/2020	N	Qal	16.8 - 36.6	4.745	0.33	--	107.4	6.73	--	24.2	32.41
	EM31	2/3/2021	N	Qal	16.8 - 36.6	5.097	0.65	0 U	63.1	6.72	0 U	24.6	28
	EM32	3/30/2021	N	Qal	16.8 - 36.6	5.097	0.65	--	63.1	6.72	--	24.6	28.0
	EM33	6/3/2021	N	Qal	16.8 - 36.6	3.902	0.68	0.0 U	73.5	7.59	0.0 U	25.6	56.7
	EM34	7/21/2021	N	Qal	16.8 - 36.6	4.842	0.34	0.0 U	75.3	6.93	0.0 U	25.4	10.6
	EM35	9/16/2021	N	Qal	16.8 - 36.6	5.552	1.27	0.0 U	38.7	6.69	0.0 U	25.0	13.2
	EM36	12/1/2021	N	Qal	16.8 - 36.6	6.320	1.19	0.2	-158.7	6.61	0.1	25.0	18.8
SWFTS-MW19	BL02	7/12/2017	N	Qal	11.3 - 31.1	3.130	0.77	0.00 U	88.0	7.27	0.00 U	--	12.80
	EM01	9/21/2017	N	Qal	11.3 - 31.1	3.200	0.43	--	29.3	6.93	--	--	8.59
	EM02	9/28/2017	N	Qal	11.3 - 31.1	5.293	6.39	--	11.9	7.19	--	--	818
	EM03	10/5/2017	N	Qal	11.3 - 31.1	3.117	5.16	--	118.0	7.10	--	--	83.0
	EM04	10/12/2017	N	Qal	11.3 - 31.1	3.297	0.28	0.0 U	-86.1	6.89	0.0 U	--	36.1
	EM05	10/27/2017	N	Qal	11.3 - 31.1	3.491	0.38	--	40.8	7.05	--	--	26.8
	EM06	11/16/2017	N	Qal	11.3 - 31.1	3.410	0.73	0.0 U	37.2	7.16	0.0 U	--	65.6
	EM07	12/12/2017	N	Qal	11.3 - 31.1	3.140	0.92	0.00 U	5.0	7.61	0.80	--	9.20
	EM08	2/20/2018	N	Qal	11.3 - 31.1	3.369	1.25	0.00 U	-13.5	7.23	0.00 U	--	124
	EM09	3/27/2018	N	Qal	11.3 - 31.1	3.454	1.09	--	55.4	7.15	--	--	90.20
	EM10	4/30/2018	N	Qal	11.3 - 31.1	3.478	0.56	--	39.6	7.10	--	22.36	54.6
	EM11	7/10/2018	N	Qal	11.3 - 31.1	3.39	2.80	0 U	259	7.42	0 U	21.99	17.0
	EM12	7/26/2018	N	Qal	11.3 - 31.1	3.40	1.11	--	-107.2	7.15	--	24.61	79.8
	EM13	8/15/2018	N	Qal	11.3 - 31.1	3.76	0.95	--	-23.6	7.27	--	26.49	90.2
	EM14	9/11/2018	N	Qal	11.3 - 31.1	3.179	1.06	--	98.3	7.15	--	26.76	6.95
	EM15	10/9/2018	N	Qal	11.3 - 31.1	3.56	1.43	0 U	35	6.85	0 U	27.1 E	5.1
	EM16	12/27/2018	N	Qal	11.3 - 31.1	4.116	1.43	--	-18.3	7.15	--	23.54	39.8
	EM17	2/27/2019	N	Qal	11.3 - 31.1	3.223	0.14	0.0 U	97.9	7.11	0.0 U	21.91	6.49
	EM18	4/10/2019	N	Qal	11.3 - 31.1	3.298	1.27	--	63.6	7.13	--	21.50	20.8
	EM19	5/21/2019	N	Qal	11.3 - 31.1	3.115	1.22	0.0 U	225.0	7.15	0.0 U	22.0	6.5
	EM20	7/2/2019	N	Qal	11.3 - 31.1	2.930	1.54	--	183.5	7.13	--	22.7	6.8
	EM21	8/15/2019	N	Qal	11.3 - 31.1	3.144	1.6	0 U	139.2	7.3	0 U	24.4	6.3
	EM22	11/5/2019	N	Qal	11.3 - 31.1	3.256	1.28	0.0 U	193.2	7.12	0 U	26.2	7.2
	EM23	12/19/2019	N	Qal	11.3 - 31.1	3.117	2.03	--	127.1	7.18	--	23.1	24.23
	EM24	1/29/2020	N	Qal	11.3 - 31.1	3.611	1.01	0 U	17.4	7.22	0 U	22.7	38.89
	EM25	3/11/2020	N	Qal	11.3 - 31.1	4.286	1.69	--	158.9	7.03	--	22.2	7.2

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW19	EM26	4/28/2020	N	Qal	11.3 - 31.1	3.732	2.1	0 U	165	6.99	0 U	27.8	21.1
	EM27	7/9/2020	N	Qal	11.3 - 31.1	4.269	0.8	--	75.2	6.99	--	25.4	57.3
	EM28	8/19/2020	N	Qal	11.3 - 31.1	3.749	0.87	0 U	45.8	6.96	0 U	26.9	17.3
	EM29	10/14/2020	N	Qal	11.3 - 31.1	3.87	0.72	0 U	100.1	7.52	0 U	25	5.98
	EM30	12/9/2020	N	Qal	11.3 - 31.1	3.347	0.87	--	96.6	7	--	23.4	9.73
	EM31	2/3/2021	N	Qal	11.3 - 31.1	3.51	1.23	0 U	159.4	7.06	0 U	21.7	4.5
	EM32	3/30/2021	N	Qal	11.3 - 31.1	3.510	1.23	--	159.4	7.06	--	21.7	4.5
	EM33	6/3/2021	N	Qal	11.3 - 31.1	2.632	1.47	0.0 U	51.1	7.72	0.0 U	22.7	8.9
	EM34	7/20/2021	N	Qal	11.3 - 31.1	2.872	0.65	0.0 U	50.7	7.06	0.0 U	25.0	6.9
	EM35	9/16/2021	N	Qal	11.3 - 31.1	3.690	0.52	0.0 U	69.7	7.05	0.0 U	26.0	18.4
	EM36	12/1/2021	N	Qal	11.3 - 31.1	3.574	1.52	0.0 U	181.2	6.92	0.0 U	23.7	2.8
SWFTS-MW20	BL02	7/12/2017	N	Qal	12.8 - 37.6	9.110	6.05	0.00 U	147	7.16	0.00 U	--	176.00
	EM01	9/21/2017	N	Qal	12.8 - 37.6	8.349	3.72	--	44.2	6.87	--	--	303
	EM02	9/26/2017	N	Qal	12.8 - 37.6	8.334	0.49	--	15.9	6.85	--	--	9.76
	EM03	10/4/2017	N	Qal	12.8 - 37.6	16.493 E	0.22	--	-3.2	6.87	--	--	59.2
	EM04	10/12/2017	N	Qal	12.8 - 37.6	8.791	0.23	0.0 U	-41.3	6.76	0.0 U	--	70.2
	EM05	10/25/2017	N	Qal	12.8 - 37.6	9.675	0.45	--	13.3	7.10	--	--	17.2
	EM06	11/16/2017	N	Qal	12.8 - 37.6	8.400	0.74	0.50	-46.4	7.00	0.00 U	--	1000 >
	EM07	12/12/2017	N	Qal	12.8 - 37.6	9.171	0.20	0.00 U	-84.9	6.88	0.00 U	--	54.2
	EM08	2/19/2018	N	Qal	12.8 - 37.6	7.870	2.54	0.00 U	244	7.34	0.00 U	--	19.8
	EM09	3/27/2018	N	Qal	12.8 - 37.6	8.230	3.64	--	247	6.97	--	--	41.4
	EM10	4/30/2018	N	Qal	12.8 - 37.6	7.881	0.19	--	28.9	6.64	--	24.39	61.8
	EM11	7/11/2018	N	Qal	12.8 - 37.6	9.01	1.72	0 U	-22.6	6.75	0 U	29.5 E	97
	EM12	7/26/2018	N	Qal	12.8 - 37.6	8.50	1.88	--	-74.5	6.76	--	28.05 E	19.3
	EM13	8/15/2018	N	Qal	12.8 - 37.6	8.111	0.81	--	-12.6	6.84	--	27.40 E	61.9
	EM14	9/11/2018	N	Qal	12.8 - 37.6	7.126	0.51	--	97.1	6.71	--	26.60	32.1
	EM15	10/9/2018	N	Qal	12.8 - 37.6	7.5	1.96	0 U	94	7.27	0 U	23.87	17.7
	EM16	12/20/2018	N	Qal	12.8 - 37.6	8.673	0.97	--	-59.5	6.7	--	24.3	109
	EM17	2/26/2019	N	Qal	12.8 - 37.6	6.669	0.36	0.0 U	52.0	6.71	0.0 U	24.31	36.9
	EM18	4/9/2019	N	Qal	12.8 - 37.6	7.569	0.64	--	235.2	1.71	--	25.95	54.9
	EM19	5/21/2019	N	Qal	12.8 - 37.6	7.230	0.41	0.5	-4.2	6.61	0.0 U	24.3	90.2
	EM20	7/2/2019	N	Qal	12.8 - 37.6	6.615	0.43	--	141.9	6.57	--	24.7	31.5
	EM21	8/13/2019	N	Qal	12.8 - 37.6	6.879	0.42	0 U	131.1	6.66	0 U	24.9	13.4
	EM22	11/5/2019	N	Qal	12.8 - 37.6	7.247	0.49	0 U	103.6	6.58	0 U	25.9	10.1
	EM23	12/17/2019	N	Qal	12.8 - 37.6	6.564	0.65	--	12.3	6.59	--	24.0	134.15
	EM24	1/29/2020	N	Qal	12.8 - 37.6	6.894	0.52	0 U	11.1	6.61	0 U	25.1	85.65
	EM25	3/12/2020	N	Qal	12.8 - 37.6	6.998	2.25	--	111.6	6.5	--	23.6	29.7
	EM26	4/29/2020	N	Qal	12.8 - 37.6	6.095	2	0 U	74.9	6.5	0 U	26	9.8
	EM27	7/9/2020	N	Qal	12.8 - 37.6	8.055	0.7	--	43.5	6.53	--	29.8	163.3
	EM28	8/20/2020	N	Qal	12.8 - 37.6	6.84	0.5	0 U	-5.2	6.46	0 U	26	19.8
	EM29	10/14/2020	N	Qal	12.8 - 37.6	8.617	0.44	0.5	29.8	6.82	0 U	27.5	23.44
	EM30	12/9/2020	N	Qal	12.8 - 37.6	7.096	0.29	--	78	6.41	--	24.8	100.12
	EM31	2/3/2021	N	Qal	12.8 - 37.6	6.894	0.74	0 U	123.8	6.54	0 U	24	39
	EM32	3/30/2021	N	Qal	12.8 - 37.6	6.894	0.74	--	123.8	6.54	--	24.0	39.0
	EM33	6/3/2021	N	Qal	12.8 - 37.6	4.776	0.61	0.0 U	25.6	7.31	0.0 U	25.4	31.9
	EM34	7/20/2021	N	Qal	12.8 - 37.6	5.763	0.18	0.0 U	42.3	6.51	0.0 U	28.2	14.0
	EM35	9/16/2021	N	Qal	12.8 - 37.6	8.115	0.25	0.0 U	19.1	6.38	0.0 U	29.0	62.1
	EM36	11/29/2021	N	Qal	12.8 - 37.6	6.702	3.05	0.0 U	80.1	6.69	0.0 U	25.5	31.2
SWFTS-MW21	BL02	7/13/2017	N	Qal	14.8 - 39.6	7.090	6.15	--	179	7.30	--	--	99.00
	EM01	9/21/2017	N	Qal	14.8 - 39.6	7.315	4.90	--	35.4	7.13	--	--	147
	EM02	9/27/2017	N	Qal	14.8 - 39.6	7.626	0.28	--	-12.8	6.95	--	--	57.8

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW21	EM03	10/5/2017	N	Qal	14.8 - 39.6	7.355	4.40	--	47.2	6.96	--	--	107
	EM04	10/11/2017	N	Qal	14.8 - 39.6	7.629	0.28	0.0 U	-30.2	6.66	0.0 U	--	120
	EM05	10/27/2017	N	Qal	14.8 - 39.6	8.021	0.45	--	53.0	6.81	--	--	72.2
	EM06	11/15/2017	N	Qal	14.8 - 39.6	7.220	3.07	0.00 U	-0.1	7.07	0.00 U	--	860.00
	EM07	12/13/2017	N	Qal	14.8 - 39.6	6.840	0.68	0.00 U	32.0	7.52	0.80	--	21.60
	EM08	2/20/2018	N	Qal	14.8 - 39.6	7.347	0.24	0.00 U	18.7	6.14	0.04	--	59.70
	EM09	3/27/2018	N	Qal	14.8 - 39.6	6.878	0.37	--	-72.8	7.07	--	--	8.71
	EM10	4/30/2018	N	Qal	14.8 - 39.6	6.85	0.00	--	186	7.12	--	24.42	54.7
	EM11	7/12/2018	N	Qal	14.8 - 39.6	7.41	0.06	0 U	141	7.28	0 U	24.97	38.6
	EM12	7/27/2018	N	Qal	14.8 - 39.6	6.54	8.98 E	--	-76.2	6.99	--	24.57	763
	EM13	8/15/2018	N	Qal	14.8 - 39.6	7.72	0.68	--	16.1	7.02	--	26.88	208
	EM14	9/12/2018	N	Qal	14.8 - 39.6	6.923	0.35	--	112	6.92	--	26.65	8.36
	EM15	10/9/2018	N	Qal	14.8 - 39.6	7.15	0.59	0 U	52	6.63	0 U	26.1	4.8
	EM16	12/20/2018	N	Qal	14.8 - 39.6	7.975	1.11	--	-53.7	6.97	--	24.45	370
	EM17	2/26/2019	N	Qal	14.8 - 39.6	7.48	0.00	0.0 U	-33	6.60	0.0 U	24.48	47.9
	EM18	4/10/2019	N	Qal	14.8 - 39.6	6.119	3.78	--	127.6	7.07	--	24.4	49.2
	EM19	5/22/2019	N	Qal	14.8 - 39.6	6.536	0.57	0.0 U	170.9	7.04	0.0 U	24.2	58.9
	EM20	7/1/2019	N	Qal	14.8 - 39.6	6.019	0.25	--	68.9	7.00	--	25.9	109.3
	EM21	8/13/2019	N	Qal	14.8 - 39.6	6.973	0.38	0 U	126.0	7.01	0 U	24.3	13.9
	EM22	11/4/2019	N	Qal	14.8 - 39.6	6.670	0.30	0 U	96.5	6.78	0 U	25.5	28.8
	EM23	12/18/2019	N	Qal	14.8 - 39.6	6.114	0.82	--	41.9	6.87	--	24.0	49.33
	EM24	1/30/2020	N	Qal	14.8 - 39.6	6.158	0.63	0 U	69.1	7.07	0 U	24.3	83.44
	EM25	3/11/2020	N	Qal	14.8 - 39.6	6.335	2.27	--	198	7.14	--	23.6	72.5
	EM26	4/29/2020	N	Qal	14.8 - 39.6	4.77	3.29	0 U	189.6	6.9	0 U	23.4	195.7
	EM27	7/10/2020	N	Qal	14.8 - 39.6	6.665	1.0	--	96.0	7.03	--	24.9	200.7
	EM28	8/20/2020	N	Qal	14.8 - 39.6	6.486	0.49	0 U	58.9	6.9	0 U	25.8	6.9
	EM29	10/14/2020	N	Qal	14.8 - 39.6	7.117	0.43	0 U	63.8	7.37	0 U	25.7	24.12
	EM30	12/9/2020	N	Qal	14.8 - 39.6	6.059	0.29	--	84.5	6.94	--	24.3	33.27
	EM31	2/3/2021	N	Qal	14.8 - 39.6	6	0.77	0 U	180.6	6.99	0 U	23.8	16.6
	EM32	3/30/2021	N	Qal	14.8 - 39.6	6.000	0.77	--	180.6	6.99	--	23.8	16.6
	EM33	6/2/2021	N	Qal	14.8 - 39.6	4.928	0.63	0.0 U	106.1	7.24	0.0 U	25.1	50.0
	EM34	7/20/2021	N	Qal	14.8 - 39.6	5.098	0.38	0.0 U	87.9	6.90	0.0 U	25.5	20.6
	EM35	9/16/2021	N	Qal	14.8 - 39.6	5.587	0.41	0.0 U	83.4	6.99	0.0 U	26.2	52.5
	EM36	12/1/2021	N	Qal	14.8 - 39.6	6.928	1.34	0.0 U	65.8	6.76	0.0 U	24.8	11.8
SWFTS-MW22	BL02	7/13/2017	N	Qal	11.8 - 31.6	4.370	2.09	0.00 U	126.0	7.55	0.00 U	--	1000 >
	EM01	9/20/2017	N	Qal	11.8 - 31.6	4.272	0.32	--	-61.4	7.09	--	--	648
	EM02	9/27/2017	N	Qal	11.8 - 31.6	4.273	0.12	--	-54.7	6.99	--	--	110
	EM03	10/5/2017	N	Qal	11.8 - 31.6	4.085	0.41	--	119.7	6.96	--	--	43.8
	EM04	10/12/2017	N	Qal	11.8 - 31.6	4.333	2.72	0 U	138.4	6.99	0 U	--	438
	EM05	10/26/2017	N	Qal	11.8 - 31.6	4.508	0.29	--	93.6	7.13	--	--	196
	EM06	11/16/2017	N	Qal	11.8 - 31.6	4.333	0.45	0.00 U	-53.1	7.14	0.00 U	--	320
	EM07	12/14/2017	N	Qal	11.8 - 31.6	4.630	1.31	0.00 U	-101.4	7.28	0.00 U	--	27.2
	EM08	2/21/2018	N	Qal	11.8 - 31.6	4.012	0.43	0.00 U	20.0	7.31	0.00 U	--	268
	EM09	3/28/2018	N	Qal	11.8 - 31.6	3.895	0.65	--	194.4	7.19	--	--	183.00
	EM10	4/30/2018	N	Qal	11.8 - 31.6	4.052	0.26	--	22.2	7.14	--	23.42	3.92
	EM11	7/10/2018	N	Qal	11.8 - 31.6	4.45	2.80	0 U	220	7.42	0 U	20.8	100
	EM12	7/27/2018	N	Qal	11.8 - 31.6	3.88	4.13	--	-76	7.21	--	23.95	345
	EM13	8/16/2018	N	Qal	11.8 - 31.6	4.3	2.29	--	139	7.81	--	19.93	33.7
	EM14	9/11/2018	N	Qal	11.8 - 31.6	3.804	0.47	--	94	7.22	--	25.14	47.3
	EM15	10/9/2018	N	Qal	11.8 - 31.6	4.25	0.28	0 U	67	7.75	0 U	23.92	285
	EM16	12/27/2018	N	Qal	11.8 - 31.6	4.809	0.6	--	-14.1	7.15	--	22.81	340

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW22	EM17	2/27/2019	N	Qal	11.8 - 31.6	3.919	0.07	0.0 U	96.6	7.11	0.0 U	23.00	180
	EM18	4/11/2019	N	Qal	11.8 - 31.6	5.379	0.57	--	122.5	7.06	--	22.90	77.5
	EM19	5/21/2019	N	Qal	11.8 - 31.6	4.150	0.49	0.0 U	-6.7	7.12	0.0 U	23.2	184.2
	EM20	7/2/2019	N	Qal	11.8 - 31.6	3.819	0.43	--	146.4	7.10	--	24.3	24.4
	EM21	8/12/2019	N	Qal	11.8 - 31.6	4.03	0.4	0 U	120.2	7.19	0 U	24.9	13.5
	EM22	11/5/2019	N	Qal	11.8 - 31.6	3.807	0.39	0 U	192.9	7.10	0 U	24.7	66.8
	EM23	12/19/2019	N	Qal	11.8 - 31.6	3.547	0.80	--	93.5	7.18	--	22.2	141.35
	EM24	1/30/2020	N	Qal	11.8 - 31.6	3.633	0.62	0 U	62.5	7.25	0 U	23.5	202.27
	EM25	3/11/2020	N	Qal	11.8 - 31.6	4.12	1.55	--	148.6	7.06	--	23.2	74.8
	EM26	4/28/2020	N	Qal	11.8 - 31.6	3.597	1.99	0 U	172.9	7.07	0 U	24.6	135.3
	EM27	7/10/2020	N	Qal	11.8 - 31.6	4.300	0.6	--	106.6	7.13	--	25.0	94.3
	EM28	8/20/2020	N	Qal	11.8 - 31.6	4.59	0.45	0 U	57	6.94	0 U	25.9	38.8
	EM29	10/14/2020	N	Qal	11.8 - 31.6	4.765	0.41	0 U	112	7.48	0 U	23.5	70.57
	EM30	12/9/2020	N	Qal	11.8 - 31.6	4.018	0.27	--	87	7	--	24.1	125.1
	EM31	2/3/2021	N	Qal	11.8 - 31.6	4.031	0.77	0 U	169.7	7.05	0 U	23.1	128.4
	EM32	3/30/2021	N	Qal	11.8 - 31.6	4.031	0.77	--	169.7	7.05	--	23.1	128.4
	EM33	6/2/2021	N	Qal	11.8 - 31.6	3.508	1.16	0.0 U	98.0	7.41	0.0 U	25.8	105.8
	EM35	9/16/2021	N	Qal	11.8 - 31.6	3.972	0.81	0.0 U	93.4	7.08	0.0 U	25.2	88.9
	EM36	12/2/2021	N	Qal	11.8 - 31.6	4.656	1.70	0.0 U	121.3	6.96	0.0 U	22.9	209.9
SWFTS-MW23	BL02	7/13/2017	N	Qal	13.8 - 33.6	3.060	0.36	0.00 U	91.3	7.24	0.00 U	--	19.40
	EM01	9/22/2017	N	Qal	13.8 - 33.6	3.229	0.55	--	-19.6	6.96	--	--	10.00
	EM02	9/28/2017	N	Qal	13.8 - 33.6	3.277	0.16	--	-14.1	6.99	--	--	10.9
	EM03	10/5/2017	N	Qal	13.8 - 33.6	3.347	0.79	--	-2.6	6.93	--	--	1.95
	EM04	10/11/2017	N	Qal	13.8 - 33.6	3.410	1.87	0.0 U	52.3	6.96	0.0 U	--	5.25
	EM05	10/26/2017	N	Qal	13.8 - 33.6	3.809	0.38	--	92.0	7.11	--	--	2.1
	EM06	11/15/2017	N	Qal	13.8 - 33.6	3.500	0.49	0.00 U	-28.9	7.09	0.00 U	--	6.80
	EM07	12/12/2017	N	Qal	13.8 - 33.6	3.818	0.23	0.00 U	-98.2	7.15	0.00 U	--	3.74
	EM08	2/21/2018	N	Qal	13.8 - 33.6	3.650	5.42	0.00 U	142.0	8.13 E	0.00 U	--	0.80
	EM09	3/28/2018	N	Qal	13.8 - 33.6	3.460	2.59	--	285	7.25	--	--	3.1
	EM10	5/2/2018	N	Qal	13.8 - 33.6	2.655	0.30	--	101.0	7.31	--	19.77	6.55
	EM11	7/10/2018	N	Qal	13.8 - 33.6	3.299	0.44	0 U	-27.1	7.2	0.04	24.97	59.6
	EM13	8/16/2018	N	Qal	13.8 - 33.6	3.1	2.48	--	137	7.80	--	20.07	3.9
	EM14	9/12/2018	N	Qal	13.8 - 33.6	2.969	0.64	--	130.6	7.24	--	24.60	4.99
	EM15	10/11/2018	N	Qal	13.8 - 33.6	3.26	1.68	0 U	100	7.25	0 U	23.45	5.5
	EM16	12/28/2018	N	Qal	13.8 - 33.6	3.062	0.97	--	84.4	7.18	--	21.42	5.33
	EM17	2/27/2019	N	Qal	13.8 - 33.6	2.834	0.05	0.0 U	95.8	7.15	0.0 U	22.04	3.30
	EM18	4/11/2019	N	Qal	13.8 - 33.6	2.733	0.57	--	130.3	7.14	--	21.4	2.2
	EM19	5/22/2019	N	Qal	13.8 - 33.6	2.913	0.08	0.0 U	211.2	7.13	0.0 U	21.0	24.8
	EM20	7/3/2019	N	Qal	13.8 - 33.6	2.934	0.50	--	160.5	7.09	--	22.2	9.3
	EM21	8/14/2019	N	Qal	13.8 - 33.6	3.311	0.42	0 U	108.2	7.26	0 U	24.0	7.5
	EM22	11/5/2019	N	Qal	13.8 - 33.6	3.398	0.64	0.0 U	195.8	7.09	0 U	25.0	6.0
	EM23	12/19/2019	N	Qal	13.8 - 33.6	3.126	1.41	--	92.6	7.20	--	21.9	7.61
	EM24	1/30/2020	N	Qal	13.8 - 33.6	3.055	0.61	0 U	54.9	7.27	0 U	21.5	23.40
	EM25	3/10/2020	N	Qal	13.8 - 33.6	2.471	2.44	--	176.6	7.2	--	20.2	19.7
	EM26	4/28/2020	N	Qal	13.8 - 33.6	2.397	2.12	0 U	164.8	7.19	0 U	22.3	32.2
	EM27	7/10/2020	N	Qal	13.8 - 33.6	4.199	0.71	--	181.3	7.56	--	23.8	6.91
	EM28	8/20/2020	N	Qal	13.8 - 33.6	2.835	0.51	0 U	36.2	7.12	0 U	26.9	9.2
	EM29	10/13/2020	N	Qal	13.8 - 33.6	2.392	0.49	0 U	114.6	7.49	0 U	23.9	5.18
	EM30	12/9/2020	N	Qal	13.8 - 33.6	2.805	0.33	--	92.5	7.1	--	23.5	4.06
	EM31	2/3/2021	N	Qal	13.8 - 33.6	2.679	0.83	0 U	162.6	7.19	0 U	20.6	3.9
	EM32	3/30/2021	N	Qal	13.8 - 33.6	2.679	0.83	--	162.6	7.19	--	20.6	3.9

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW23	EM33	6/2/2021	N	Qal	13.8 - 33.6	2.283	0.74	0.0 U	84.9	7.42	0.0 U	23.1	3.8
	EM34	7/21/2021	N	Qal	13.8 - 33.6	3.035	0.13	0.0 U	81.0	7.13	0.0 U	23.8	7.0
	EM35	9/16/2021	N	Qal	13.8 - 33.6	2.739	0.38	0.0 U	107.7	7.29	0.0 U	25.4	16.1
	EM36	12/2/2021	N	Qal	13.8 - 33.6	2.551	1.13	0.0 U	204.8	7.08	0.0 U	21.0	6.3
SWFTS-MW24	BL02	7/13/2017	N	Qal	12.8 - 37.6	7.450	3.04	0.00 U	160	7.31	0.00 U	--	70.9
	EM01	9/22/2017	N	Qal	12.8 - 37.6	6.989	1.31	--	-19.2	6.85	--	--	1.01
	EM02	9/28/2017	N	Qal	12.8 - 37.6	7.207	0.48	--	-8.2	6.92	--	--	0.45
	EM03	10/5/2017	N	Qal	12.8 - 37.6	7.129	0.76	--	5.4	6.80	--	--	0.30
	EM04	10/11/2017	N	Qal	12.8 - 37.6	7.050	3.88	0.0 U	112.3	6.97	0.0 U	--	120
	EM05	10/26/2017	N	Qal	12.8 - 37.6	7.389	3.06	--	116.0	7.03	--	--	71.0
	EM06	11/15/2017	N	Qal	12.8 - 37.6	6.230	1.39	0.00 U	36.6	7.09	0.00 U	--	5.02
	EM07	12/12/2017	N	Qal	12.8 - 37.6	7.384	1.11	0.00 U	-10.1	7.06	0.00 U	--	7.20
	EM08	2/21/2018	N	Qal	12.8 - 37.6	7.099	0.95	0.00 U	-47.3	6.38	0.00 U	--	5.49
	EM09	3/28/2018	N	Qal	12.8 - 37.6	6.458	0.55	--	-37.1	6.95	--	--	3.85
	EM10	5/2/2018	N	Qal	12.8 - 37.6	6.28	0.00	--	235	6.98	--	22.95	0.0
	EM11	7/12/2018	N	Qal	12.8 - 37.6	6.42	0.10	0 U	194	7.19	0 U	26.68	1.5
	EM12	7/27/2018	N	Qal	12.8 - 37.6	5.95	5.09	--	-71.1	6.96	--	24.82	7.54
	EM13	8/15/2018	N	Qal	12.8 - 37.6	19.1 E	1.83	--	134	7.15	--	23.22	34.6
	EM14	9/12/2018	N	Qal	12.8 - 37.6	6.241	0.75	--	114.3	7.08	--	26.70	1.49
	EM15	10/10/2018	N	Qal	12.8 - 37.6	6.25	2.95	0 U	148	7.37	0 U	21.77	24.0
	EM16	1/2/2019	N	Qal	12.8 - 37.6	5.709	1.55	--	127.2	6.97	--	21.45	20.9
	EM17	2/27/2019	N	Qal	12.8 - 37.6	5.168	1.29	0.0 U	36.8	7.08	0.0 U	21.54	0.19
	EM18	4/10/2019	N	Qal	12.8 - 37.6	4.976	1.24	--	115.2	6.99	--	22.8	8.5
	EM19	5/22/2019	N	Qal	12.8 - 37.6	5.342	1.18	0.0 U	196.5	6.84	0.0 U	22.9	29.9
	EM20	7/1/2019	N	Qal	12.8 - 37.6	4.992	0.65	--	105.4	6.99	--	26.4	43.7
	EM21	8/14/2019	N	Qal	12.8 - 37.6	5.639	0.63	0 U	160.6	7.03	0 U	24.0	9.6
	EM22	11/5/2019	N	Qal	12.8 - 37.6	5.485	1.34	0 U	249.1	6.98	0 U	24.2	3.2
	EM23	12/19/2019	N	Qal	12.8 - 37.6	5.123	1.47	--	104.0	7.04	--	23.7	6.39
	EM24	1/30/2020	N	Qal	12.8 - 37.6	5.170	1.16	0 U	83.0	7.05	0 U	23.6	8.35
	EM25	3/10/2020	N	Qal	12.8 - 37.6	4.59	2.8	--	121.7	6.95	--	21.9	3
	EM26	4/28/2020	N	Qal	12.8 - 37.6	4.74	2.6	0 U	170	6.91	0 U	22.9	4
	EM27	7/10/2020	N	Qal	12.8 - 37.6	5.843	1.2	--	110.4	7.00	--	26.1	44.3
	EM28	8/18/2020	N	Qal	12.8 - 37.6	5.462	0.77	0 U	260.8	6.99	0 U	26.6	7.7
	EM29	10/12/2020	N	Qal	12.8 - 37.6	5.703	1.17	0 U	115.4	7.22	0 U	27	76.24
	EM30	12/9/2020	N	Qal	12.8 - 37.6	4.922	0.49	--	104.1	6.83	--	24.7	7.65
	EM31	2/3/2021	N	Qal	12.8 - 37.6	4.677	4.05	0 U	175.4	7.06	0 U	21.8	19.2
	EM32	3/30/2021	N	Qal	12.8 - 37.6	4.677	4.05	--	175.4	7.06	--	21.8	19.2
	EM33	6/2/2021	N	Qal	12.8 - 37.6	4.061	1.16	0.0 U	129.7	7.23	0.0 U	25.6	18.1
	EM34	7/19/2021	N	Qal	12.8 - 37.6	5.264	0.97	0.0 U	95.3	6.90	0.0 U	25.4	5.9
	EM35	9/16/2021	N	Qal	12.8 - 37.6	4.738	1.00	0.0 U	141.2	7.01	0.0 U	25.5	21.2
	EM36	12/1/2021	N	Qal	12.8 - 37.6	5.179	1.48	0.0 U	174.7	6.87	0.0 U	24.2	16.2
SWFTS-MW25	BL02	7/13/2017	N	Qal	12.8 - 42.6	6.260	3.03	0.00 U	162	6.99	0.00 U	--	30.0
	EM01	9/22/2017	N	Qal	12.8 - 42.6	7.168	0.50	--	31.1	6.99	--	--	6.11
	EM02	9/28/2017	N	Qal	12.8 - 42.6	7.323	0.14	--	-28.6	7.03	--	--	364
	EM03	10/5/2017	N	Qal	12.8 - 42.6	7.160	0.96	--	0.9	6.92	--	--	171
	EM04	10/11/2017	N	Qal	12.8 - 42.6	7.247	0.26	0.0 U	-1.6	6.86	0.0 U	--	294
	EM05	10/26/2017	N	Qal	12.8 - 42.6	7.443	0.98	--	76.1	6.94	--	--	92
	EM06	11/15/2017	N	Qal	12.8 - 42.6	6.642	1.11	0.0 U	22.8	6.80	0.0 U	--	459.00
	EM07	12/12/2017	N	Qal	12.8 - 42.6	7.206	0.63	0.0 U	-77.2	6.92	0.0 U	--	69.4
	EM08	2/21/2018	N	Qal	12.8 - 42.6	7.389	0.32	0.00 U	-84.9	6.17	0.00 U	--	109
	EM09	3/28/2018	N	Qal	12.8 - 42.6	6.926	0.20	--	-156.2	6.90	--	--	81.20

Table E.3
Groundwater Field Test Results Summary
Seep Well Field Bioremediation Treatability Study

Location	Event	Sample Date	QCType	Screened Lithology	Screened Interval	Field Tests							
						Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Sulfide	Temperature	Turbidity
						mS/cm	mg/L	mg/L	mV	SU	mg/L	C	NTU
SWFTS-MW25	EM10	5/3/2018	N	Qal	12.8 - 42.6	6.68	0.00	--	132	6.94	--	24.11	23.6
	EM11	7/10/2018	N	Qal	12.8 - 42.6	6.45	3.00	0 U	230	7.34	0 U	22.3	40.1
	EM12	7/27/2018	N	Qal	12.8 - 42.6	6.19	2.49	--	-73.6	6.89	--	24.3	139
	EM13	8/15/2018	N	Qal	12.8 - 42.6	19.8 E	1.91	--	135	7.04	--	21.27	272
	EM14	9/12/2018	N	Qal	12.8 - 42.6	6.214	0.47	--	113.6	7.00	--	25.38	340
	EM15	10/11/2018	N	Qal	12.8 - 42.6	6.34	1.25	0 U	92	7.12	0 U	24.77	55.8
	EM16	1/2/2019	N	Qal	12.8 - 42.6	5.69	0.97	--	132	6.92	--	21.31	402
	EM17	2/27/2019	N	Qal	12.8 - 42.6	5.467	0.05	0.0 U	104.8	6.41	0.0 U	23.66	418
	EM18	4/11/2019	N	Qal	12.8 - 42.6	7.274	0.81	--	113.4	6.87	--	23.57	432
	EM19	5/22/2019	N	Qal	12.8 - 42.6	5.395	0.12	0.0 U	226.6	6.88	0.0 U	22.7	86.7
	EM20	7/3/2019	N	Qal	12.8 - 42.6	5.162	0.47	--	140.2	6.80	--	23.1	54.2
	EM21	8/14/2019	N	Qal	12.8 - 42.6	5.470	0.39	0 U	115.3	7.08	0 U	24.3	46
	EM22	11/5/2019	N	Qal	12.8 - 42.6	5.369	0.54	0 U	193.3	6.99	0.1	24.5	121.6
	EM23	12/19/2019	N	Qal	12.8 - 42.6	5.015	0.74	--	91.8	7.01	--	22.5	180.03
	EM24	1/30/2020	N	Qal	12.8 - 42.6	5.184	0.55	0 U	77.4	7.04	0 U	23.3	380.98
	EM25	3/10/2020	N	Qal	12.8 - 42.6	4.78	2.45	--	161.9	6.97	--	22.3	81
	EM26	4/28/2020	N	Qal	12.8 - 42.6	4.956	2	0 U	164.6	6.94	0 U	24.1	369.1
	EM27	7/10/2020	N	Qal	12.8 - 42.6	5.646	0.67	--	179.9	7.09	--	25.4	131.7
	EM28	8/19/2020	N	Qal	12.8 - 42.6	5.348	0.8	0 U	187.6	7	0 U	24.4	510.2
	EM29	10/13/2020	N	Qal	12.8 - 42.6	4.269	0.35	0 U	159	7.33	0 U	23.6	230.6
	EM30	12/9/2020	N	Qal	12.8 - 42.6	4.696	0.27	--	98.3	6.89	--	23.4	420.38
	EM31	2/4/2021	N	Qal	12.8 - 42.6	4.552	0.77	0 U	171.6	6.99	0 U	22.3	796
	EM32	3/30/2021	N	Qal	12.8 - 42.6	4.552	0.77	--	171.6	6.99	--	22.3	796.0
	EM33	6/2/2021	N	Qal	12.8 - 42.6	3.961	0.65	0.0 U	94.9	7.16	0.0 U	25.5	149.3
	EM34	7/21/2021	N	Qal	12.8 - 42.6	5.244	0.11	0.0 U	98.5	6.89	0.0 U	24.8	219.5
	EM35	9/16/2021	N	Qal	12.8 - 42.6	4.550	1.13	0.0 U	138.2	7.00	0.0 U	23.9	299.4
	EM36	12/1/2021	N	Qal	12.8 - 42.6	5.164	0.95	0.0 U	175.7	6.83	0.0 U	22.7	159.1

Notes:
E - Instrument error during field test.
mg/L - milligrams per liter
mS/cm - milliSiemens per centimeter
mV - milliVolts
N - Normal field sample
NTU - Nephelometric Turbidity Unit
SU - Standard Units
UMCf- Upper Muddy Creek Formation
> - The analyte concentration was greater than the value shown and above the range of the instrument.
---- Not tested.

Table E.4
Groundwater Biotrap Microbial Results Summary
Seep Well Field Bioremediation Treatability

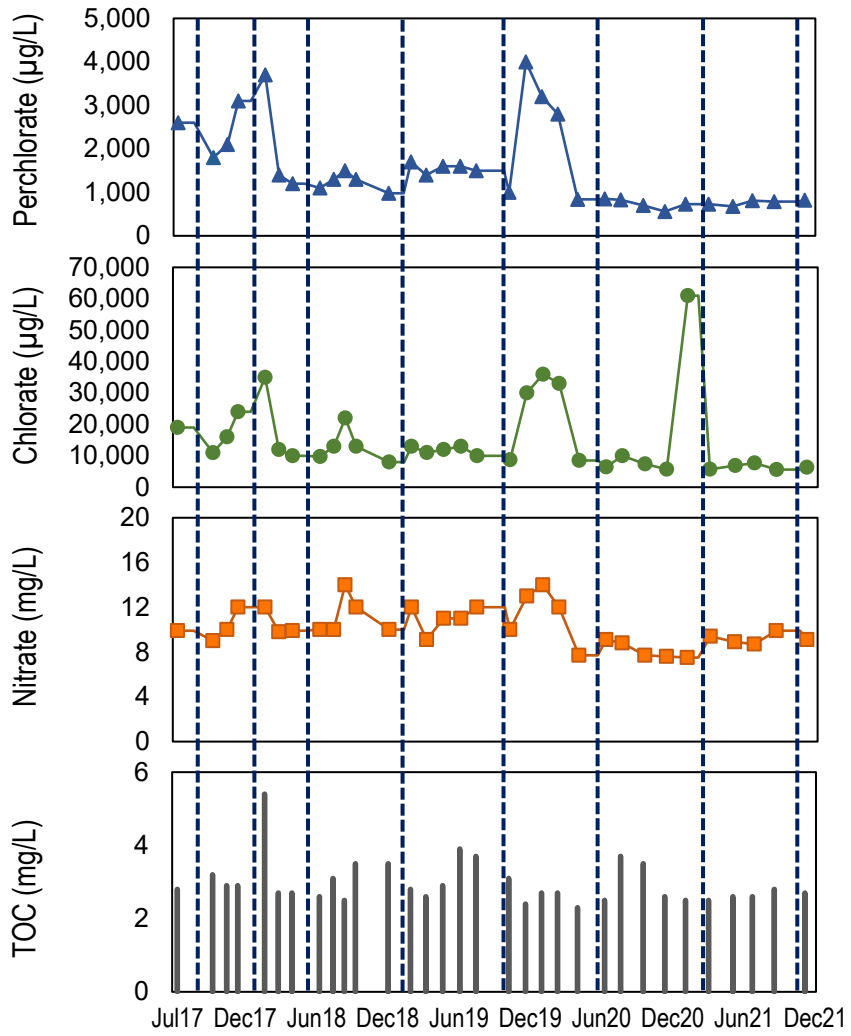
Location	Sample Date[1]	Sample Matrix	Microbial Census	Microbial Phospholipid Fatty Acid Analysis (PLFA)								
			Perchlorate reductase gene (pcrA)	Total Biomass	Proteobacteria (Monos)	Firmicutes (TerBrSats)	Anaerobic metal reducers (BrMonos)	SRB/Actinomycetes (MidBrSats)	General (Nsats)	Eukaryotes (polyenoics)	Slowed Growth	Decreased Permeability
			cells/bead	cells/bead	%	%	%	%	%	%	ratio cy/cis	ratio trans/cis
SWFTS-IW08	8/16/2017	Biotrap	<250	6.64E+04	79.01	1.21	0.00	0.00	19.77	0.00	2.37	0.35
SWFTS-IW12	8/16/2017	Biotrap	63.2 J	1.42E+05	69.27	4.32	0.00	0.00	25.30	1.12	1.10	0.19
SWFTS-MW11	8/16/2017	Biotrap	<250	1.83E+05	71.71	0.38	5.03	0.00	19.75	3.14	2.17	0.42
SWFTS-MW16	8/16/2017	Biotrap	192 J	6.10E+04	76.63	0.00	1.72	0.00	21.64	0.00	1.77	0.00
SWFTS-MW20	8/16/2017	Biotrap	<250	1.06E+05	64.44	2.33	1.43	0.00	31.16	0.62	1.55	0.23
SWFTS-IW08	11/29/2017	Biotrap	<250	3.03E+05	55.41	10.21	2.27	0.58	25.71	5.83	0.83	1.16
SWFTS-IW12	11/29/2017	Biotrap	<250	2.25E+05	55.45	8.79	0.85	0.28	28.91	5.72	0.79	0.97
SWFTS-MW11	11/29/2017	Biotrap	<250	3.43E+05	72.71	1.59	6.72	0.29	13.79	4.92	1.57	0.32
SWFTS-MW16	11/29/2017	Biotrap	1,330	9.19E+05	58.97	18.72	2.76	2.18	16.57	0.80	0.05	0.12
SWFTS-MW20	11/29/2017	Biotrap	<250	6.04E+04	69.40	1.00	7.76	0.00	18.73	3.12	3.38	0.00
PC-94	10/25/2018	Biotrap	79.9	7.03E+04	58.41	7.52	0.00	0.00	34.06	0.00	2.89	0.00
SWFTS-MW07A	10/25/2018	Biotrap	5.8 J	1.32E+05	45.26	8.96	1.28	0.00	39.92	4.57	1.46	0.10
SWFTS-MW14	10/25/2018	Biotrap	<80.6	1.34E+06	50.22	8.67	2.57	3.06	31.61	3.89	0.14	0.12
SWFTS-MW15	10/25/2018	Biotrap	0.5 J	8.14E+04	66.94	5.07	0.00	0.00	27.37	0.62	3.72	0.34
SWFTS-IW11	11/28/2018	Biotrap	<250	2.48E+06	50.80	20.30	1.50	1.67	24.16	1.60	0.16	0.08
SWFTS-IW20	11/28/2018	Biotrap	<250	3.00E+06	46.11	20.54	1.02	1.30	28.21	2.80	0.43	0.15
SWFTS-IW06A	11/28/2018	Biotrap	<250	2.48E+06	46.92	19.40	2.03	3.09	27.08	1.48	0.31	0.10
SWFTS-IW02A	1/8/2020	Biotrap	<250	7.30E+05	65.37	4.47	0.94	0.73	19.53	8.98	0.49	1.84
SWFTS-MW07A	1/8/2020	Biotrap	<250	7.36E+04	60.47	0.00	0.00	0.00	39.53	0.00	0.49	1.84
SWFTS-MW09B	1/8/2020	Biotrap	<250	7.47E+04	37.79	0.00	0.00	0.00	62.22	0.00	0.47	0.00
SWFTS-MW14	1/8/2020	Biotrap	<250	1.29E+05	39.49	0.09	5.79	6.79	33.03	14.83	1.03	1.07
SWFTS-IW02A	12/17/2020	Biotrap	<250	3.95E+06	26.19	38.84	2.87	1.83	29.75	0.54	1.19	0.16
SWFTS-MW07A	12/17/2020	Biotrap	<250	7.37E+04	61.00	4.19	0.00	15.21	19.59	0.00	0.81	0.13
SWFTS-MW09B	12/17/2020	Biotrap	<250	9.42E+04	64.47	4.21	1.34	0.00	27.46	2.50	0.99	0.00
SWFTS-MW14	12/17/2020	Biotrap	4,740	2.38E+05	60.13	4.10	0.00	11.92	23.85	0.00	0.30	0.04
SWFTS-IW02A	1/7/2022	Biotrap	69,800	4.75E+06	53.42	12.02	2.21	1.69	28.05	2.60	0.30	0.40
SWFTS-MW07A	1/7/2022	Biotrap	2,390	2.74E+04	78.67	0.00	0.00	0.00	21.34	0.00	0.70	0.00
SWFTS-MW09B	1/7/2022	Biotrap	<250	<1.66E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SWFTS-MW14	1/7/2022	Biotrap	291,000	2.65E+04	100.00	0.00	0.00	0.00	0.00	0.00	0.85	0.00

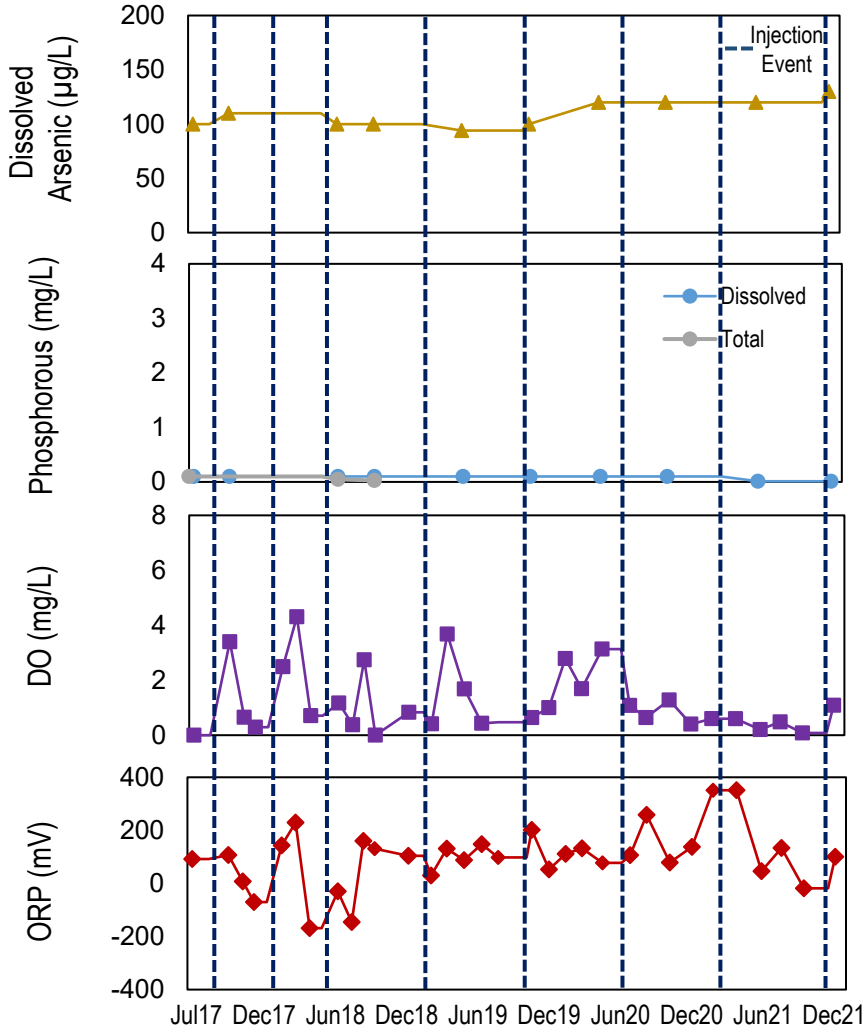
Notes:

Monos	Monoenoic
TerBrSats	Terminally Branched Saturated
BrMonos	Branched Monoenoic
MidBrSats	Mid-Chain Branched Saturated
Nsats	Normal Saturated
<	Not detected

1. Annual Bio-trap® samples for the 2021 reporting period were installed December 2 to December 7, 2021 and retrieved on January 7, 2022.

Appendix F
Concentration Trends for Effectiveness Monitoring Wells





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. PC-58 is located approximately 1,000 feet upgradient of the injection well transects.
3. Monitoring well PC-58 is screened in the alluvium from 7.8 to 32.8 feet bgs.
4. No hydraulic conductivity estimates at monitoring well PC-58 were measured.
5. No mobile porosity estimates at monitoring well PC-58 were measured.

-- Injection Event

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

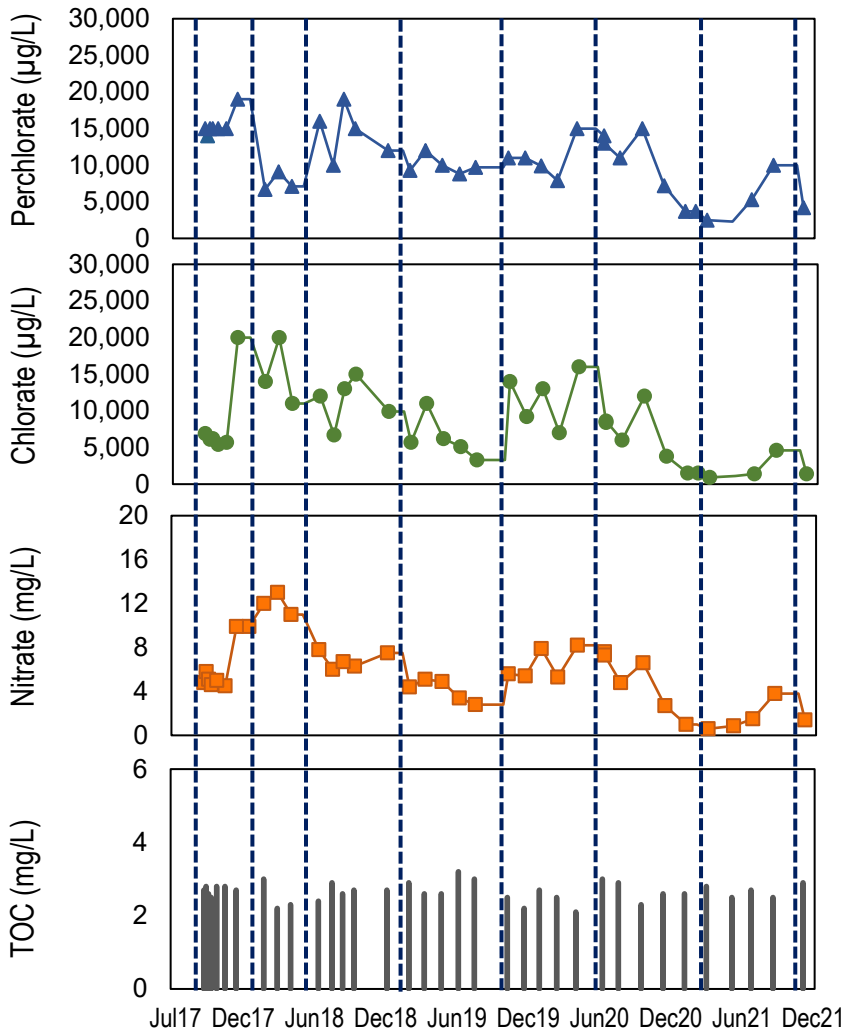
SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

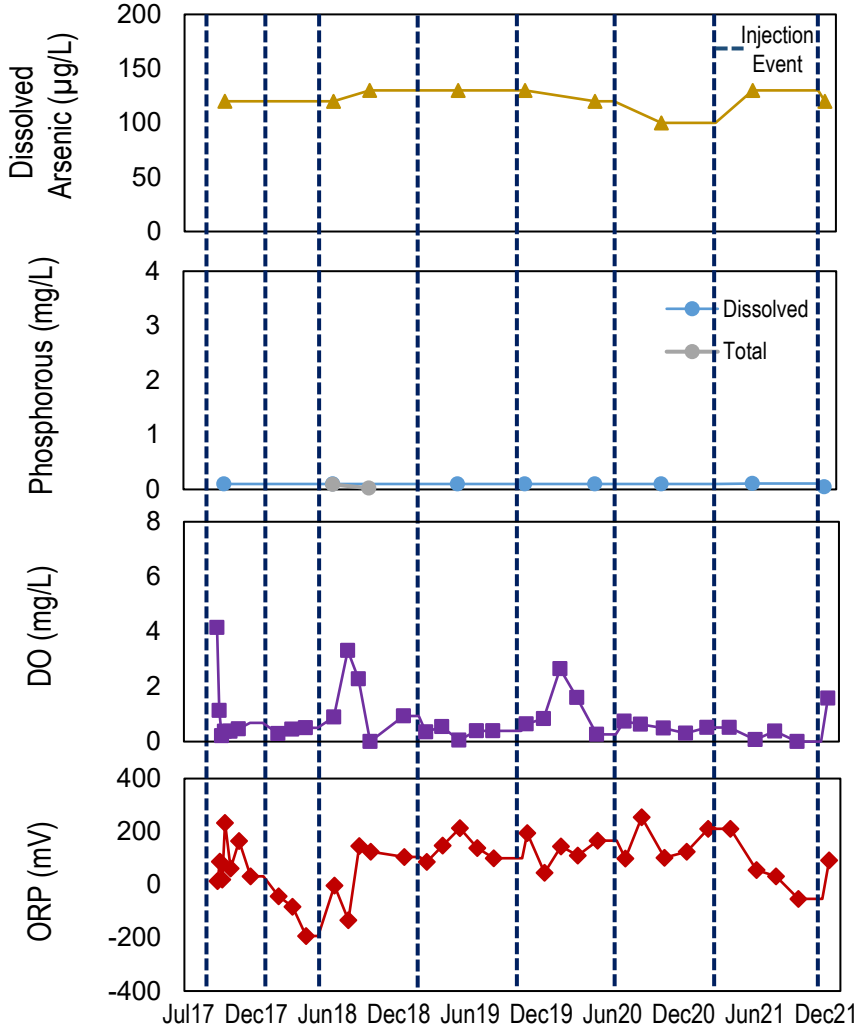
SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR PC-58

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.1

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event
2. PC-88 was added to the effectiveness monitoring network after the first injection event.
3. PC-88 is located approximately 350 feet west of injection well transects. PC-88 is considered an upgradient well.
4. Monitoring well PC-88 is screened in the alluvium from 40 to 50 feet bgs.
5. No hydraulic conductivity estimates at monitoring well PC-88 were measured.
6. No mobile porosity estimates at monitoring well PC-88 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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Figure No.
F.2

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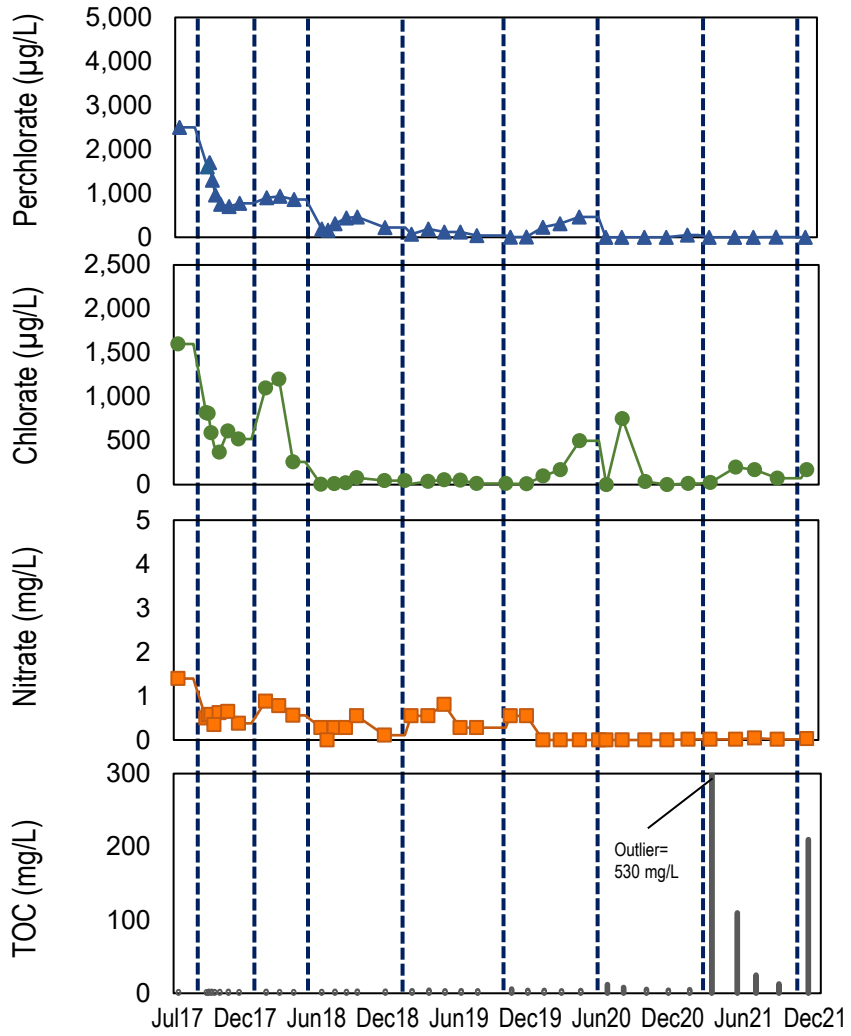

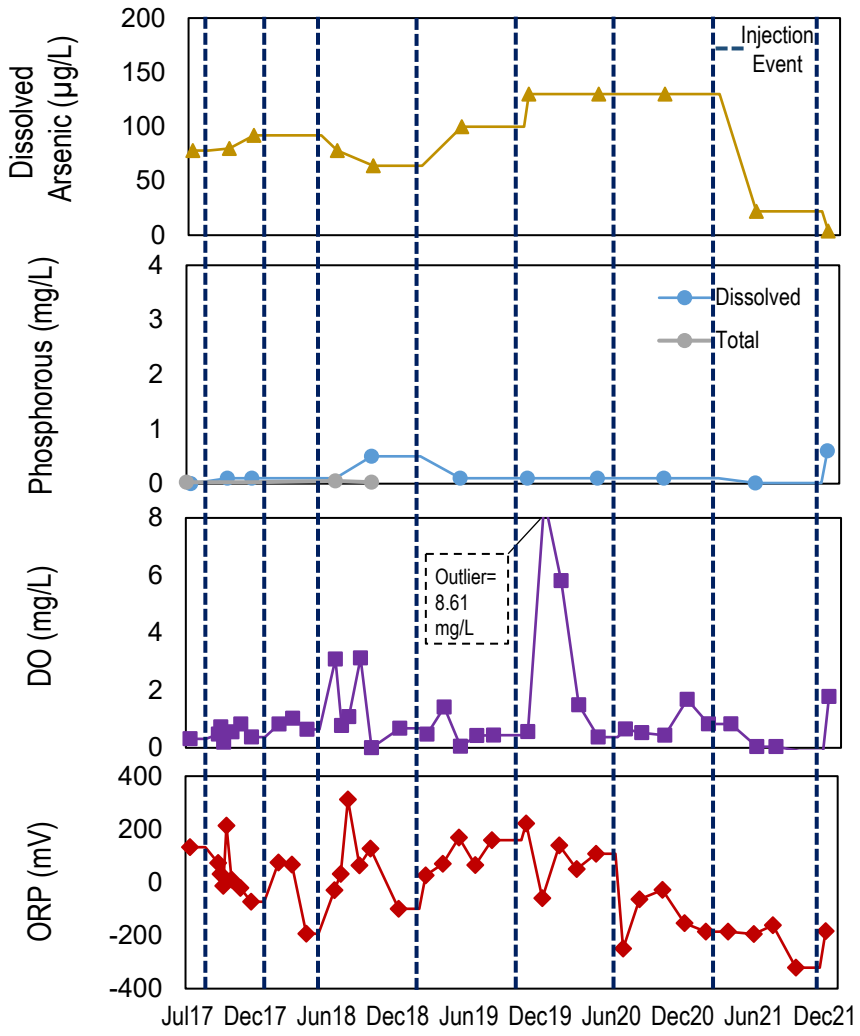

Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. PC-91 is located approximately 25 feet downgradient of the injection well transects.
3. Monitoring well PC-91 is screened in the alluvium from 11.5 to 21.5 feet bgs.
4. No hydraulic conductivity estimates at monitoring well PC-91 were measured.
5. No mobile porosity estimates at monitoring well PC-91 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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2021 ANNUAL PROGRESS REPORT
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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR PC-91

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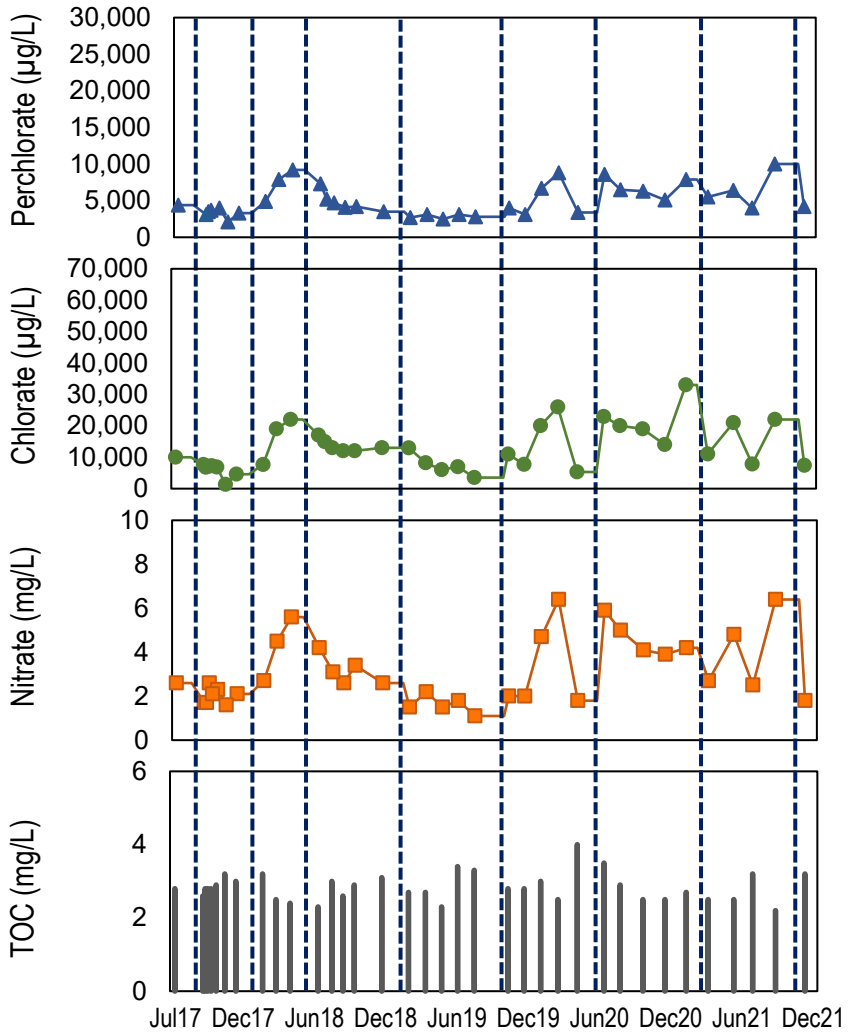
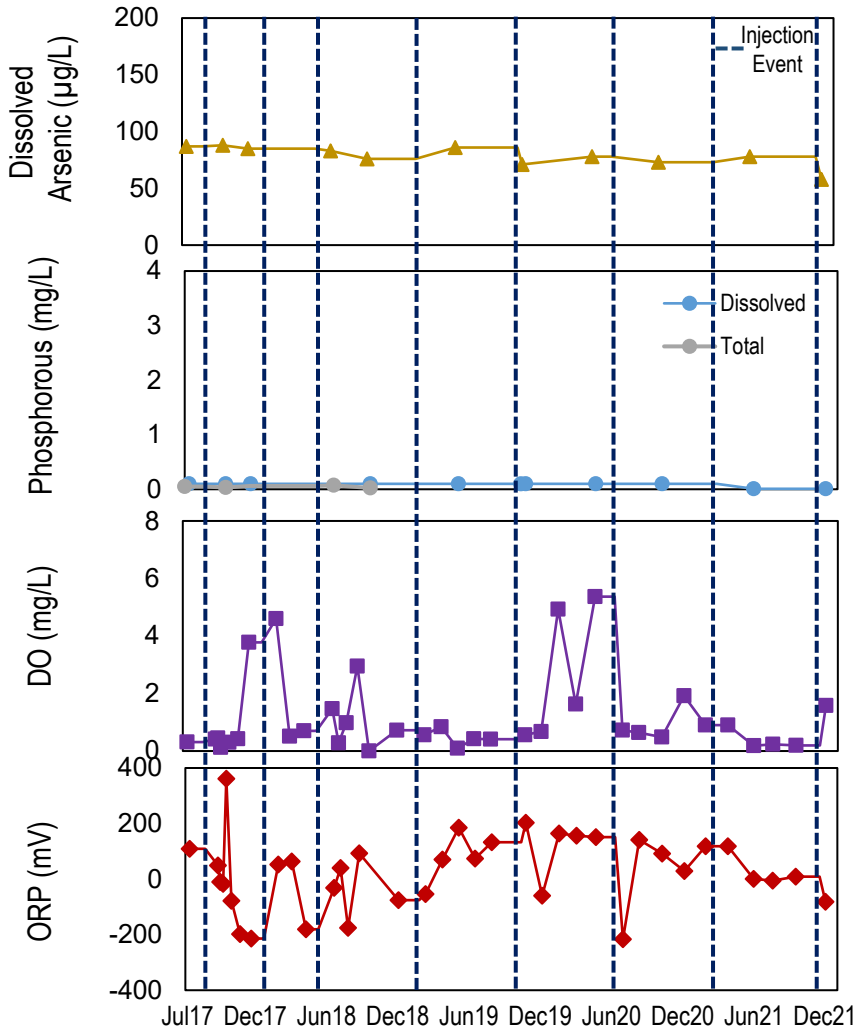
Figure No.
F.3

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. PC-92 is located approximately 30 feet downgradient of the injection well transects.
3. Monitoring well PC-92 is screened in the alluvium from 26.5 to 36.5 feet bgs.
4. No hydraulic conductivity estimates at monitoring well PC-92 were measured.
5. No mobile porosity estimates at monitoring well PC-92 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR PC-92

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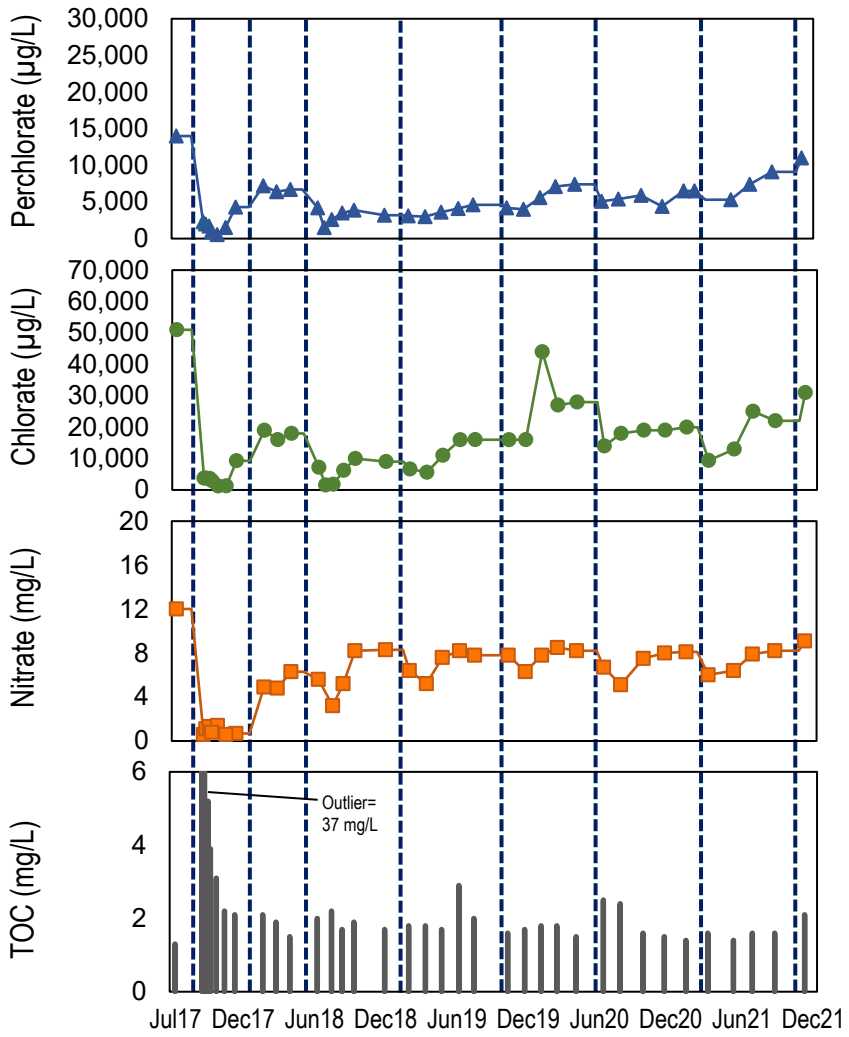
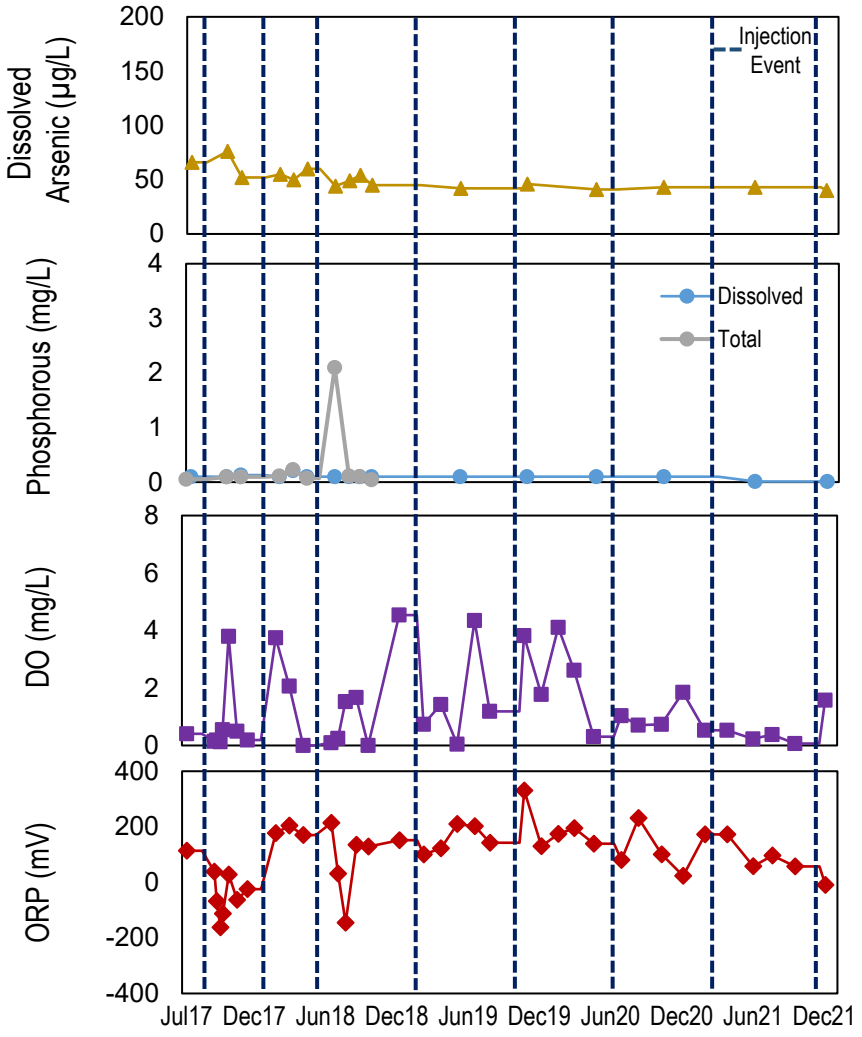
Designed By:	SS

Figure No.
F.4

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. PC-94 is located approximately 400 feet downgradient of the injection well transects.
3. Monitoring well PC-94 is screened in the alluvium from 9.5 to 19.5 feet bgs.
4. Slug testing suggests hydraulic conductivity at PC-94 is approximately 2.5 to 3.0 feet/day.
5. Nuclear magnetic resonance logging at PC-94 indicates a mobile porosity estimate of 5%.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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2021 ANNUAL PROGRESS REPORT
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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR PC-94

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Date:	MAY 18, 2022
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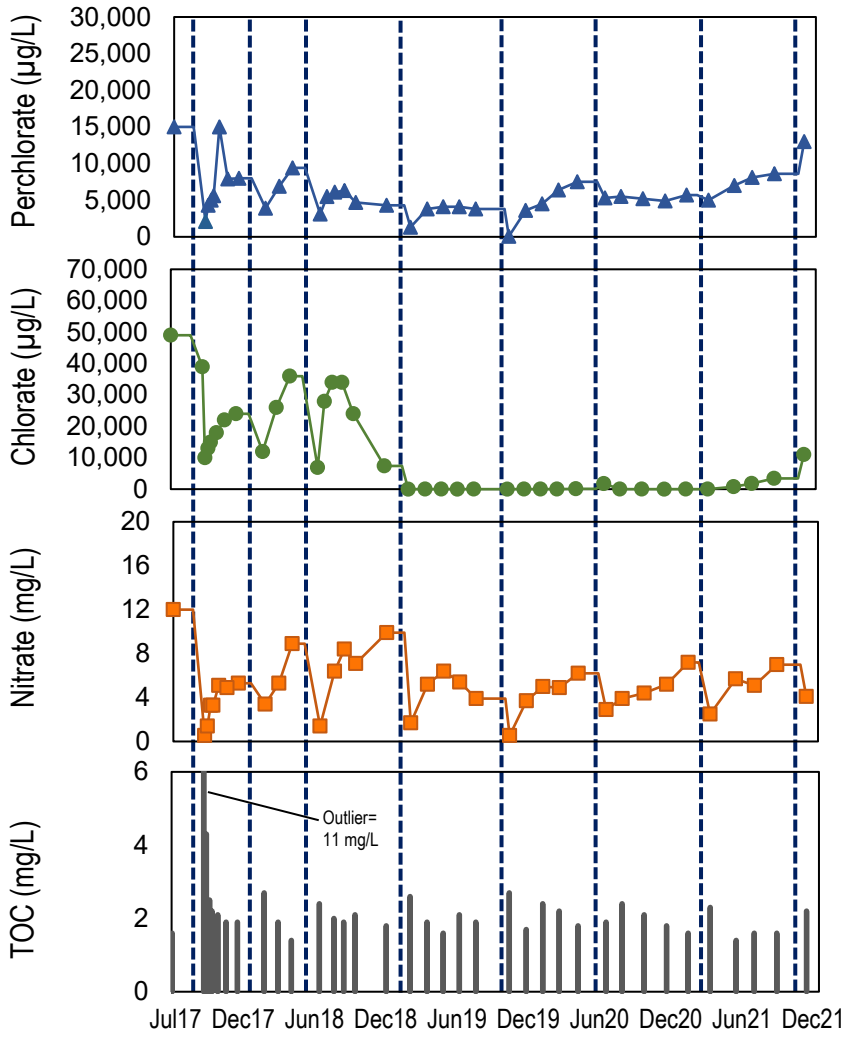
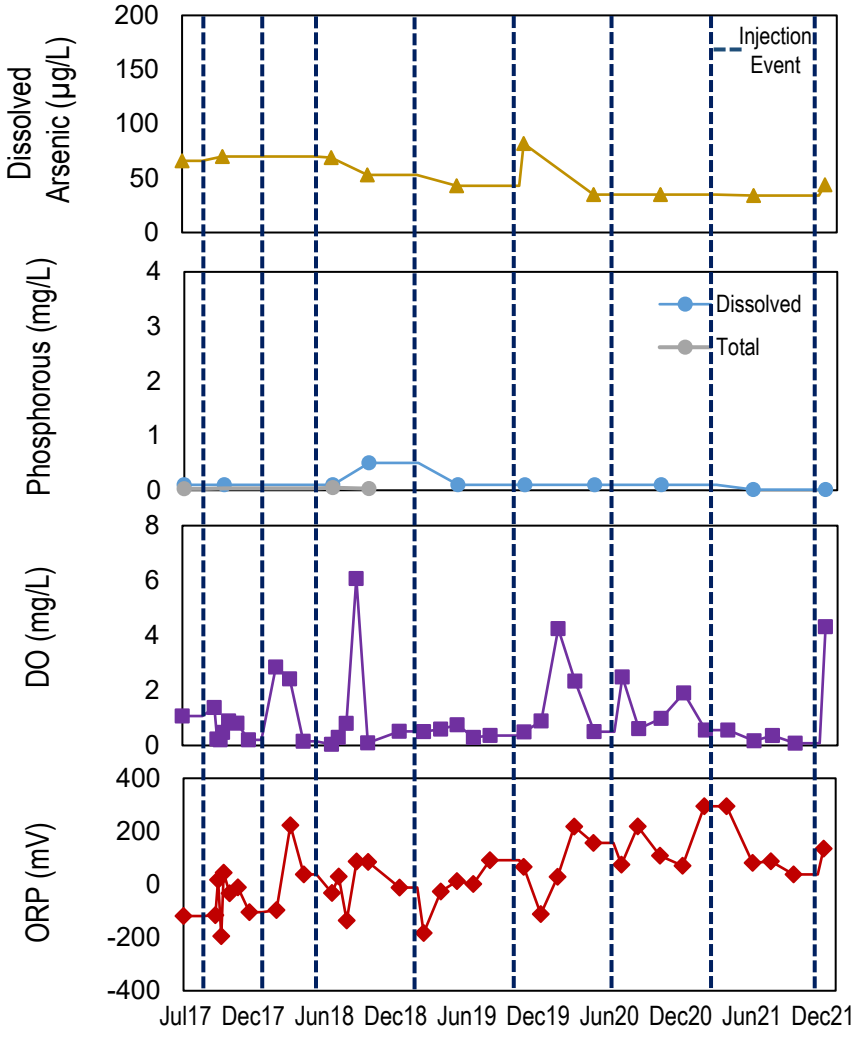
Figure No.
F.5

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW01 is located approximately 150 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW01 is screened in the alluvium from 24.2 to 38.9 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW01 is approximately 48.4 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW01 indicates a mobile porosity estimate of 7%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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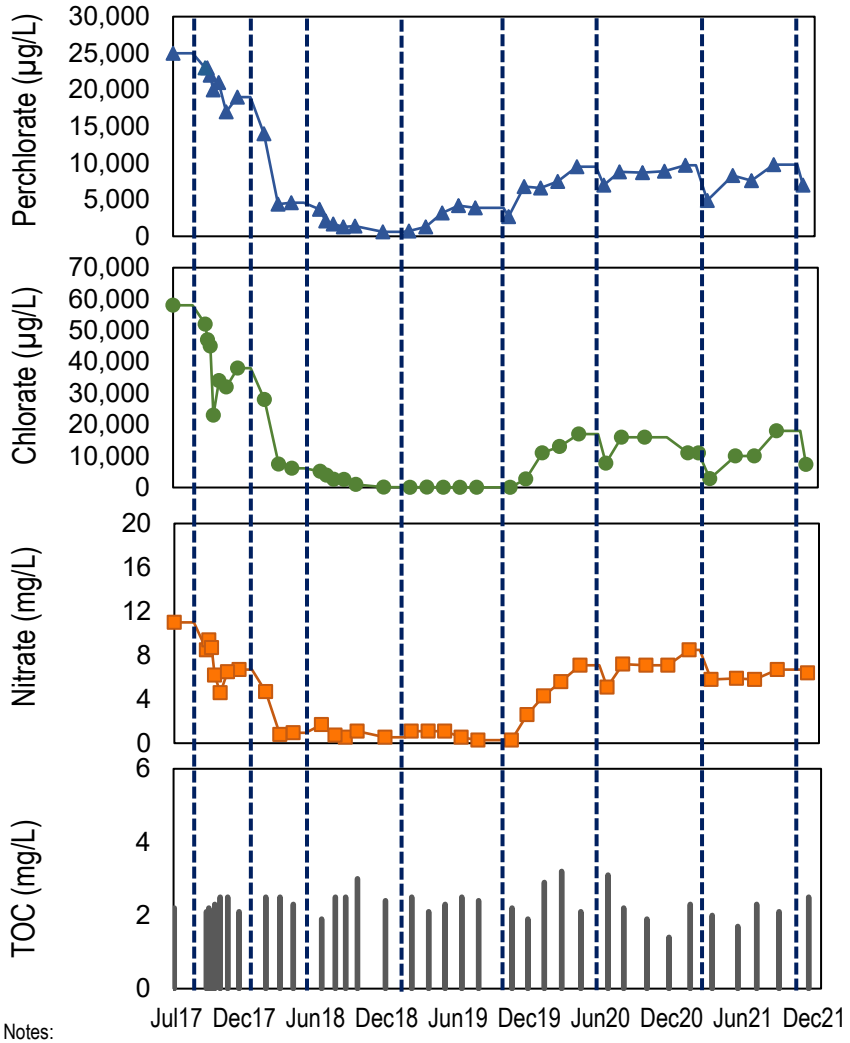
HENDERSON, NEVADA

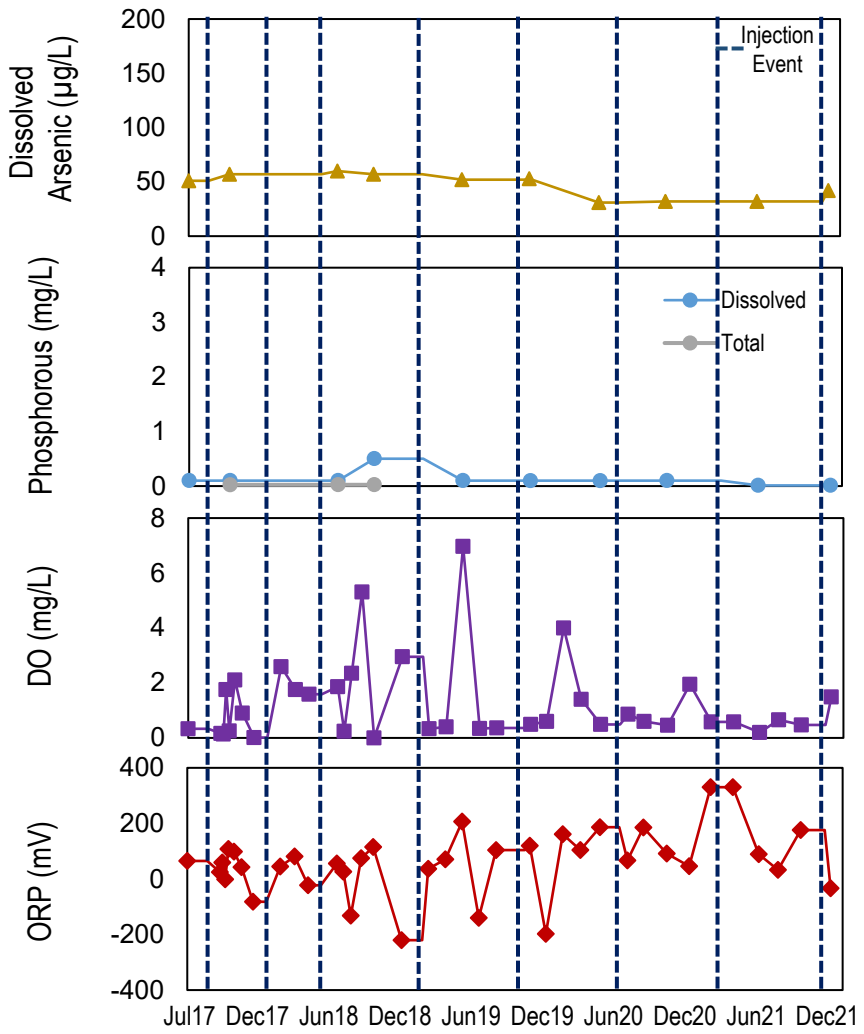
SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW01

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.6

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW02 is located between the injection well transects, approximately 50 feet downgradient of the southern injection well transect.
3. Monitoring well SWFTS-MW02 is screened in the alluvium from 18.4 to 33.1 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW02 is approximately 8.4 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW02 indicates a mobile porosity estimate of 9%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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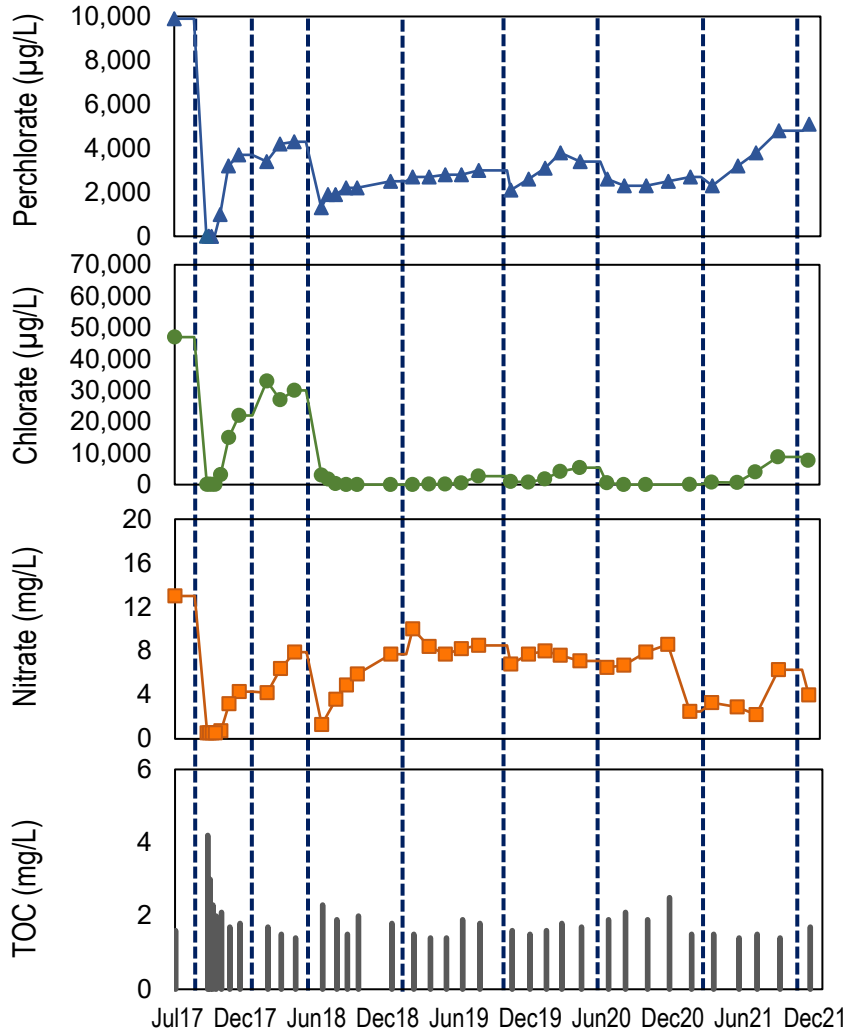
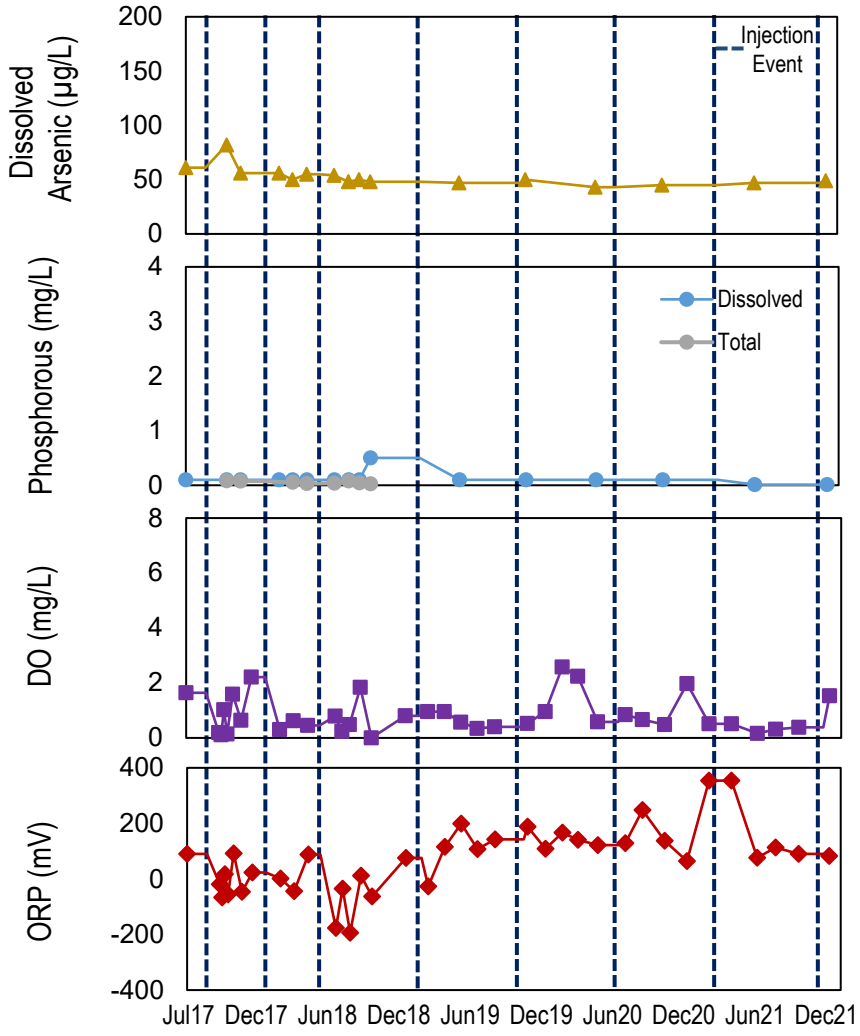
SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW02

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.7

\\tts100\fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW03 is located approximately 400 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW03 is screened in the alluvium from 27.2 to 42.1 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW03 is approximately 153.4 to 237.8 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW03 indicates a mobile porosity estimate of 11%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW03

Project No.:	117-7502021-M11
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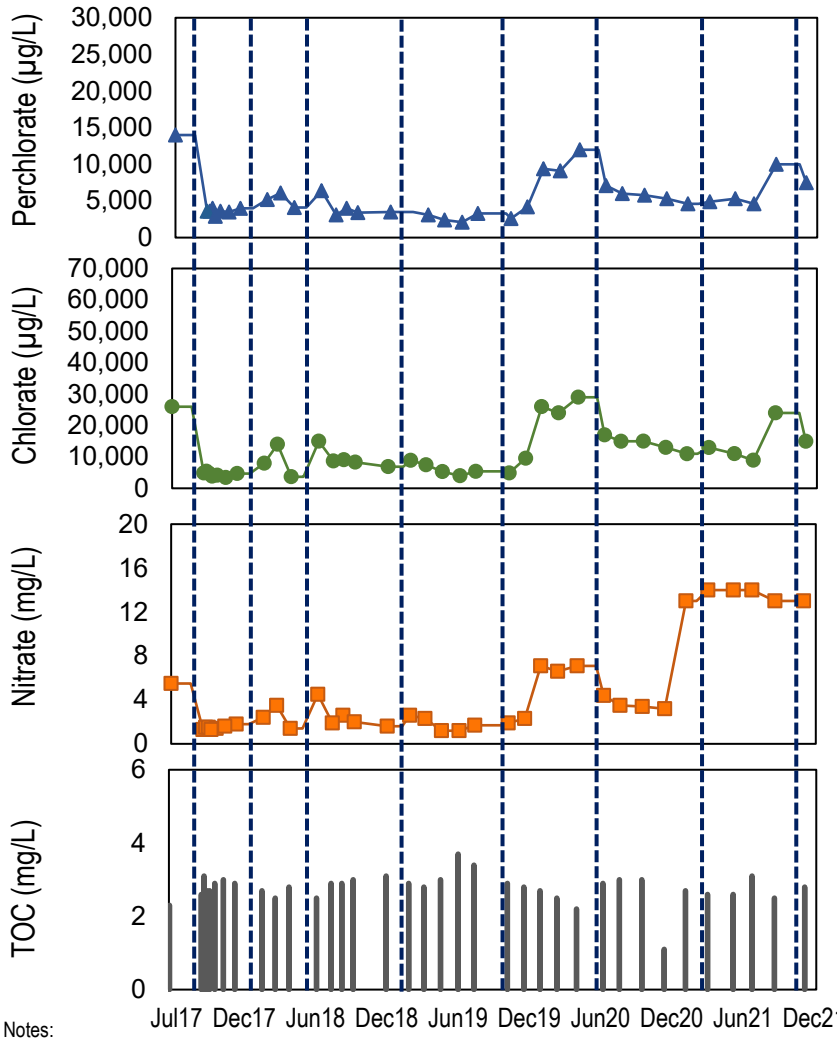
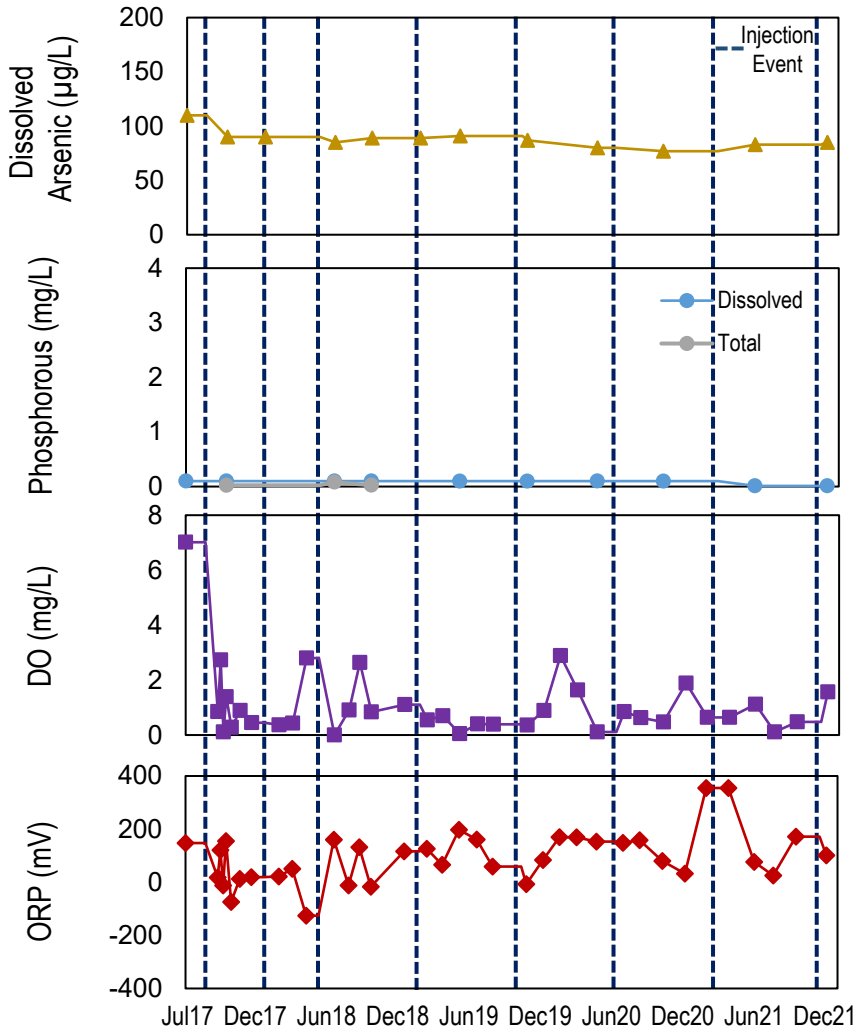
Designed By:	SS

Figure No.
F.8

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW04 is located approximately 75 feet to the north of the injection well transects. SWFTS-MW04 is considered an upgradient/side-gradient monitoring well.
3. Monitoring well SWFTS-MW04 is screened in the alluvium from 25.8 to 40.4 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW04 is approximately 18.1 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW04 indicates a mobile porosity estimate of 12%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW04

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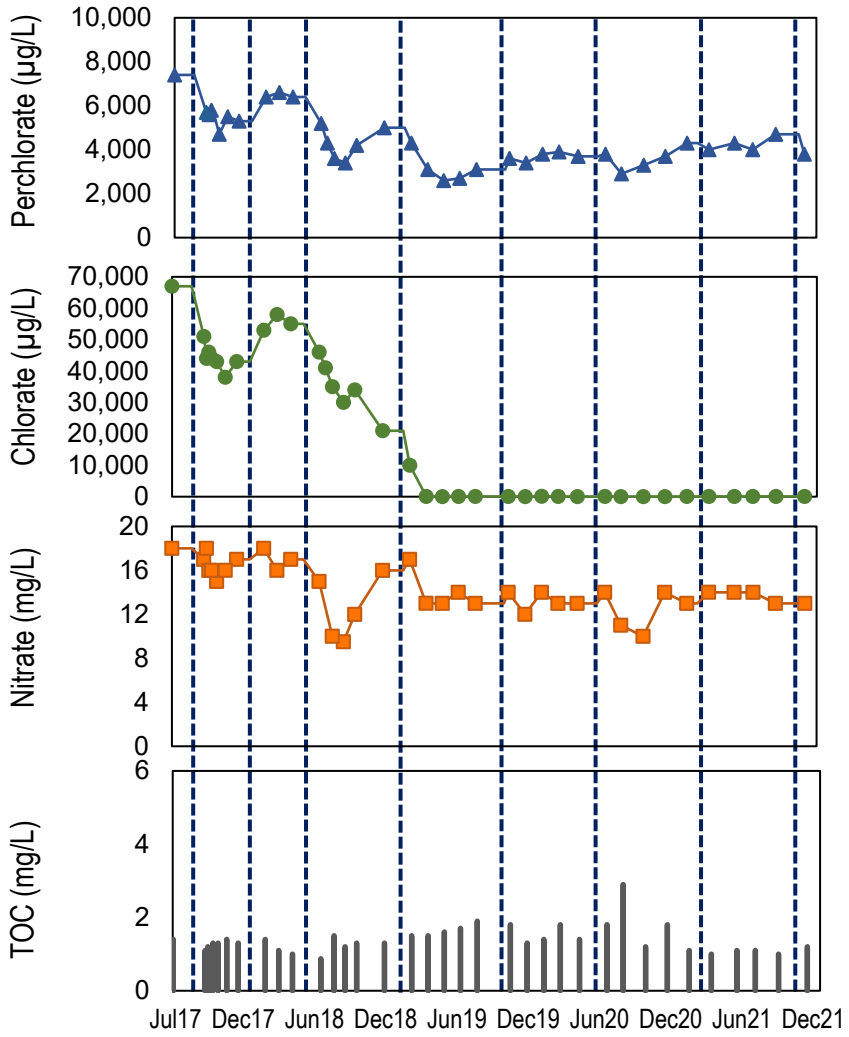
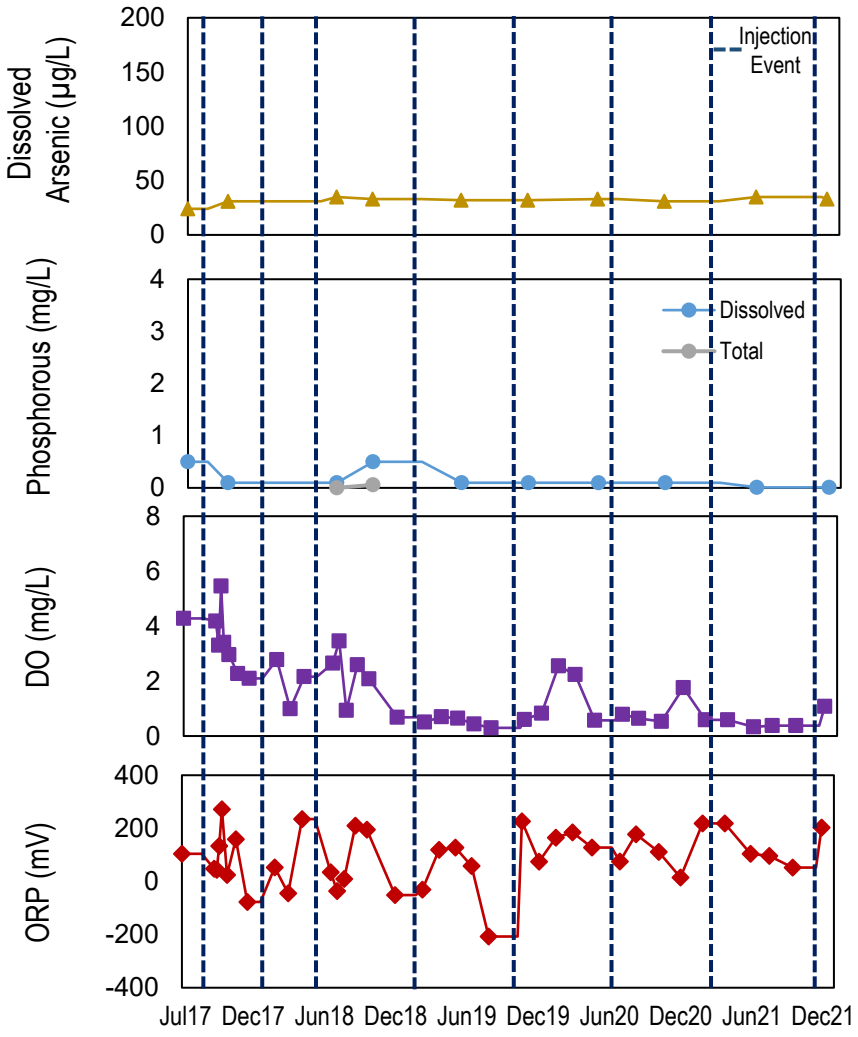
Figure No.
F.9

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW05A is located approximately 90 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW05A is screened in the alluvium from 19.3 to 29.3 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW05A is approximately 6.8 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW05A indicates a mobile porosity estimate of 7%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW05A

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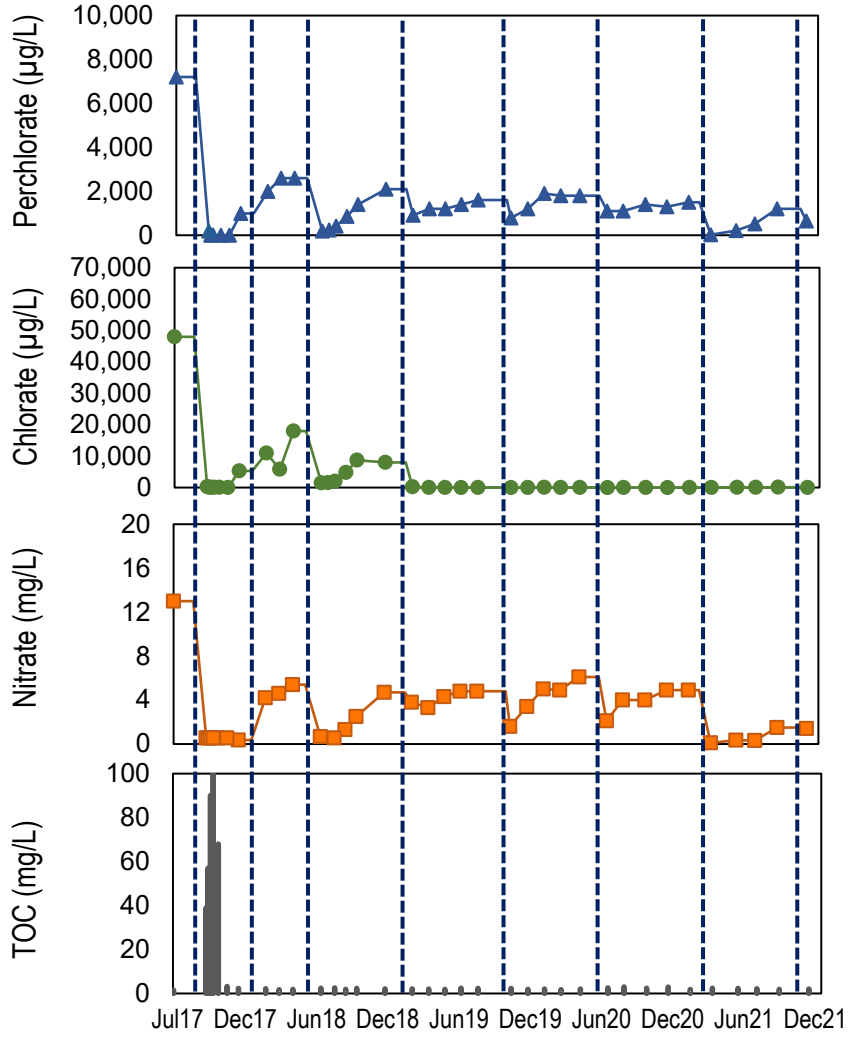
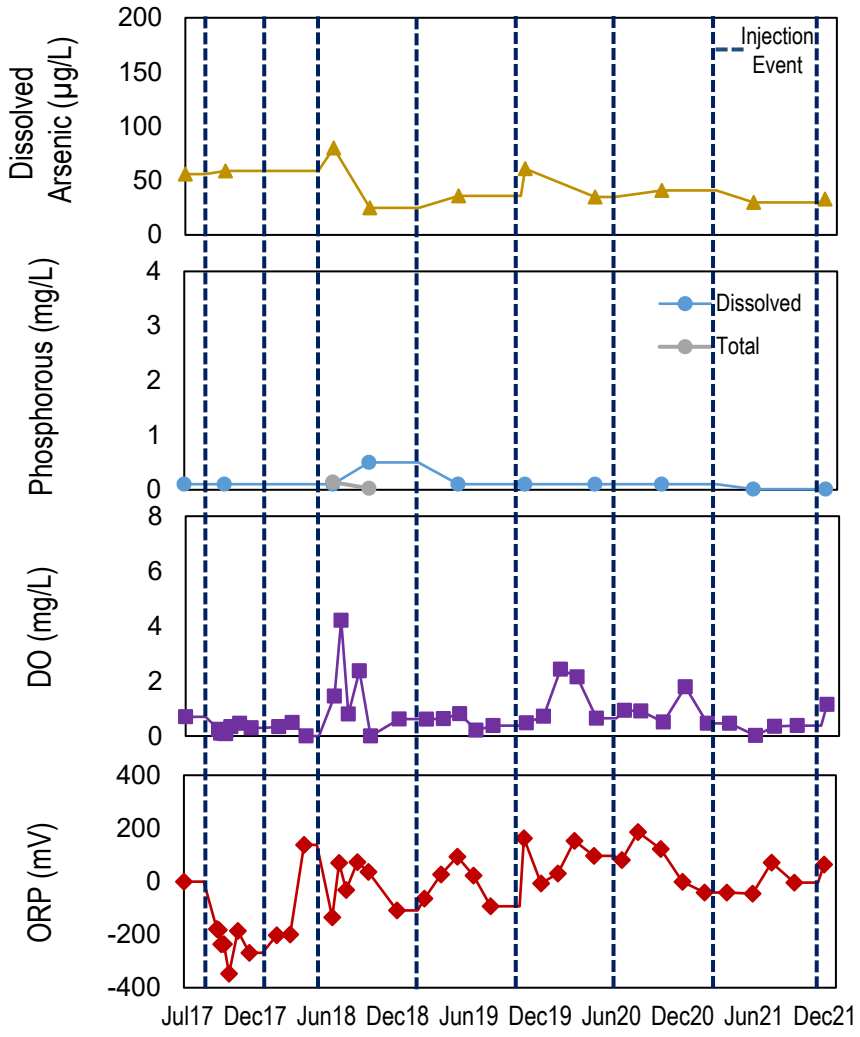
Figure No.
F.10

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW05B is located approximately 100 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW05B is screened in the alluvium from 32.3 to 42 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW05B is approximately 49.4 to 65.6 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW05B indicates a mobile porosity estimate of 8%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW05B

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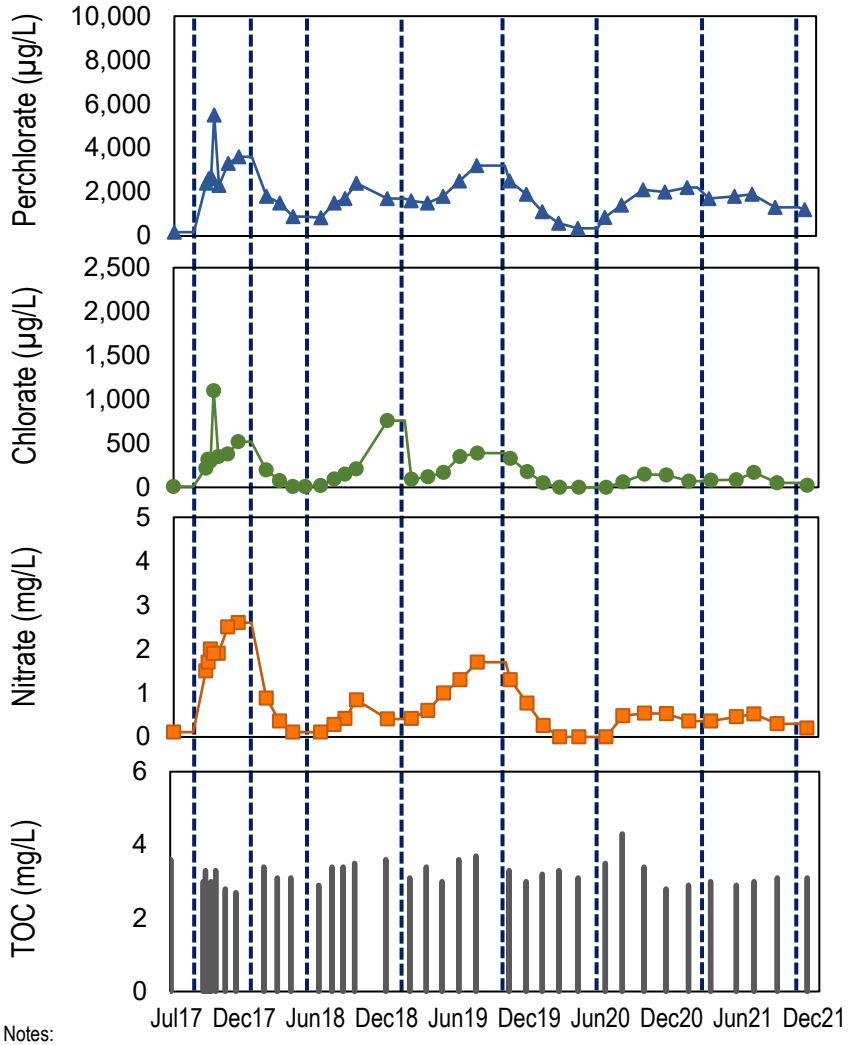
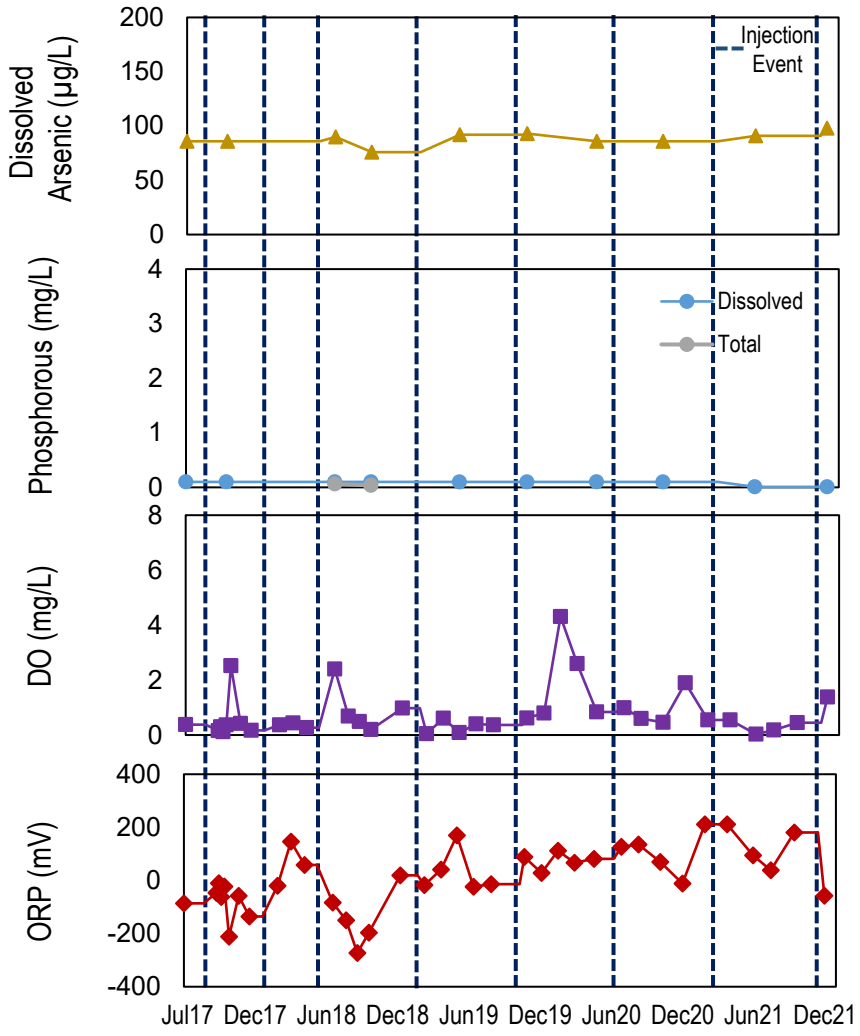
Figure No.
F.11

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW06A is located approximately 250 feet north of the injection well transects. SWFTS-MW06A is considered a side-gradient monitoring well.
3. Monitoring well SWFTS-MW06A is screened in the alluvium from 11.8 to 21.4 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW06A is approximately 5.8 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW06A indicates a mobile porosity estimate of 9%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW06A

Project No.:	117-7502021-M11
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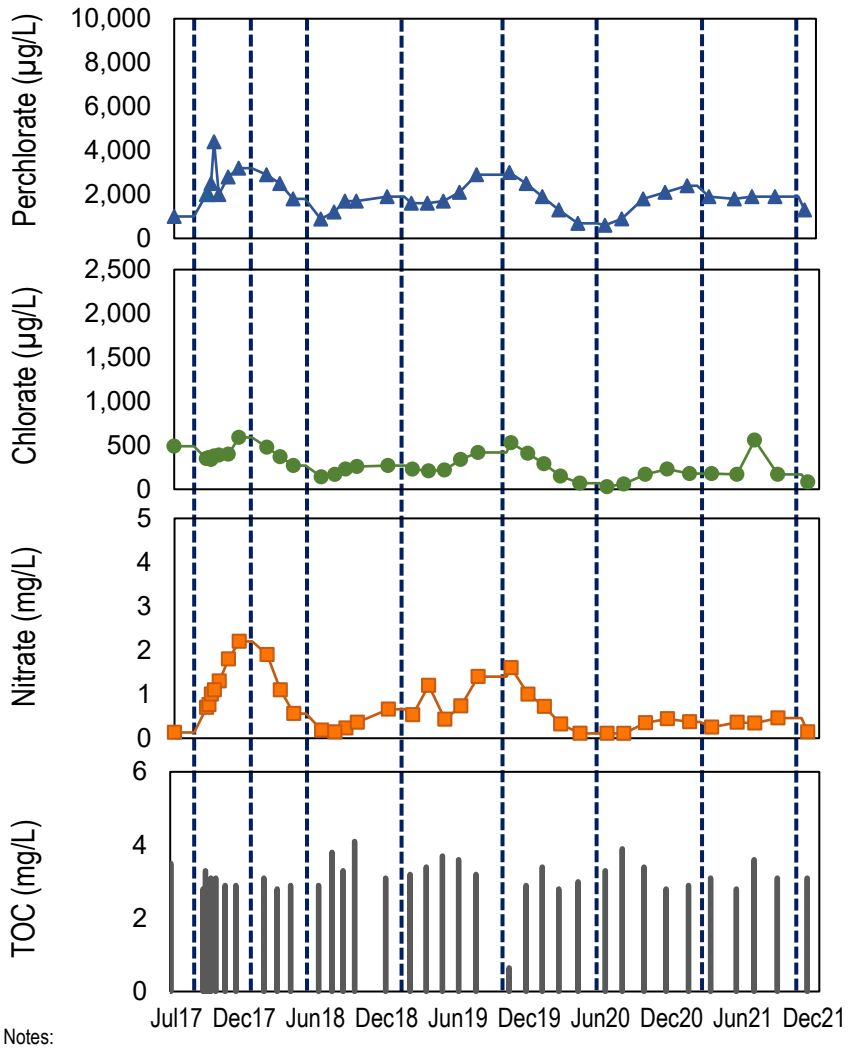
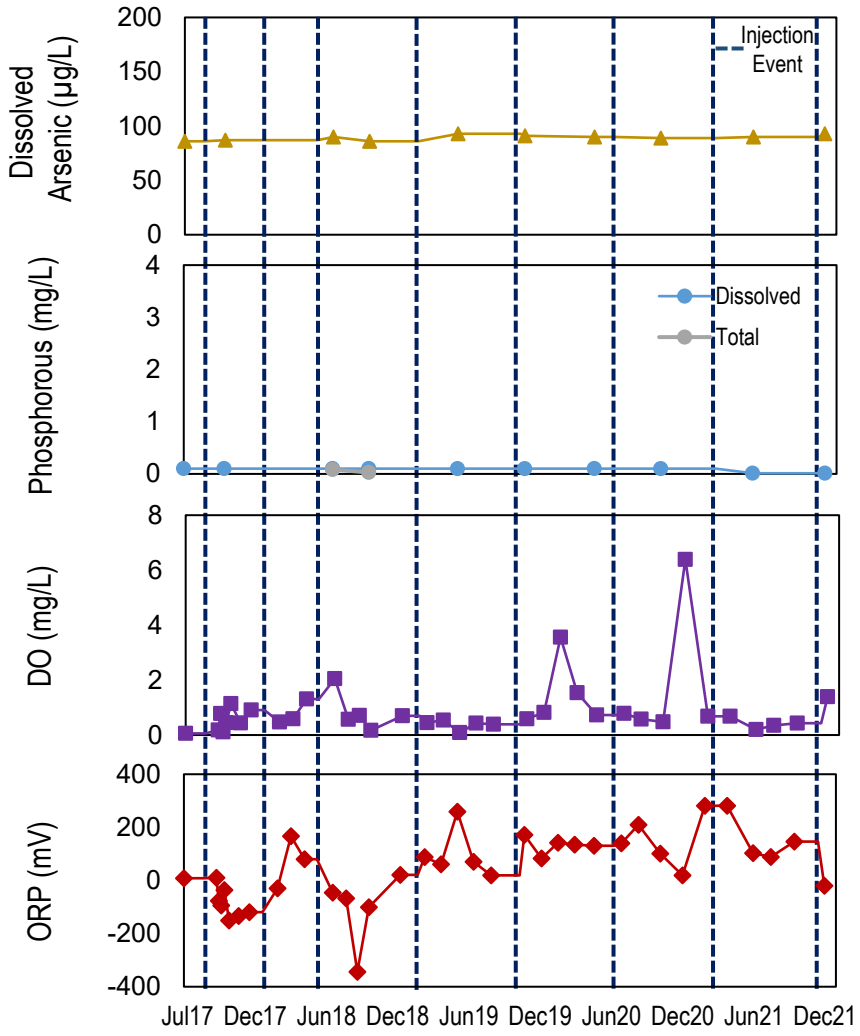
Figure No.
F.12

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW06B is located approximately 250 feet north of the injection well transects. SWFTS-MW06B is considered a side-gradient monitoring well.
3. Monitoring well SWFTS-MW06B is screened in the alluvium from 25.9 to 35.5 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW06B is approximately 24.5 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW06B indicates a mobile porosity estimate of 6%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW06B

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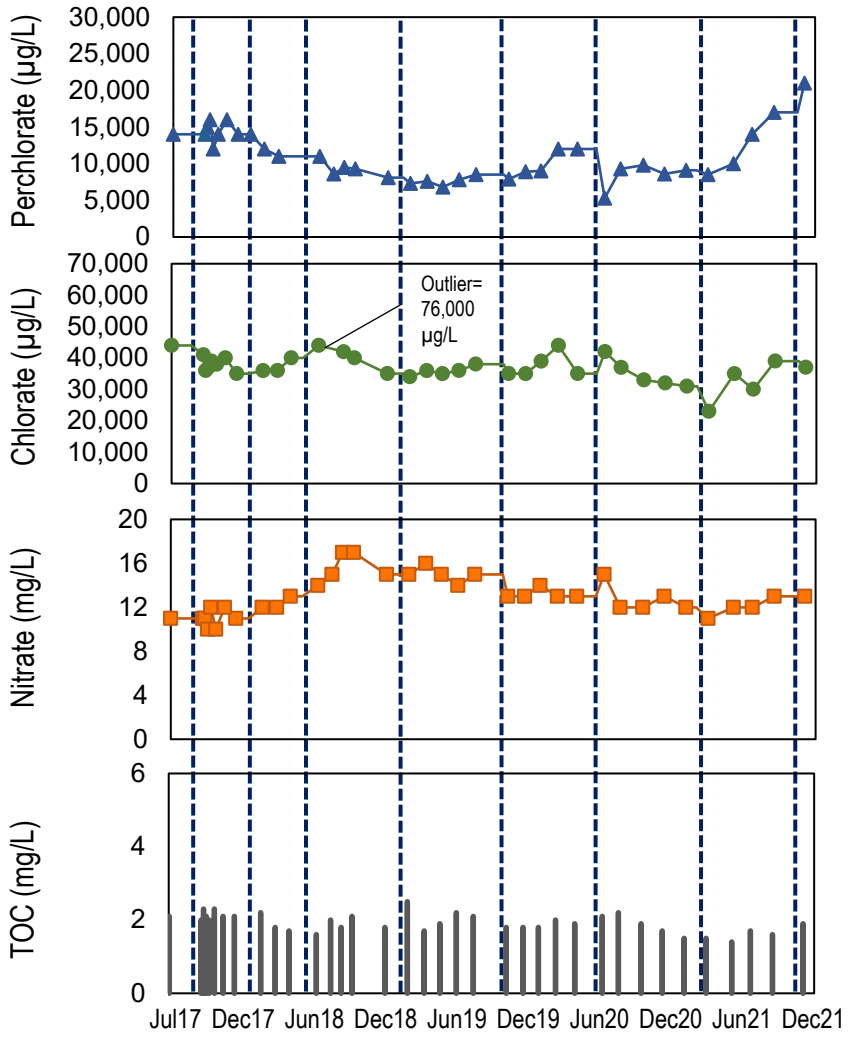
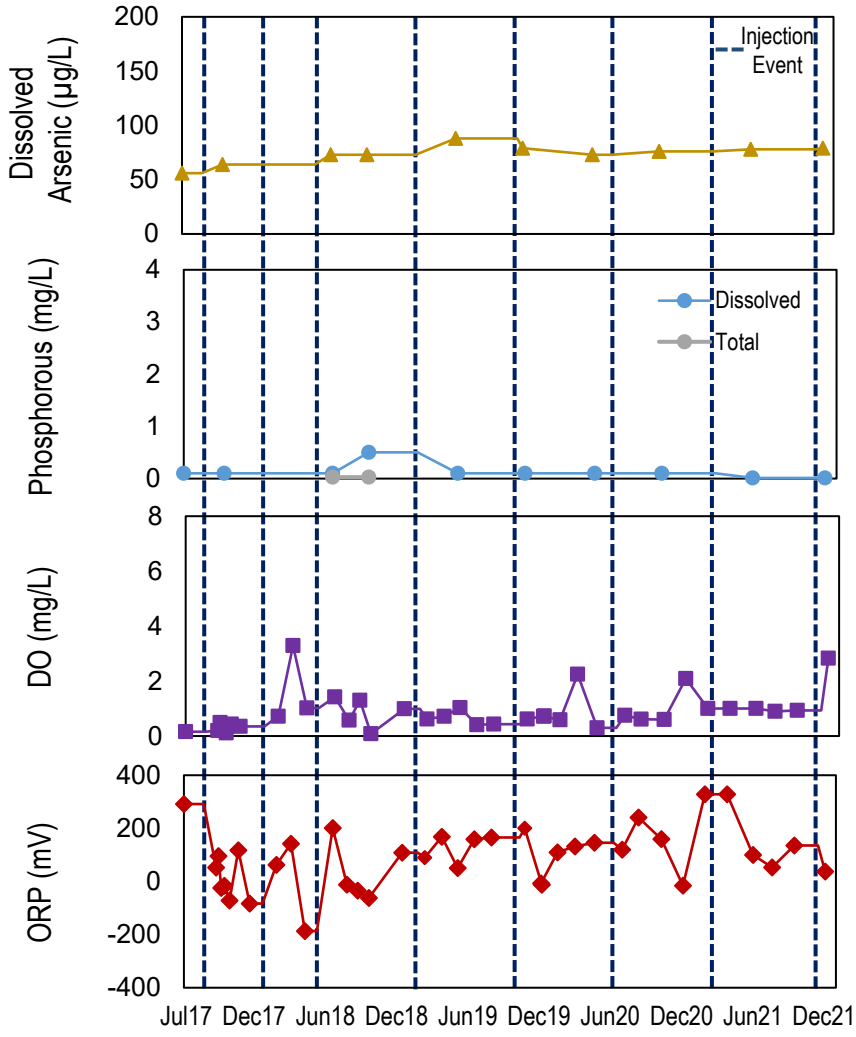
Designed By:	SS

Figure No.
F.13

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW07A is located approximately 175 feet upgradient of the injection well transects.
3. Monitoring well SWFTS-MW07A is screened in the alluvium from 15 to 29.5 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW07A is approximately 2.8 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW07A indicates a mobile porosity estimate of 3%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW07A

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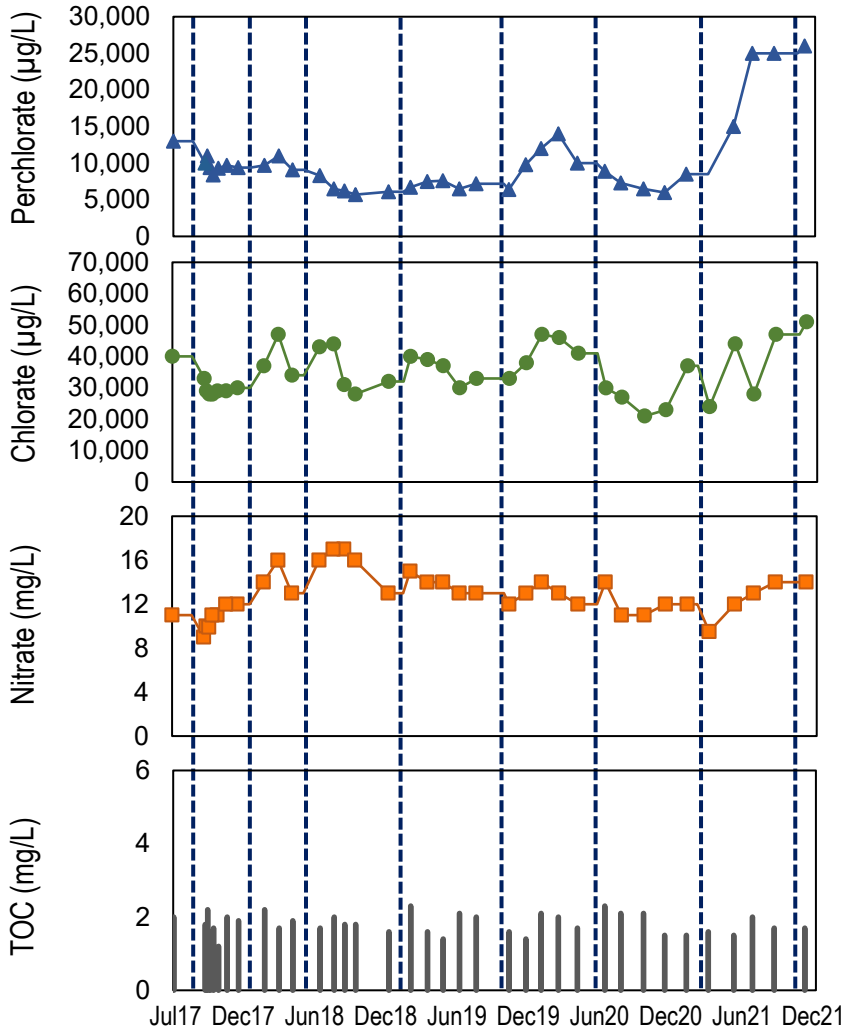
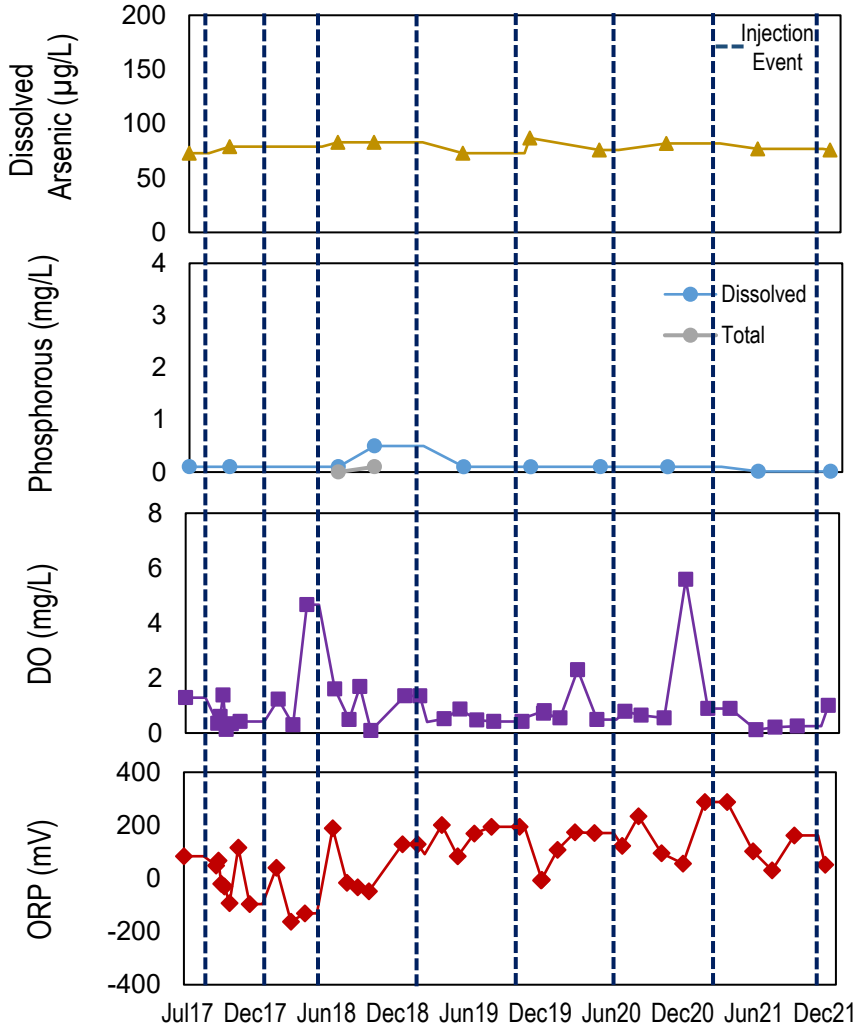
Figure No.
F.14

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW07B is located approximately 175 feet upgradient of the injection well transects.
3. Monitoring well SWFTS-MW07B is screened in the alluvium from 33.8 to 38.3 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW07B is approximately 28.1 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW07B indicates a mobile porosity estimate of 25%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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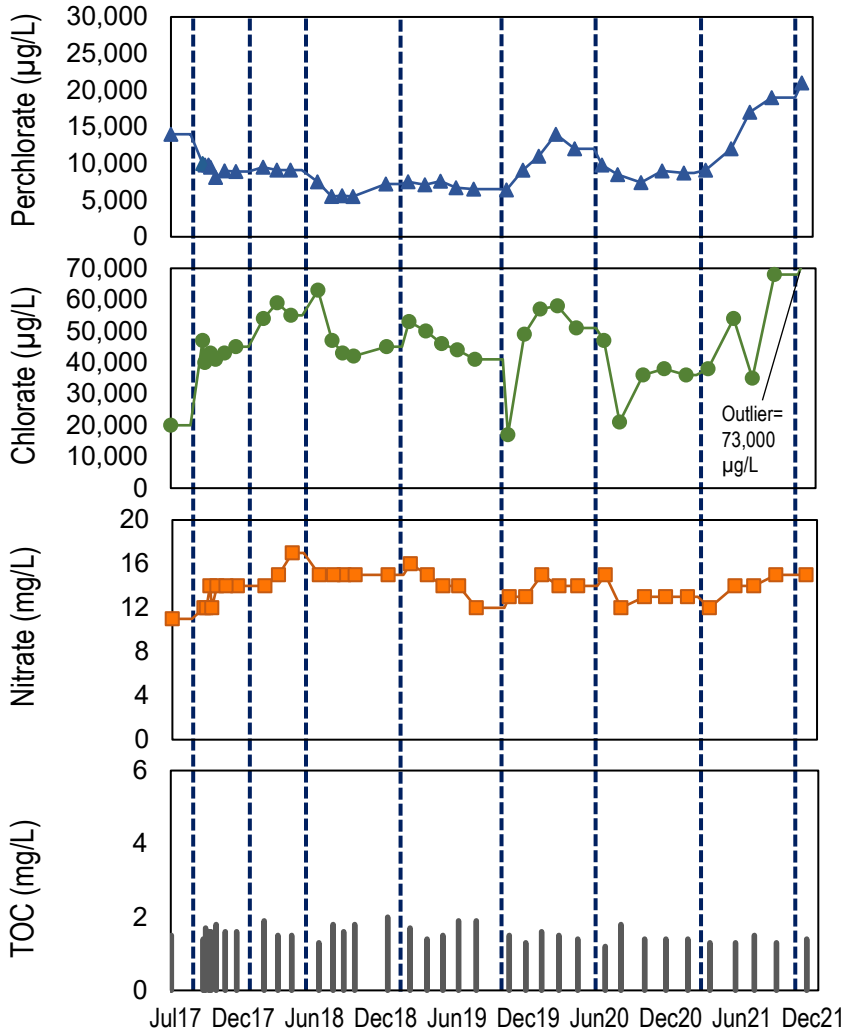
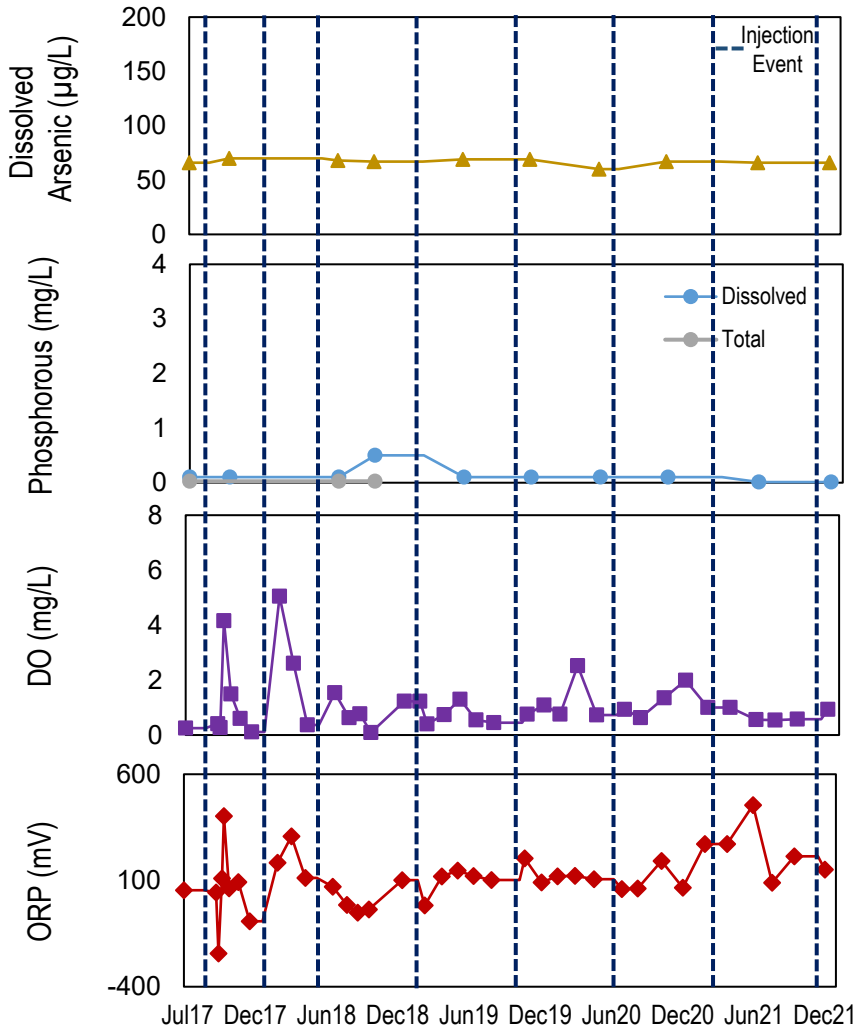
Figure No.
F.15

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW08A is located approximately 50 feet upgradient of the injection well transects.
3. Monitoring well SWFTS-MW08A is screened in the alluvium from 20.2 to 34.8 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW08A is approximately 1.3 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW08A indicates a mobile porosity estimate of 6%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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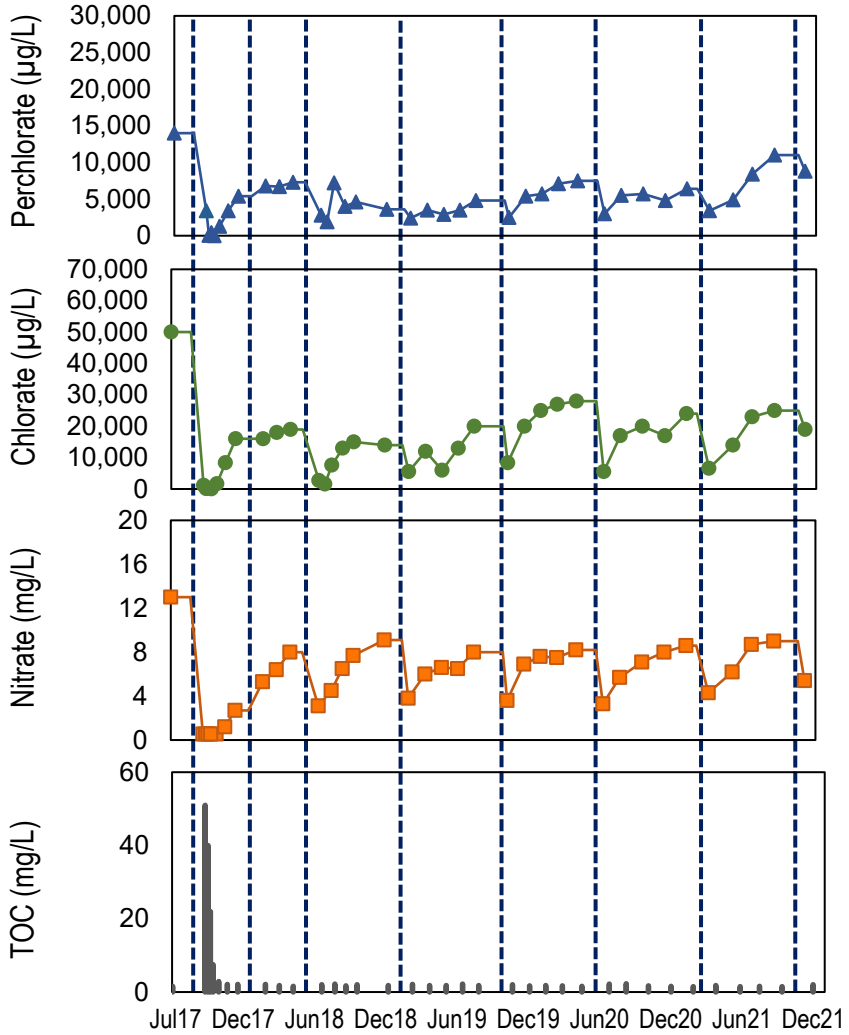
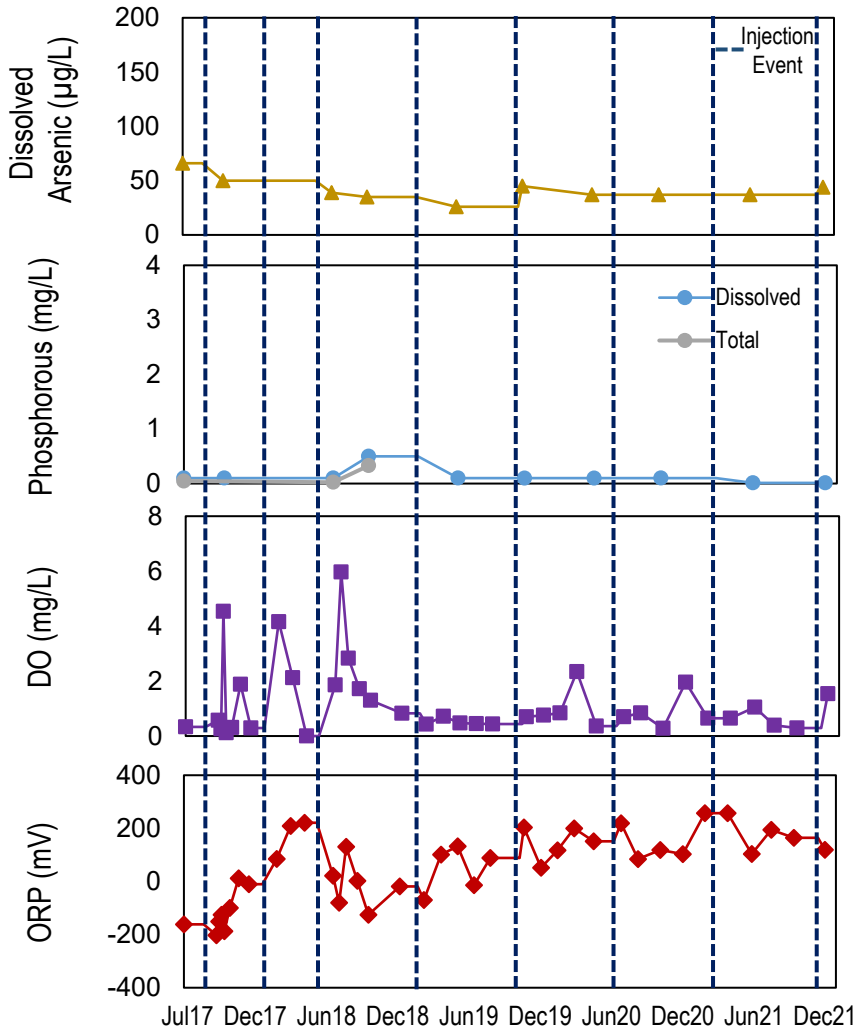
Figure No.
F.16

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW09A is located approximately 240 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW09A is screened in the alluvium from 19.3 to 28.9 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW09A is approximately 36.5 to 42.1 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW09A indicates a mobile porosity estimate of 8%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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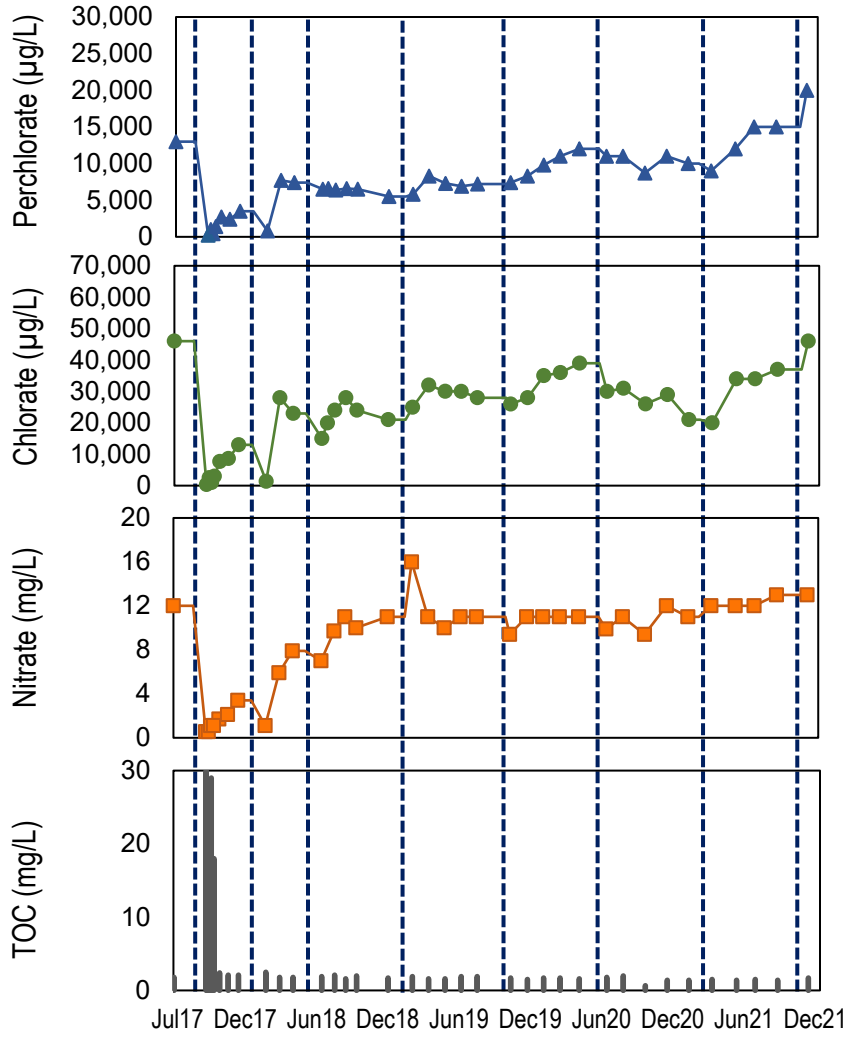
SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

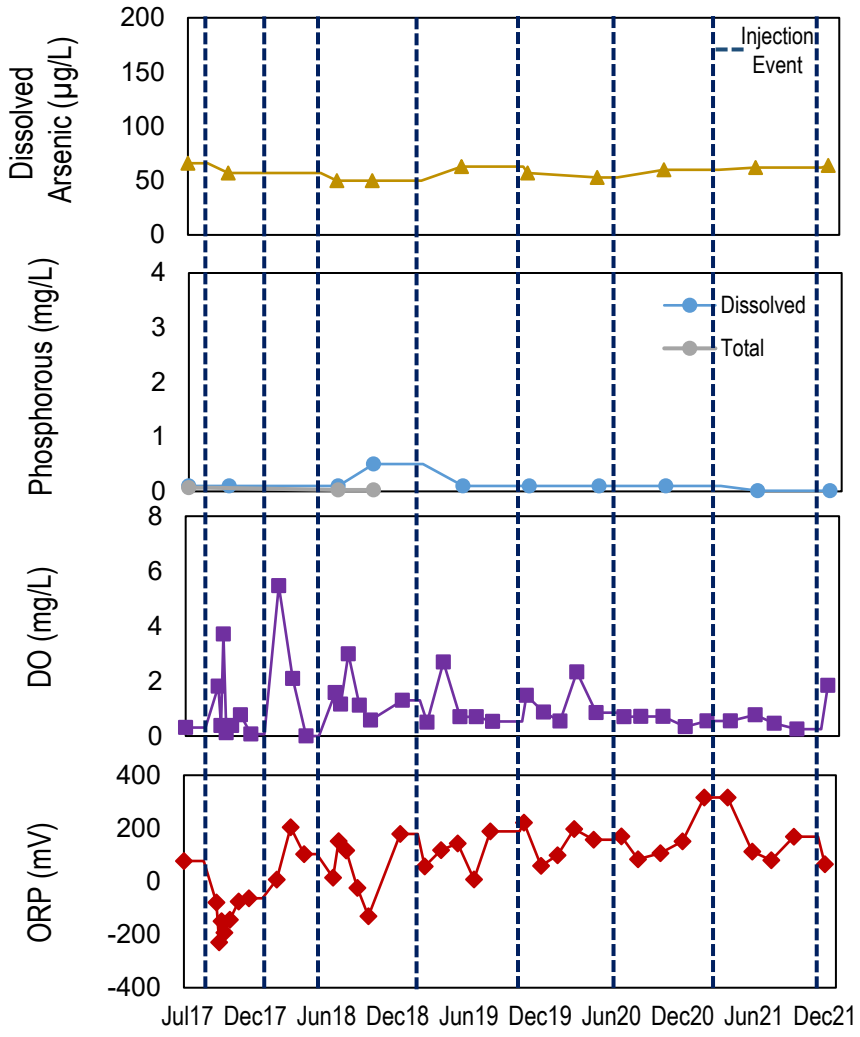
SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW09A

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.17

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW09B is located approximately 240 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW09B is screened in the alluvium from 34.4 to 39 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW09B is approximately 293.2 to 329.9 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW09B indicates a mobile porosity estimate of 7%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW09B

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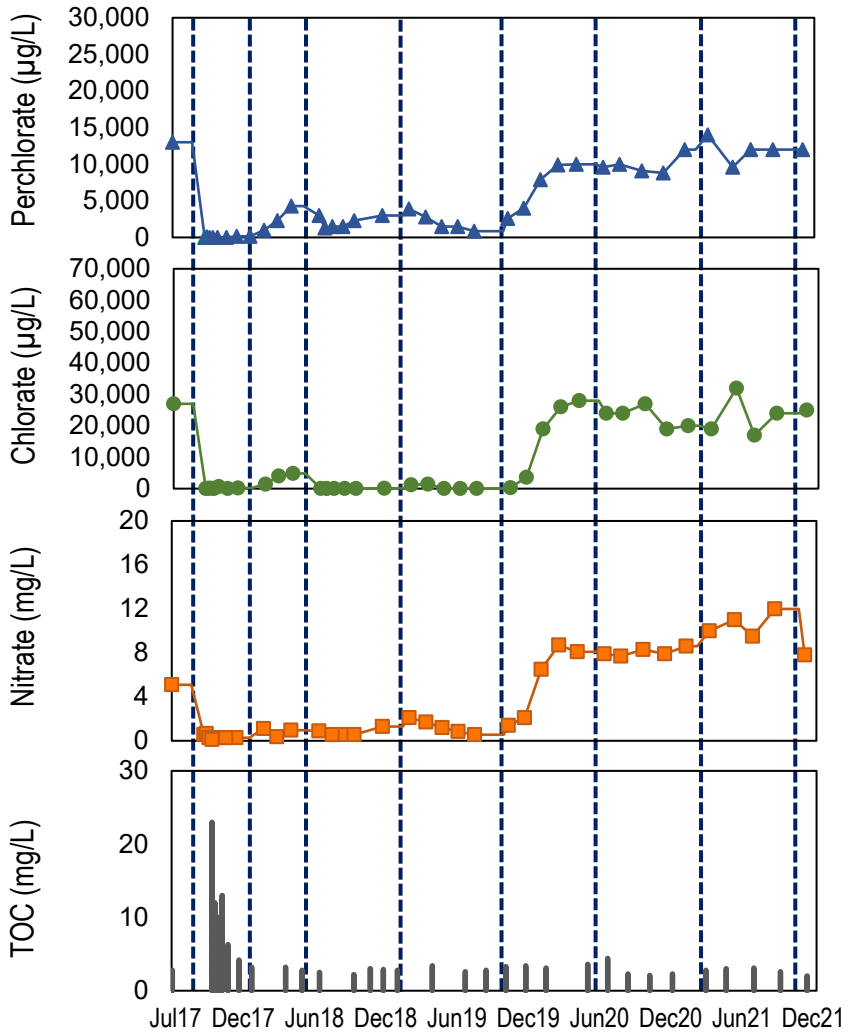
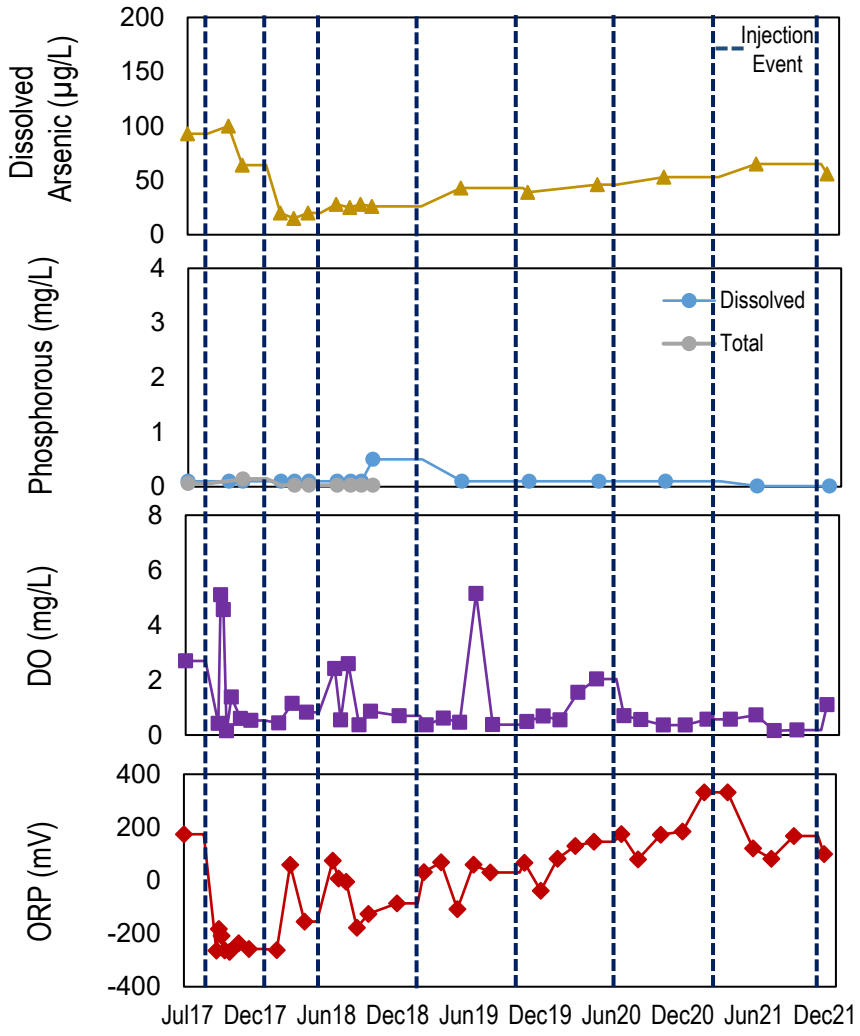
Designed By:	SS

Figure No.
F.18

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW10A is located approximately 50 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW10A is screened in the alluvium from 20.4 to 35 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW10A is approximately 17.0 to 21.0 feet/day.
5. Nuclear magnetic resonance logging at SWFTS-MW10A indicates a mobile porosity estimate of 5%.
6. Baseline analytical results shown prior to the first injection event are from samples collected in March 2017.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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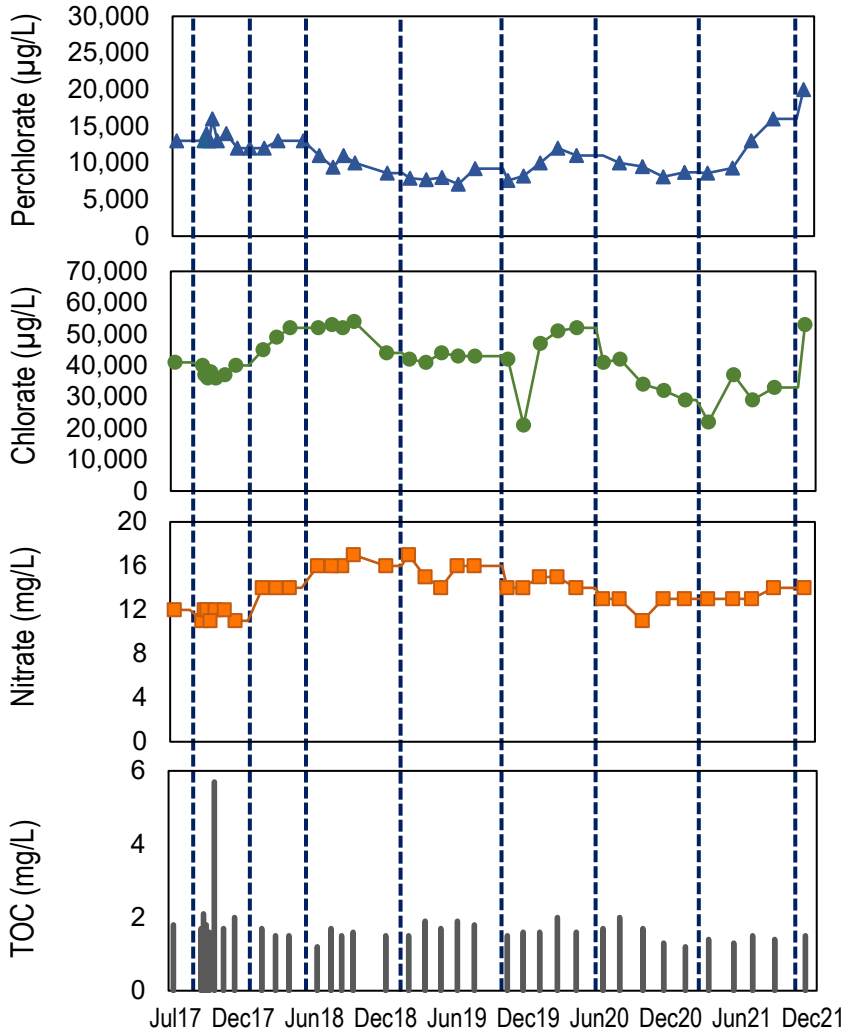
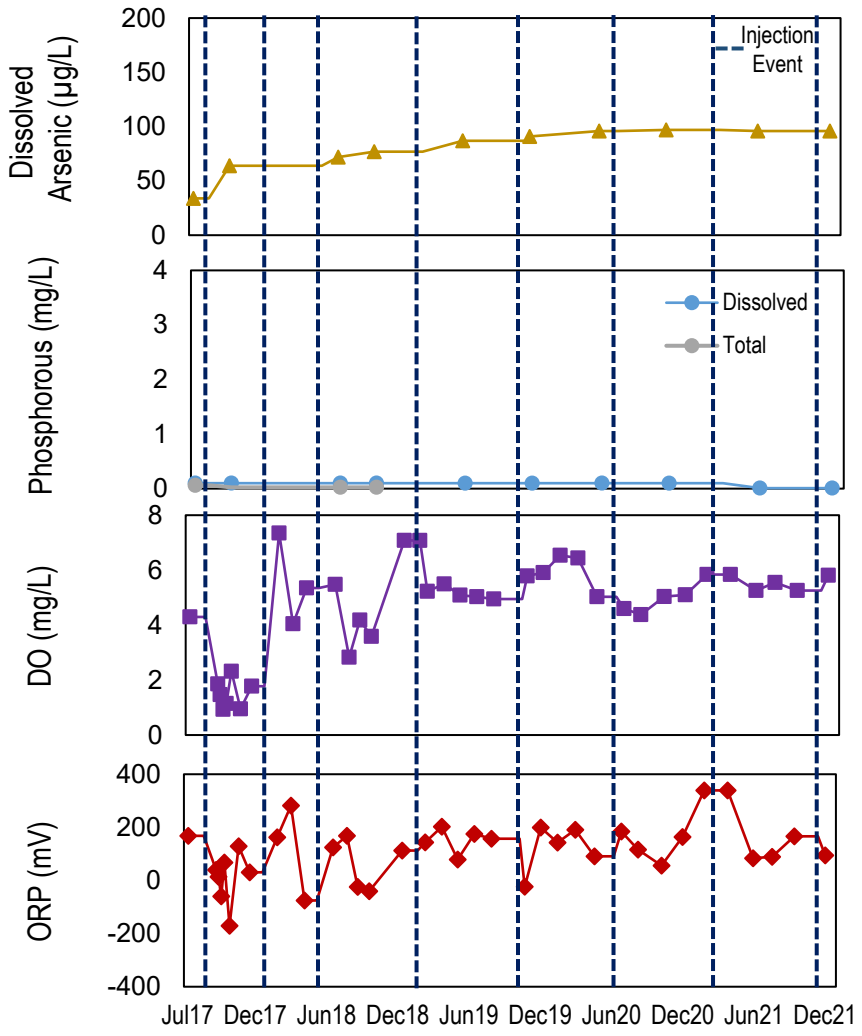
SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW10A

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.19

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW11 is located approximately 100 feet upgradient of the injection well transects.
3. Monitoring well SWFTS-MW11 is screened in the alluvium from 14.8 to 39.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW11 is approximately 0.7 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW11 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW11

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Figure No.
F.20

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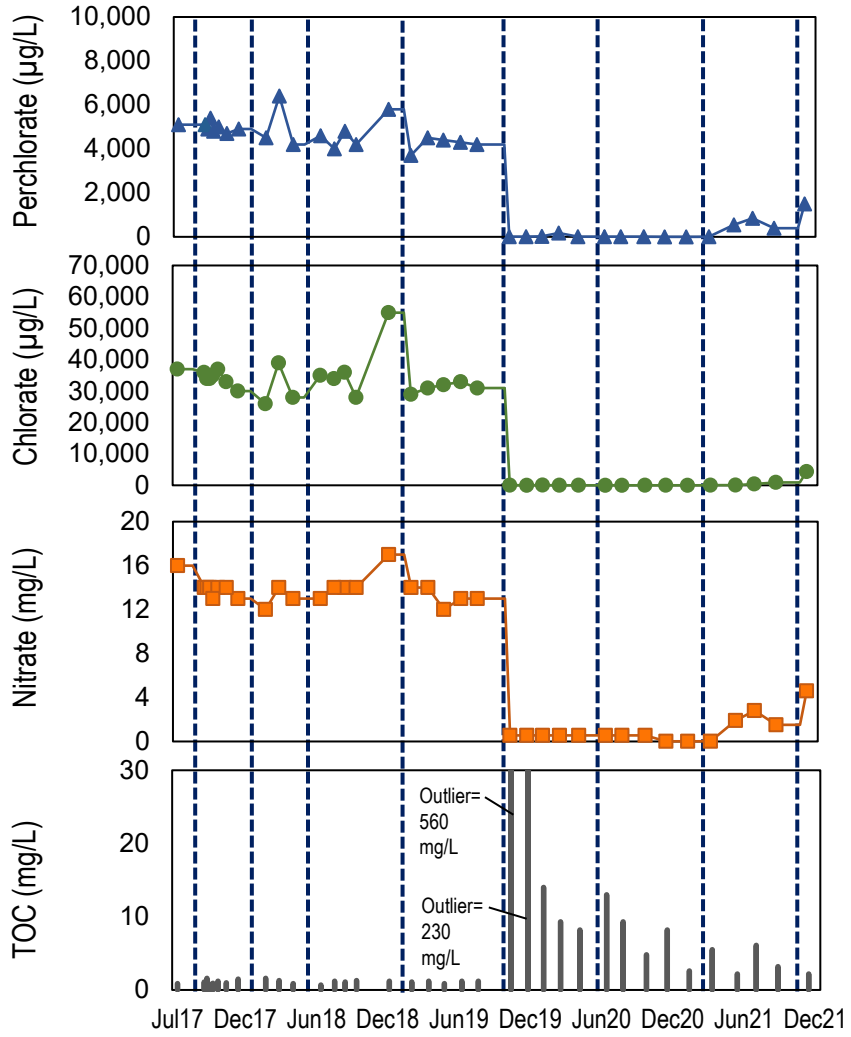

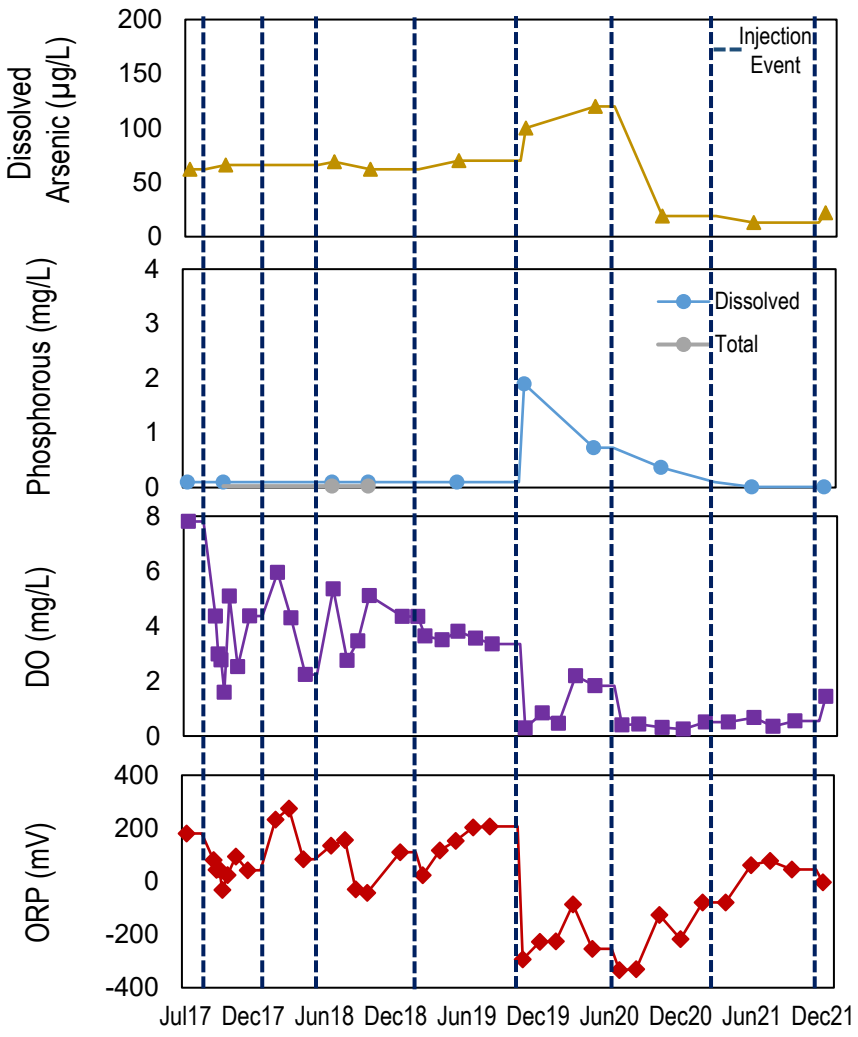

Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW12 is located approximately 125 feet upgradient of the injection well transects.
3. Monitoring well SWFTS-MW12 is screened in the alluvium from 15.8 to 40.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW12 is approximately 7.3 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW12 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW12

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Figure No.
F.21

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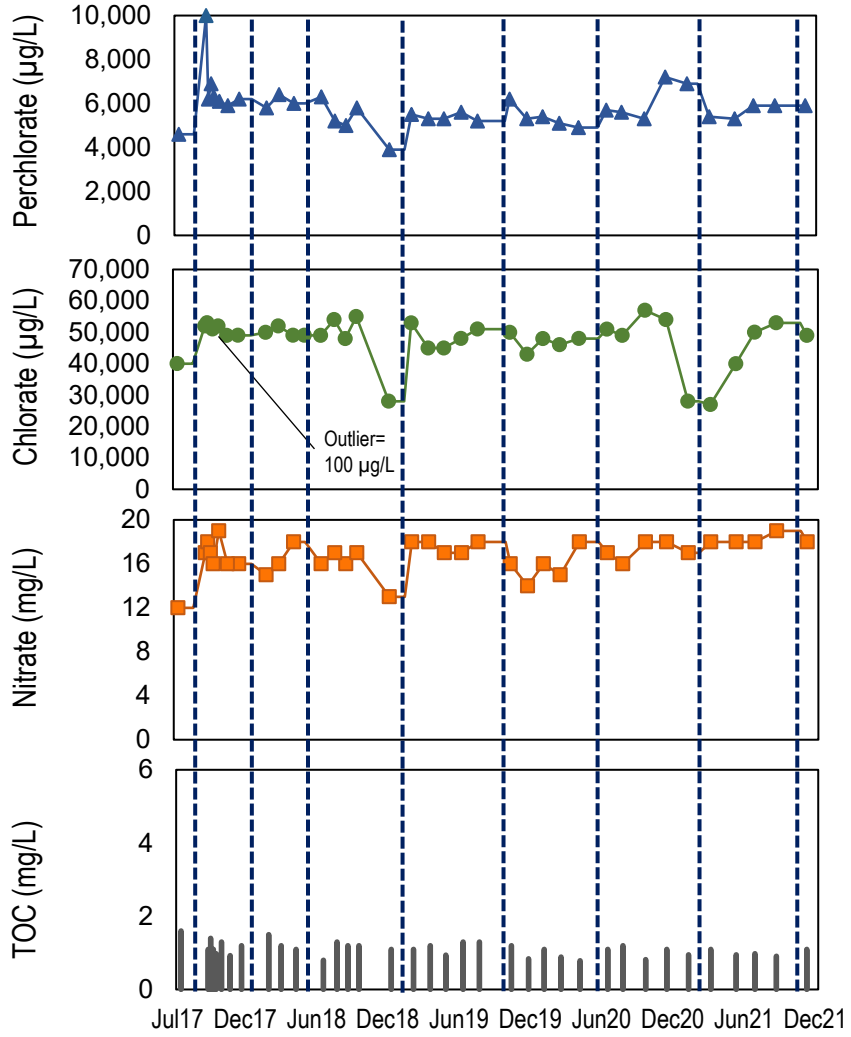

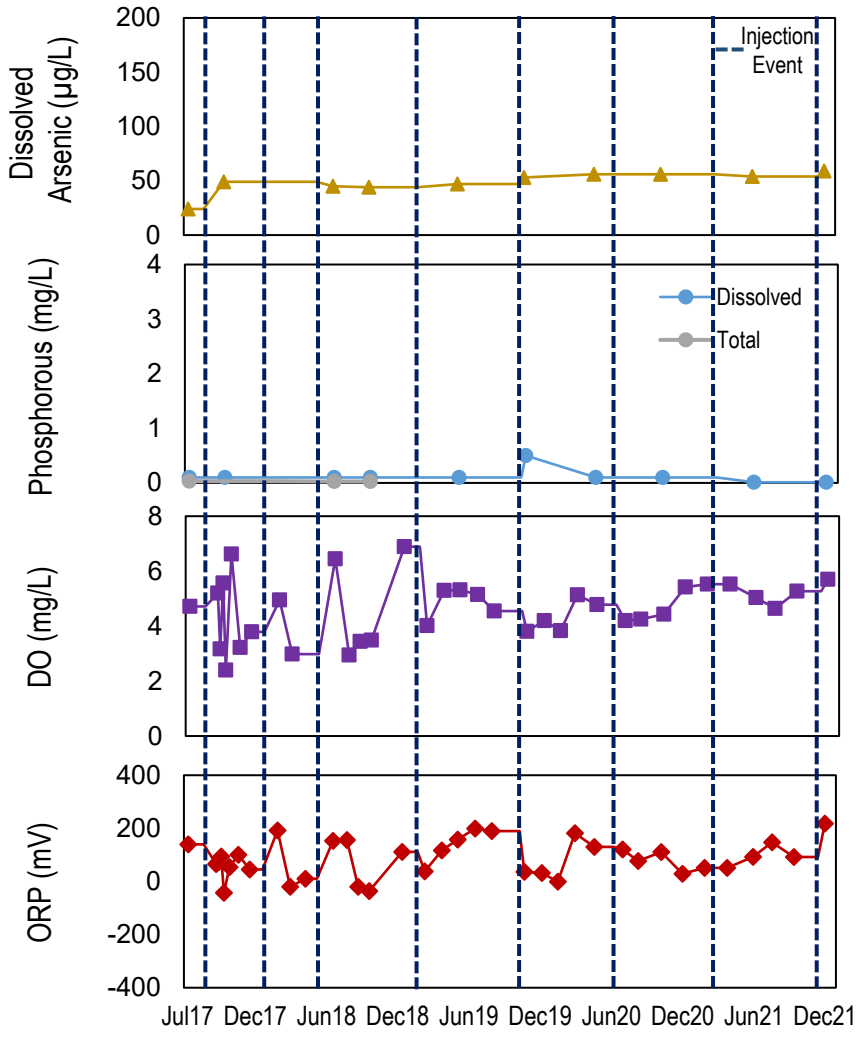

Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW13 is located approximately 100 feet south of the injection well transects. SWFTS-MW13 is considered an upgradient monitoring well.
3. Monitoring well SWFTS-MW13 is screened in the alluvium from 17.8 to 47.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW13 is approximately 0.8 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW13 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW13

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Figure No.
F.22

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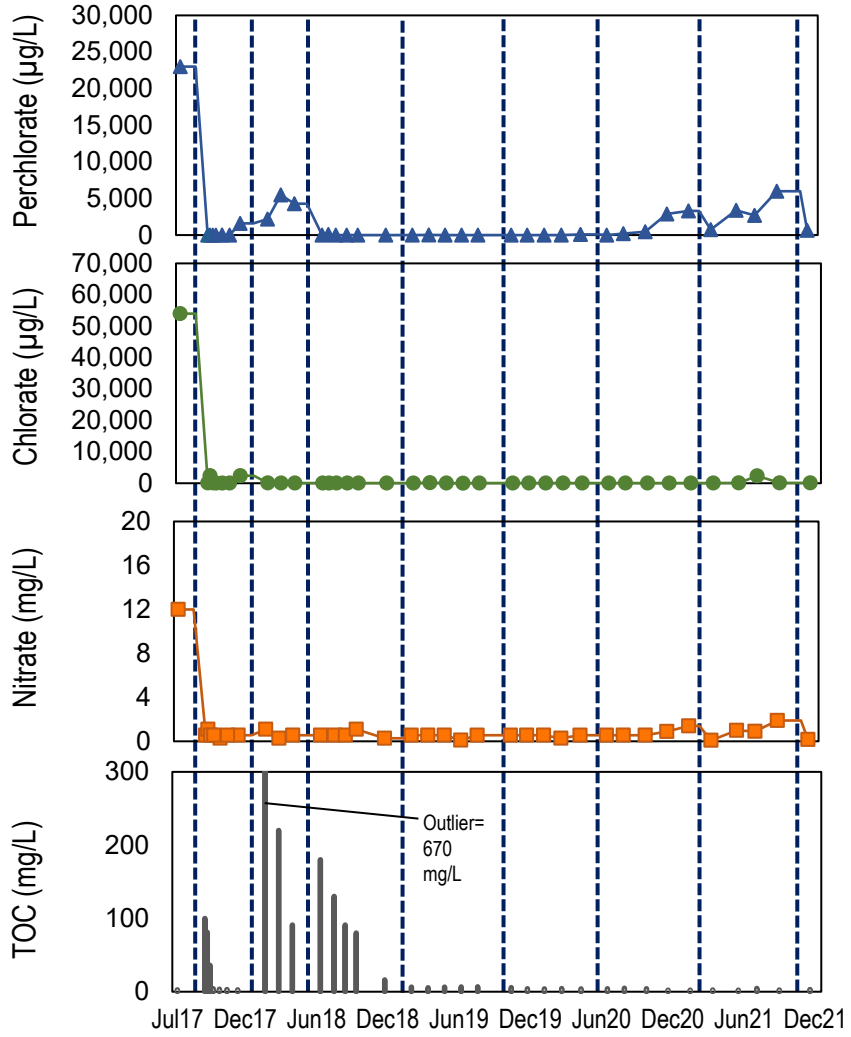

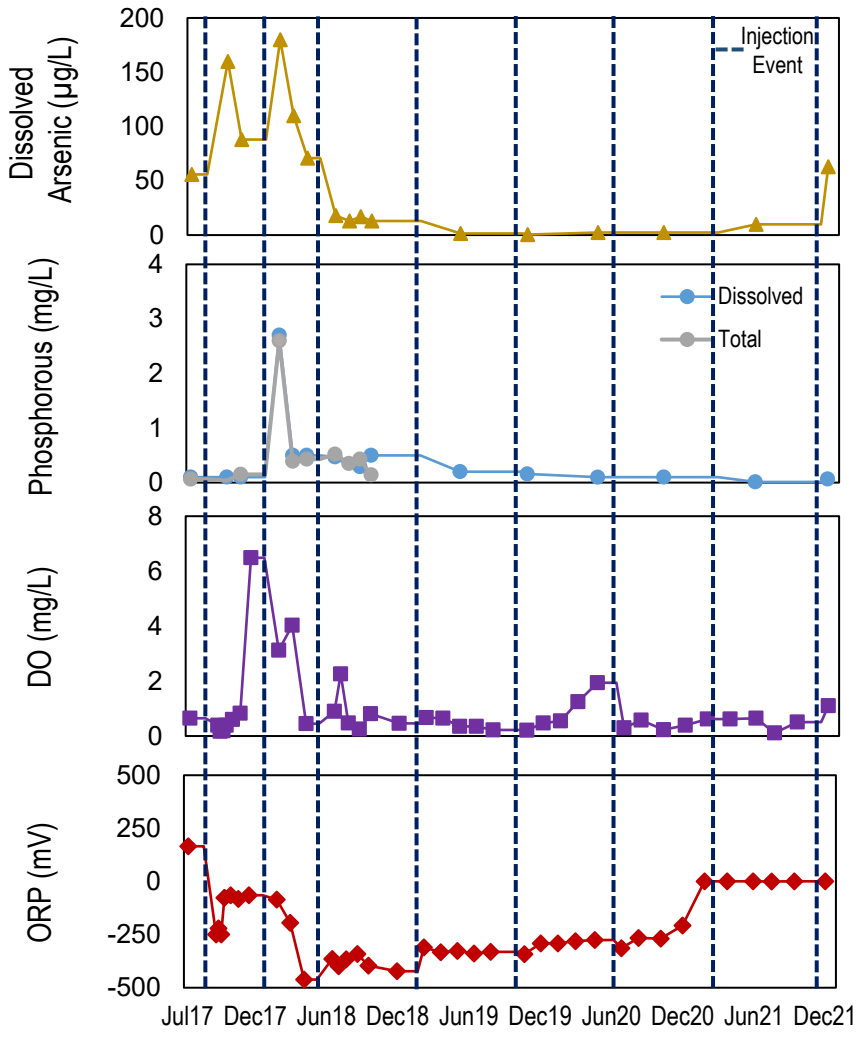

Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW14 is located between the injection well transects, approximately 100 feet downgradient of the southern injection well transect.
3. Monitoring well SWFTS-MW14 is screened in the alluvium from 16.8 to 36.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW14 is approximately 13.1 to 96.6 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW14 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW14

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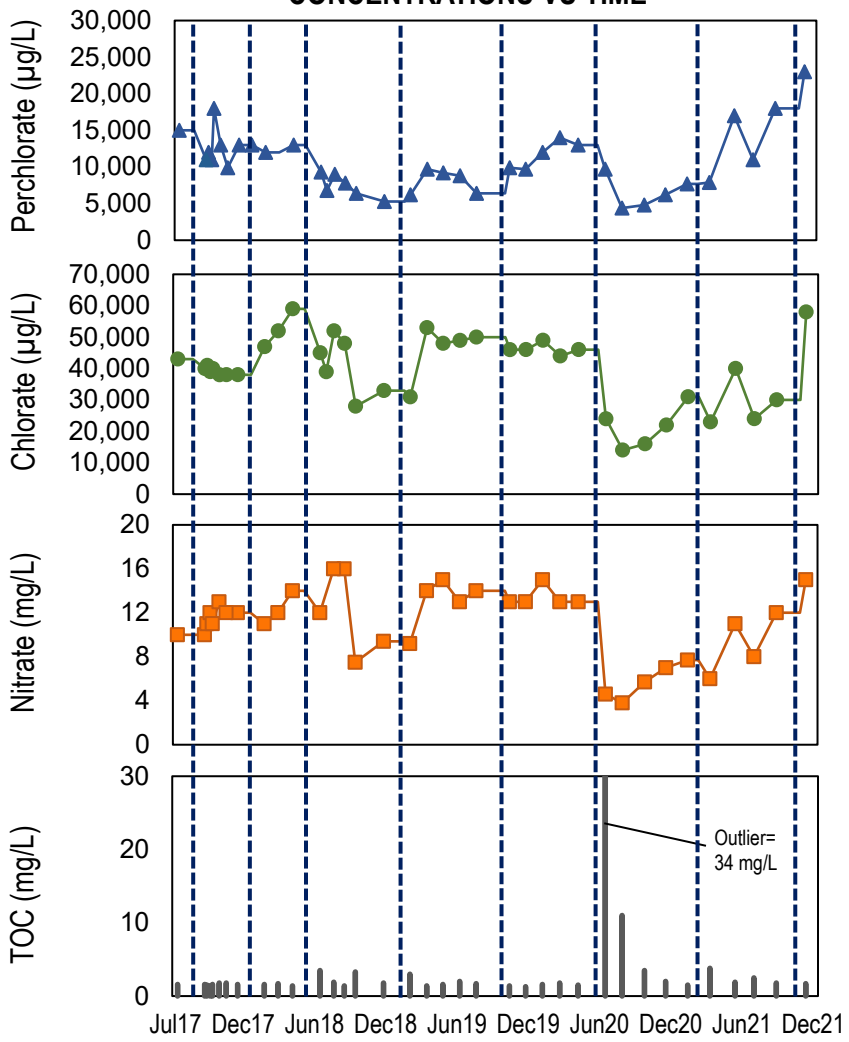
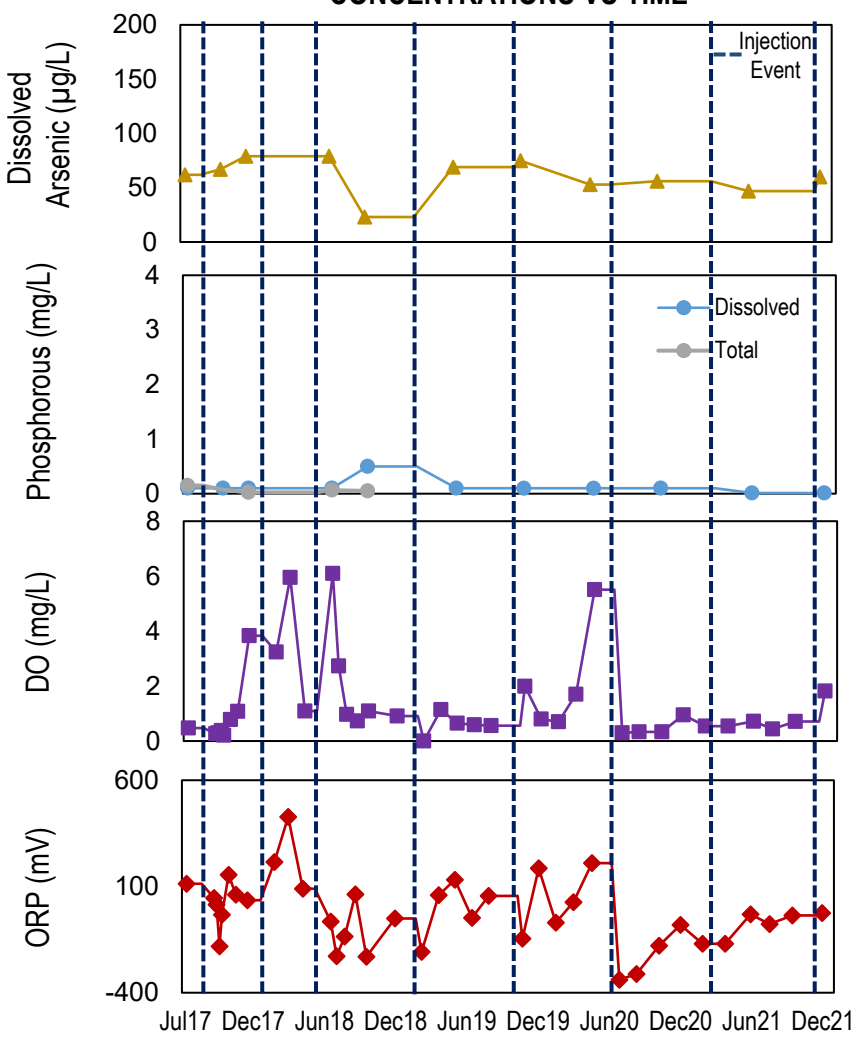
Figure No.
F.23

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW15 is located between the injection well transects, approximately 50 feet downgradient of the southern injection well transect.
3. Monitoring well SWFTS-MW15 is screened in the alluvium from 14.8 to 34.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW15 is approximately 42.9 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW15 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW15

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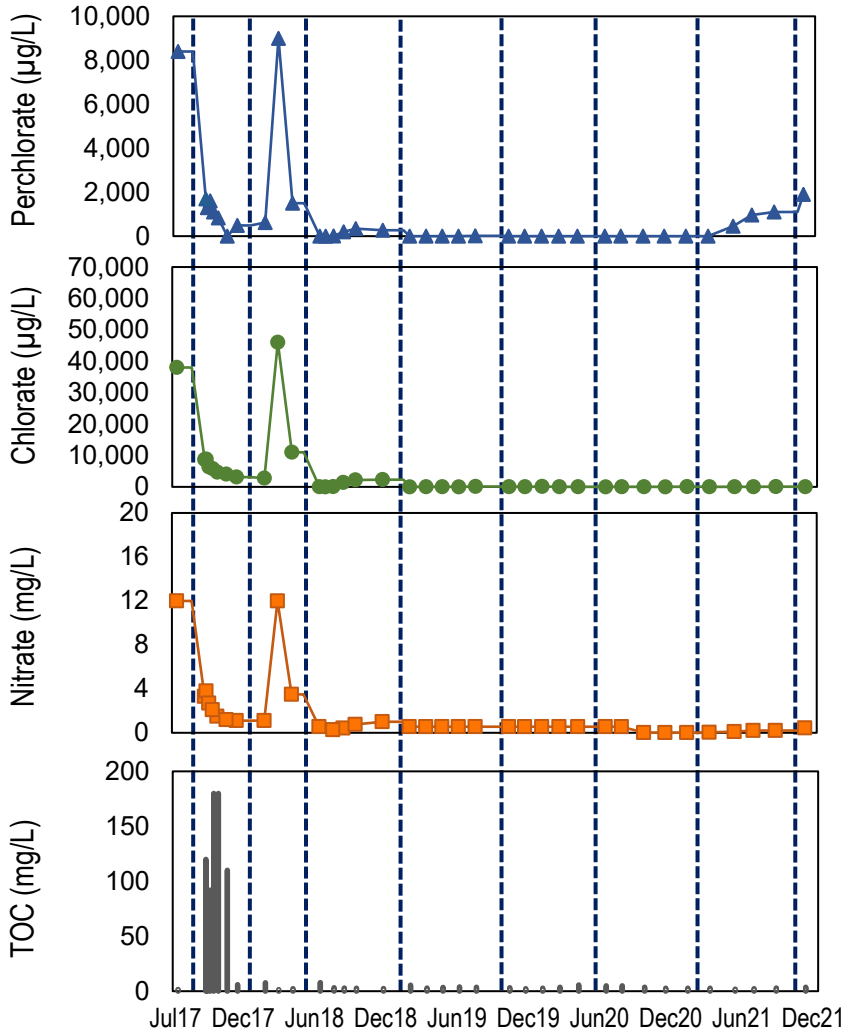
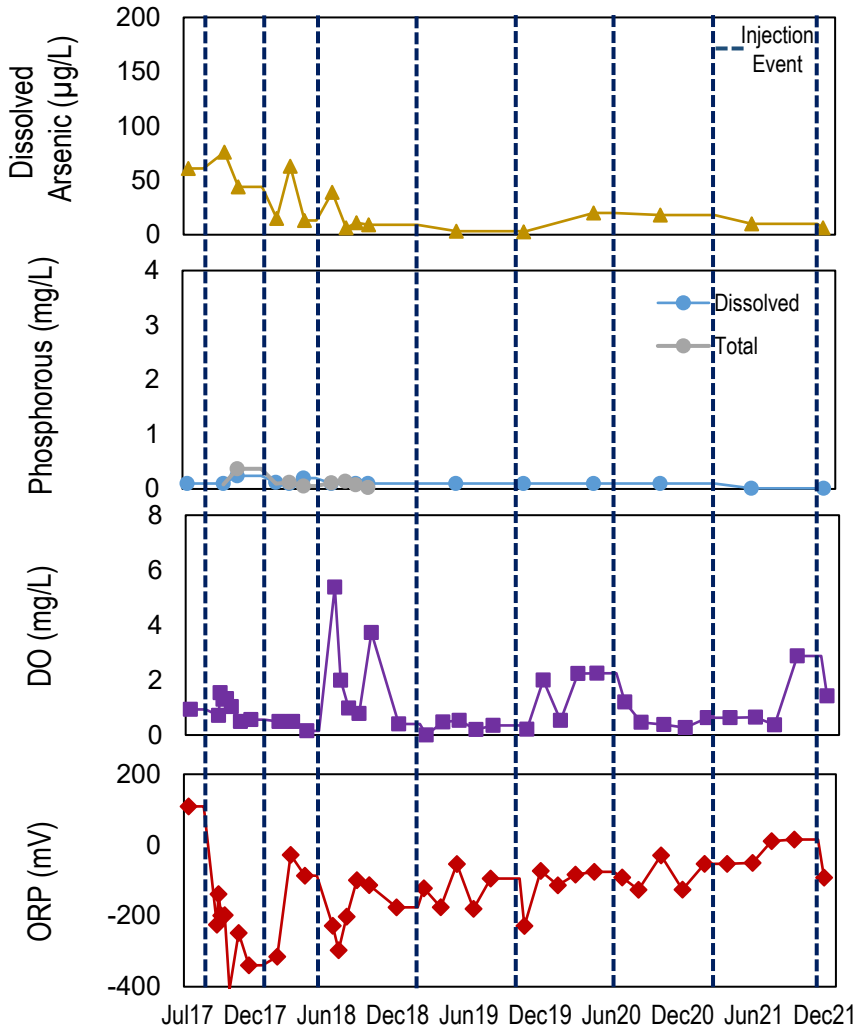
Figure No.
F.24

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW16 is located between the injection well transects, approximately 50 feet downgradient of the southern injection well transect.
3. Monitoring well SWFTS-MW16 is screened in the alluvium from 21.8 to 41.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW16 is approximately 12.5 to 51.1 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW16 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW16

Project No.:	117-7502021-M11
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Figure No.
F.25

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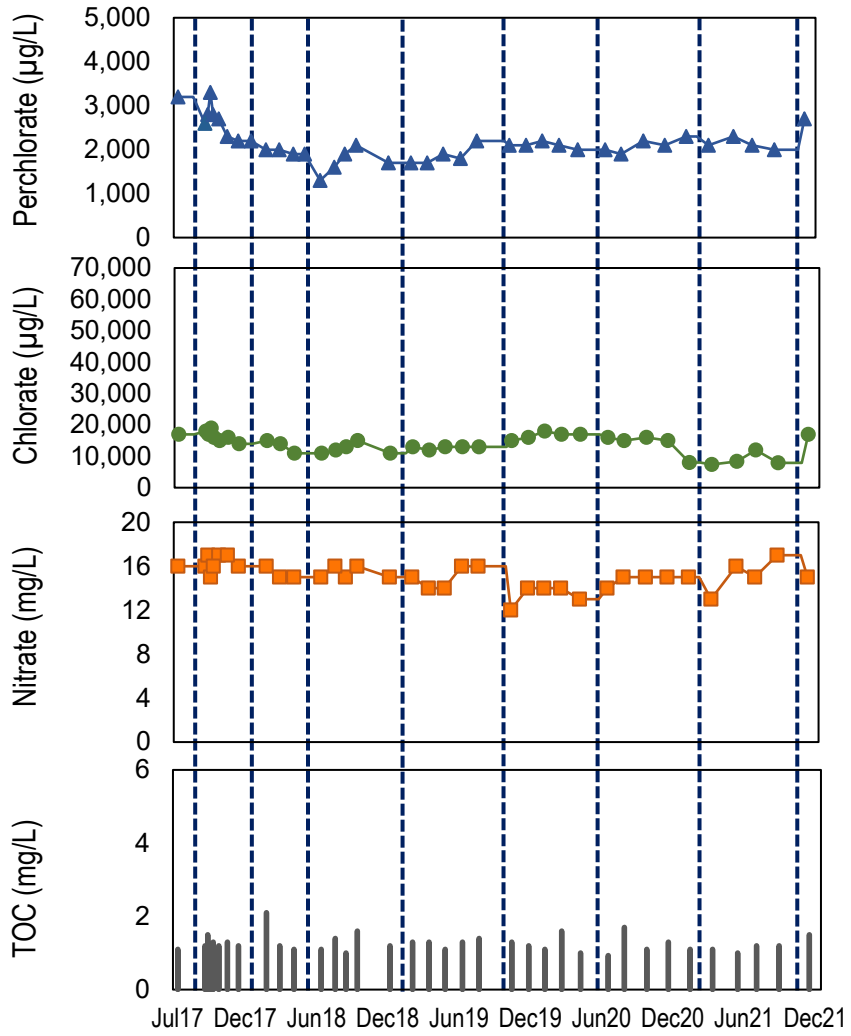

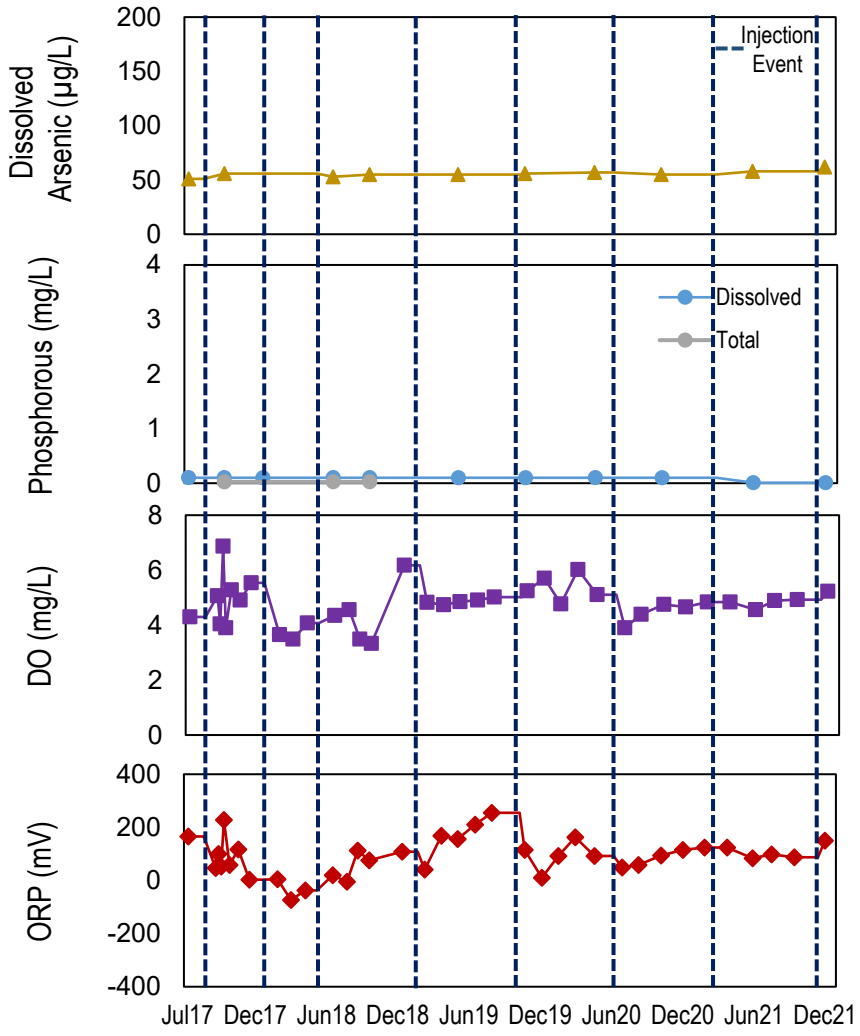

Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW17 is located approximately 100 feet southeast of the injection well transects. SWFTS-MW17 is considered an upgradient monitoring well.
3. Monitoring well SWFTS-MW17 is screened in the alluvium from 22.8 to 52.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW17 is approximately 4.2 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW17 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW17

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Figure No.
F.26

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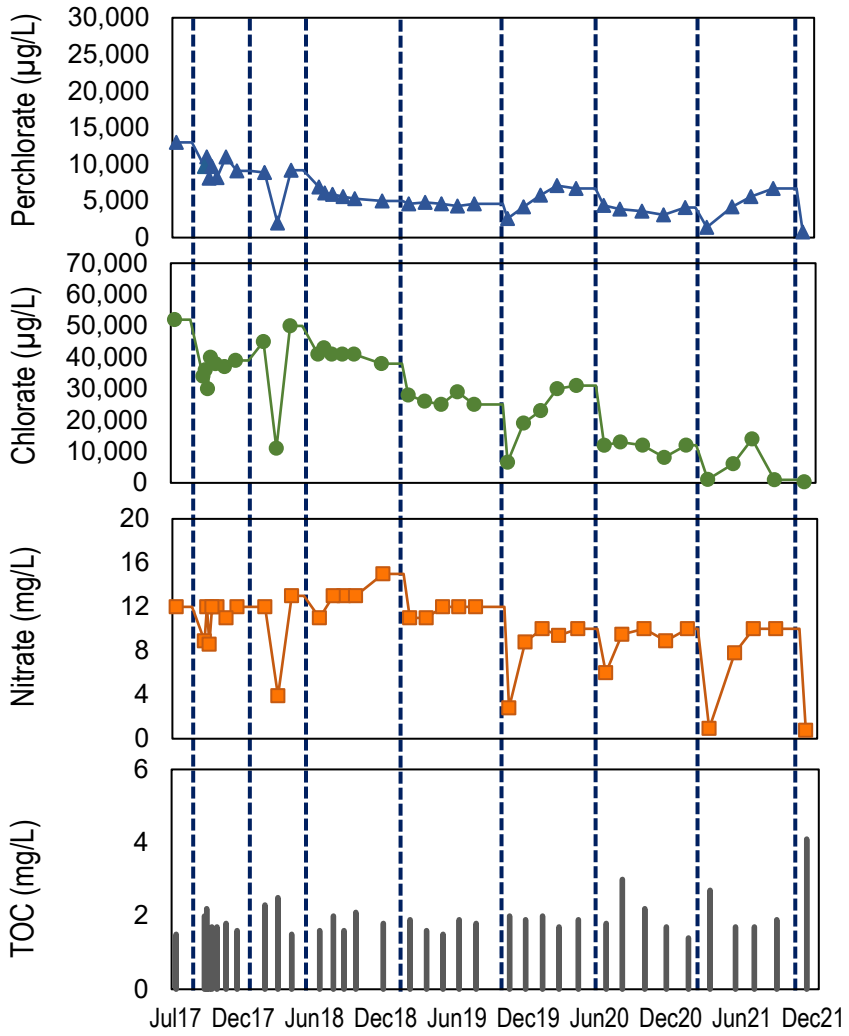

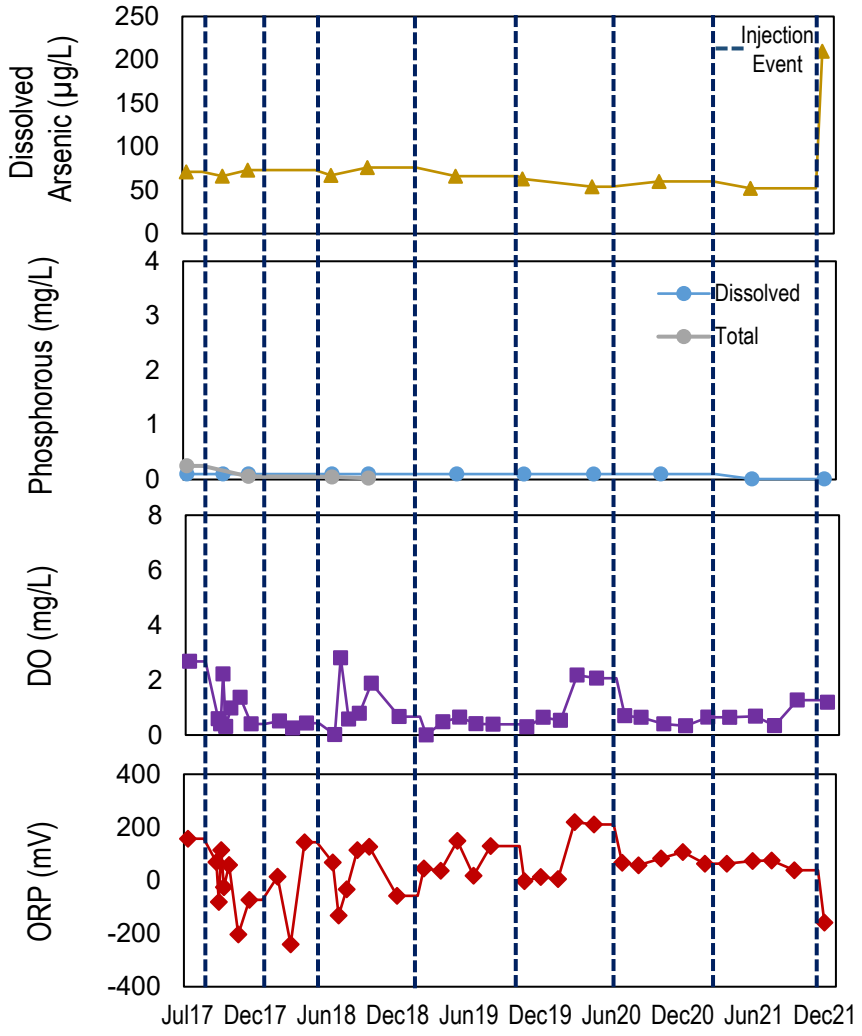

Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW18 is located approximately 25 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW18 is screened in the alluvium from 16.8 to 36.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW18 is approximately 25.0 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW18 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW18

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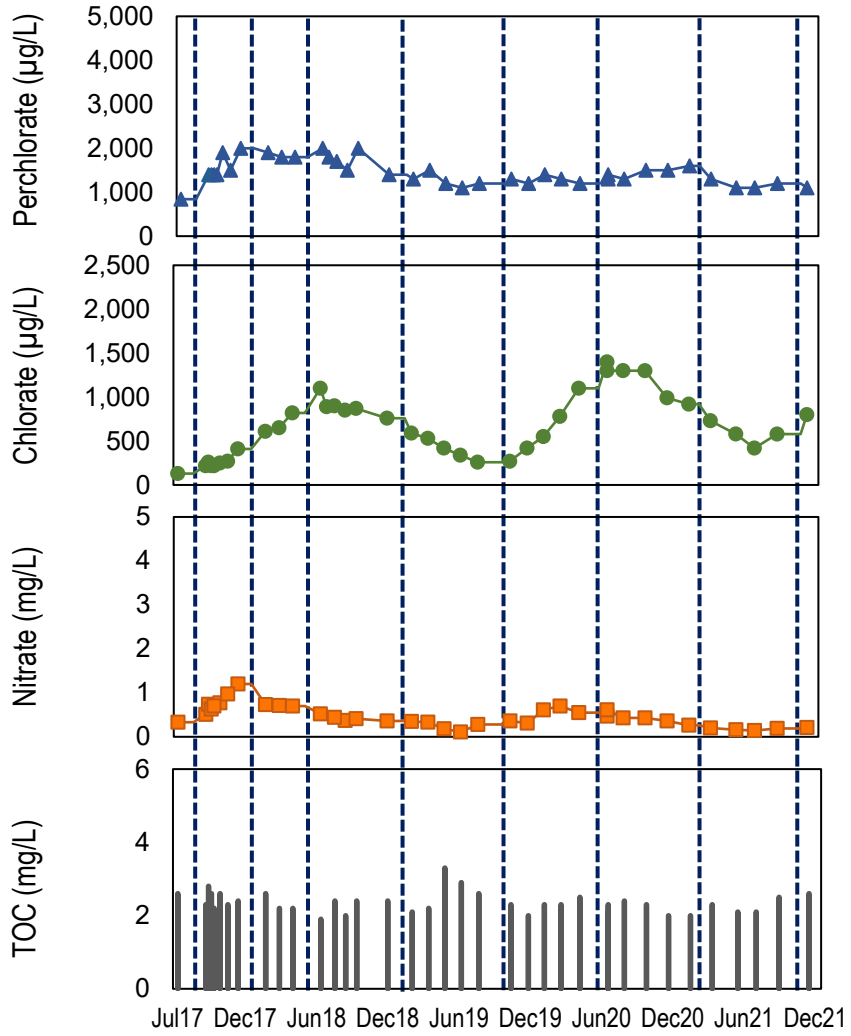
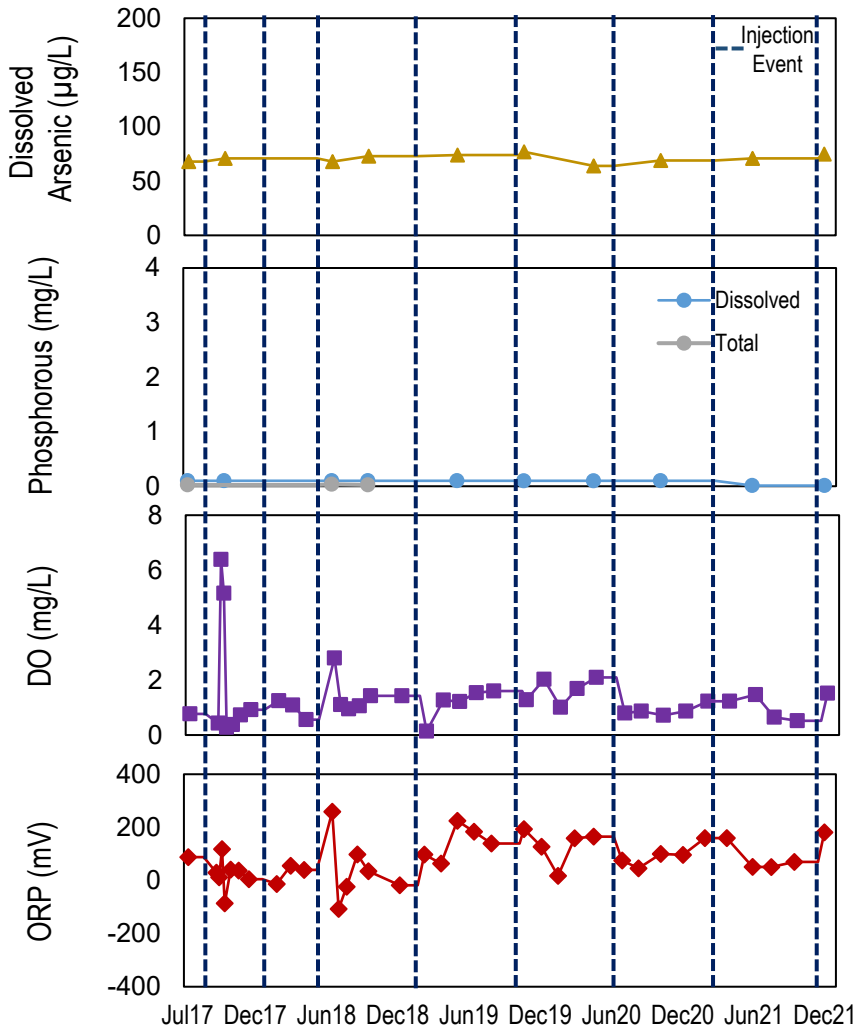
Figure No.
F.27

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW19 is located approximately 150 feet north of the injection well transects. SWFTS-MW19 is considered a side-gradient monitoring well.
3. Monitoring well SWFTS-MW19 is screened in the alluvium from 11.3 to 31.1 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW19 is approximately 1.4 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW19 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW19

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Figure No.
F.28

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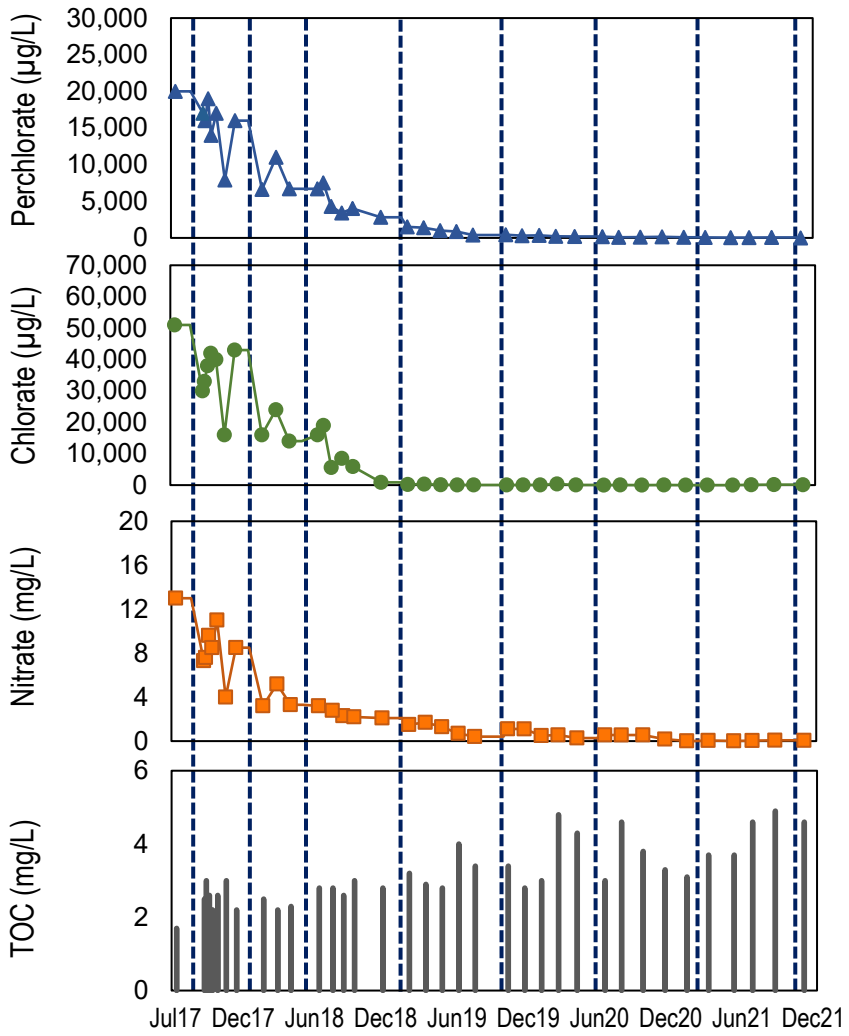

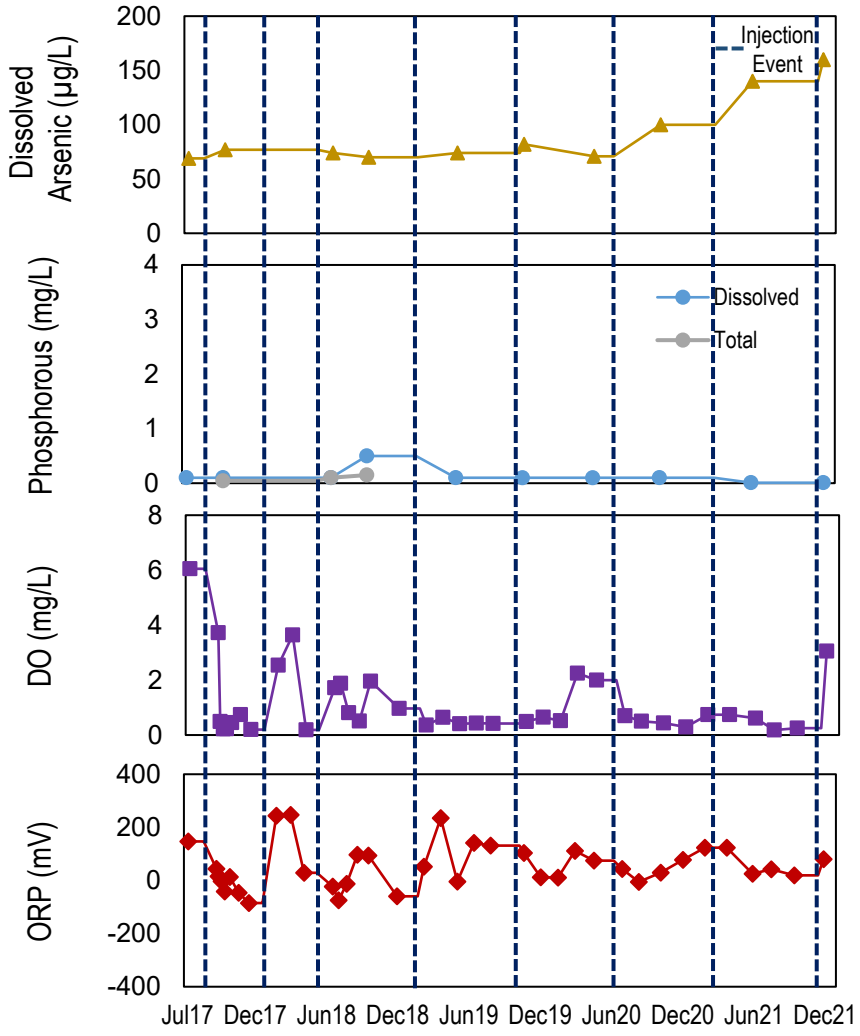

Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW20 is located approximately 100 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW20 is screened in the alluvium from 12.8 to 37.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW20 is approximately 58.1 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW20 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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NEVADA ENVIRONMENTAL RESPONSE TRUST SITE

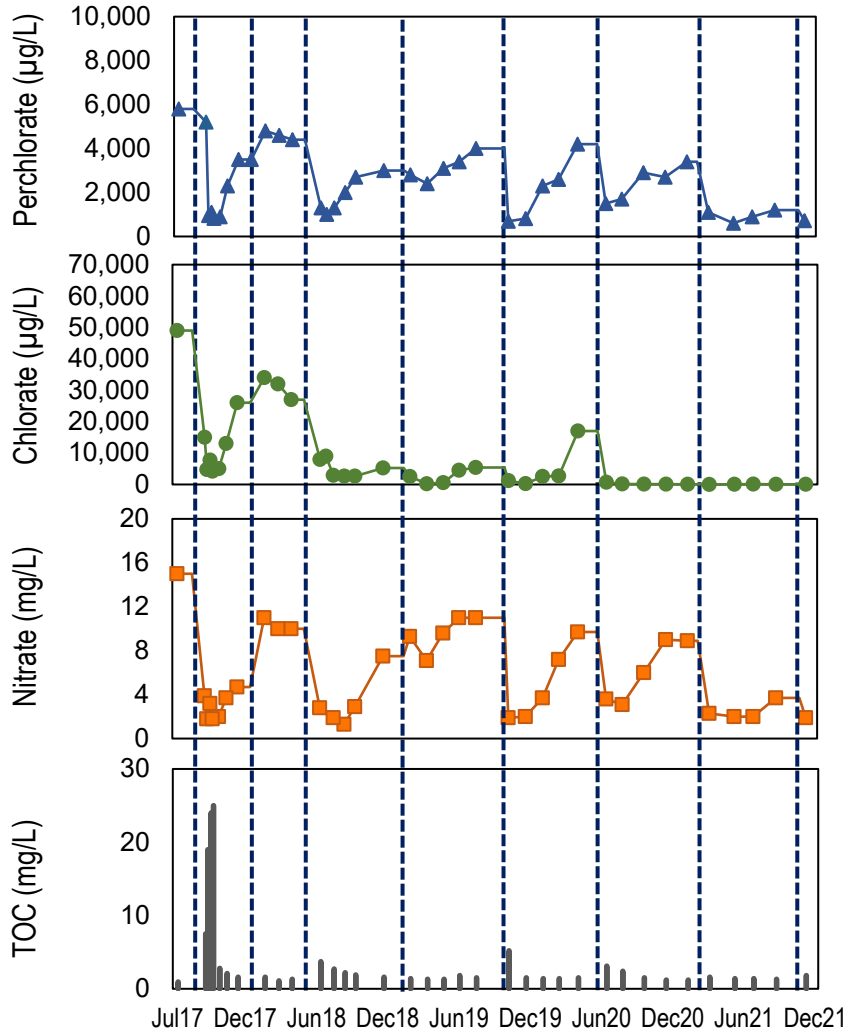
SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

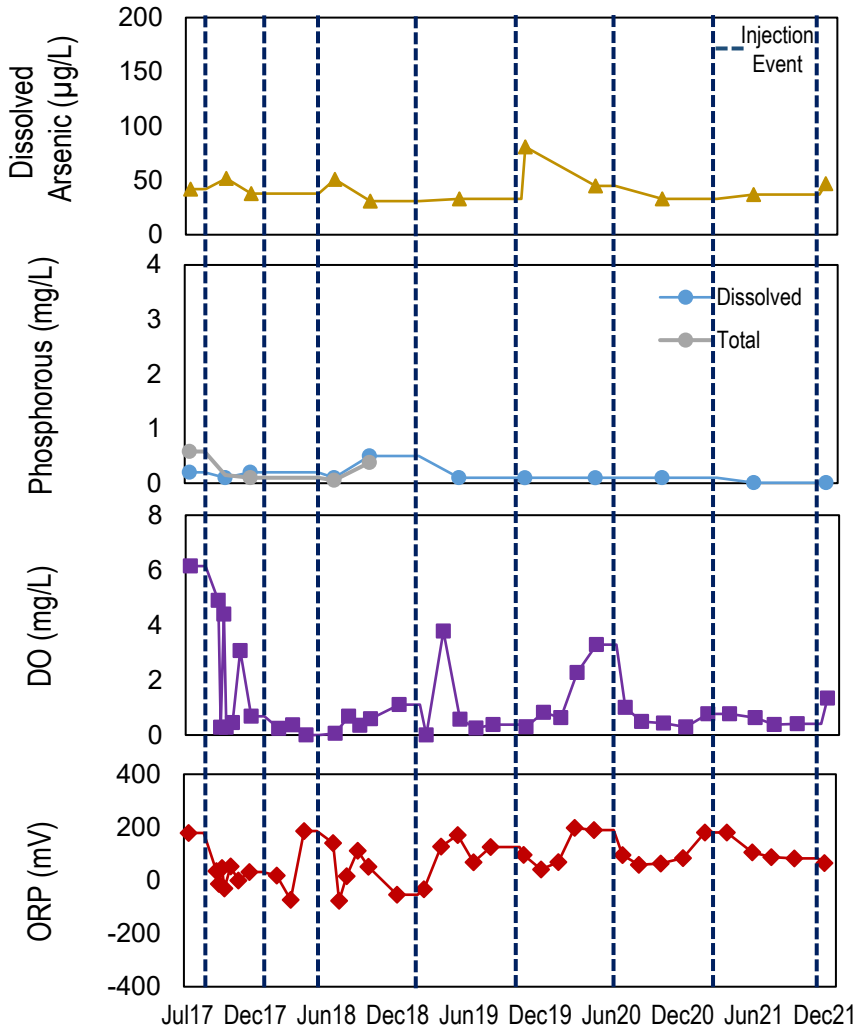
SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW20

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.29

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW21 is located approximately 150 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW21 is screened in the alluvium from 14.8 to 39.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW21 is approximately 3.8 to 29.5 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW21 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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HENDERSON, NEVADA

SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW21

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.30

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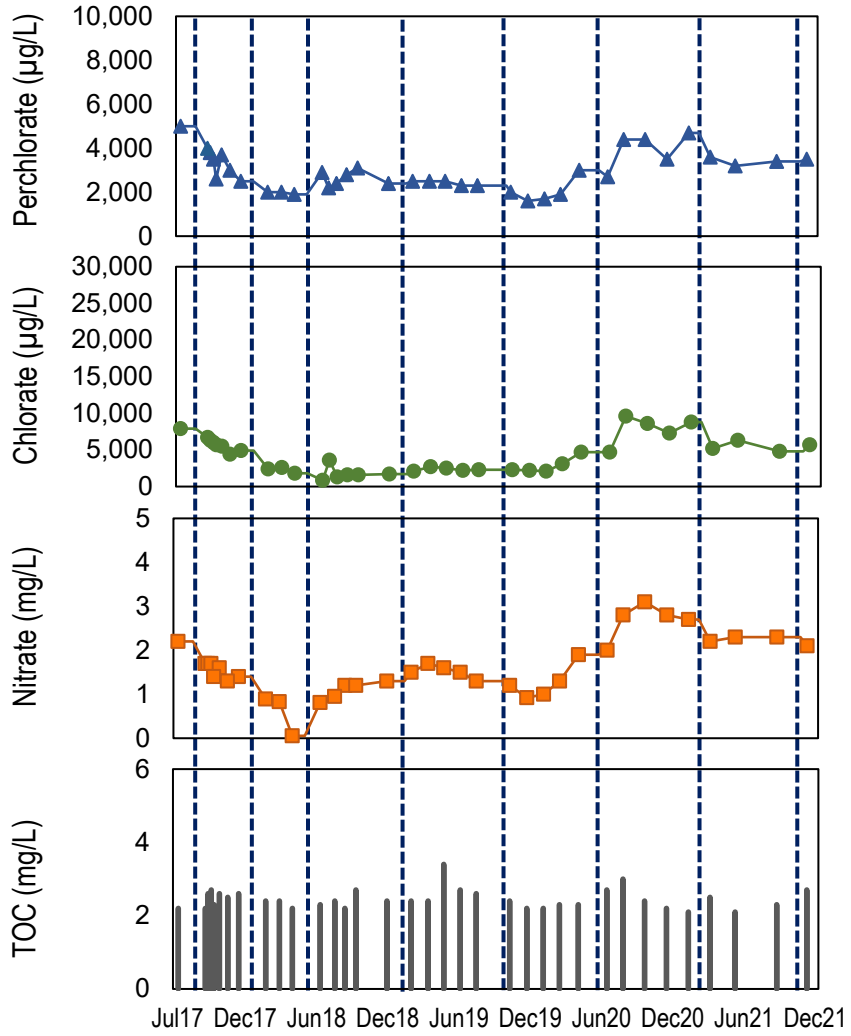

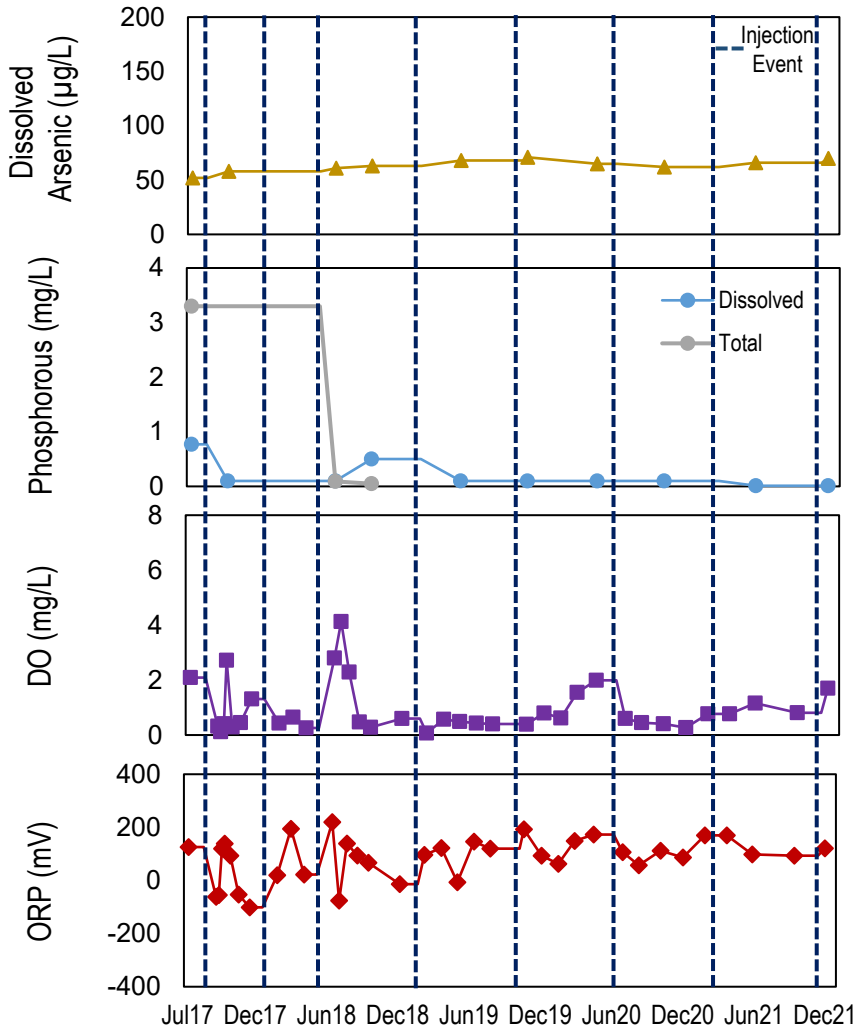

Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW22 is located approximately 275 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW22 is screened in the alluvium from 11.8 to 31.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW22 is approximately 85.1 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW22 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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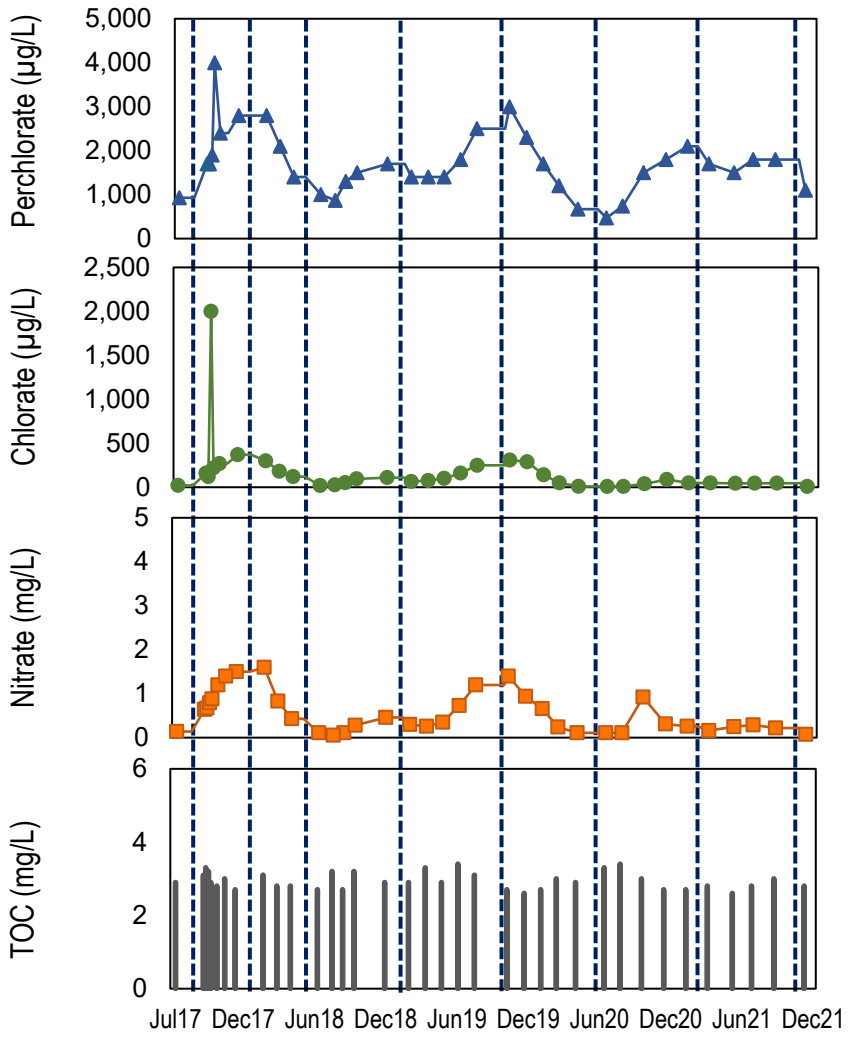
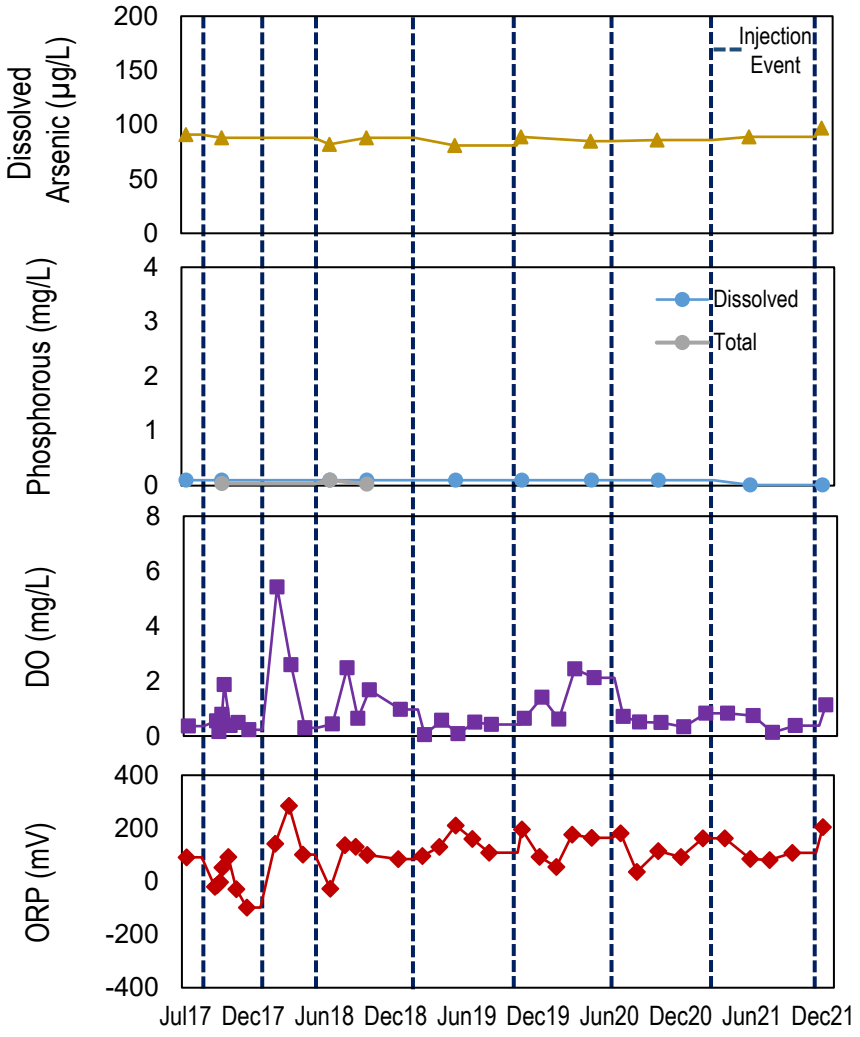
SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW22

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.31

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW23 is located approximately 500 feet north of the injection well transects. SWFTS-MW23 is considered a side-gradient monitoring well.
3. Monitoring well SWFTS-MW23 is screened in the alluvium from 13.8 to 33.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW23 is approximately 34.2 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW23 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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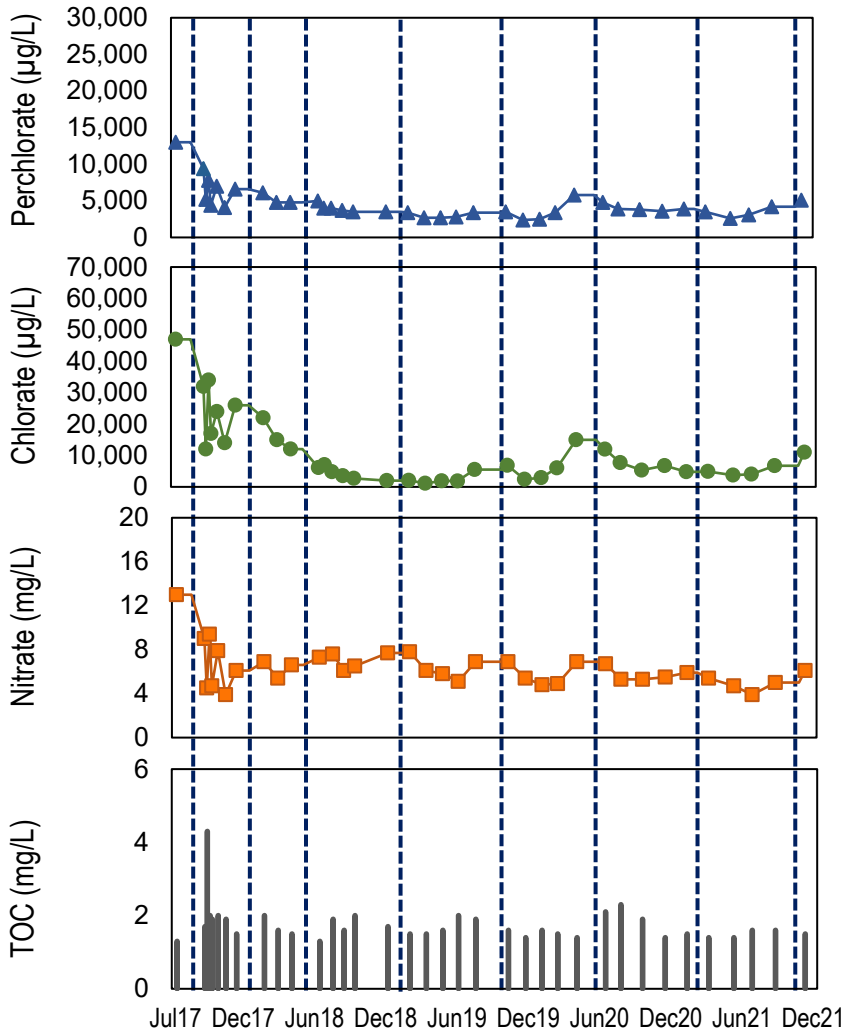
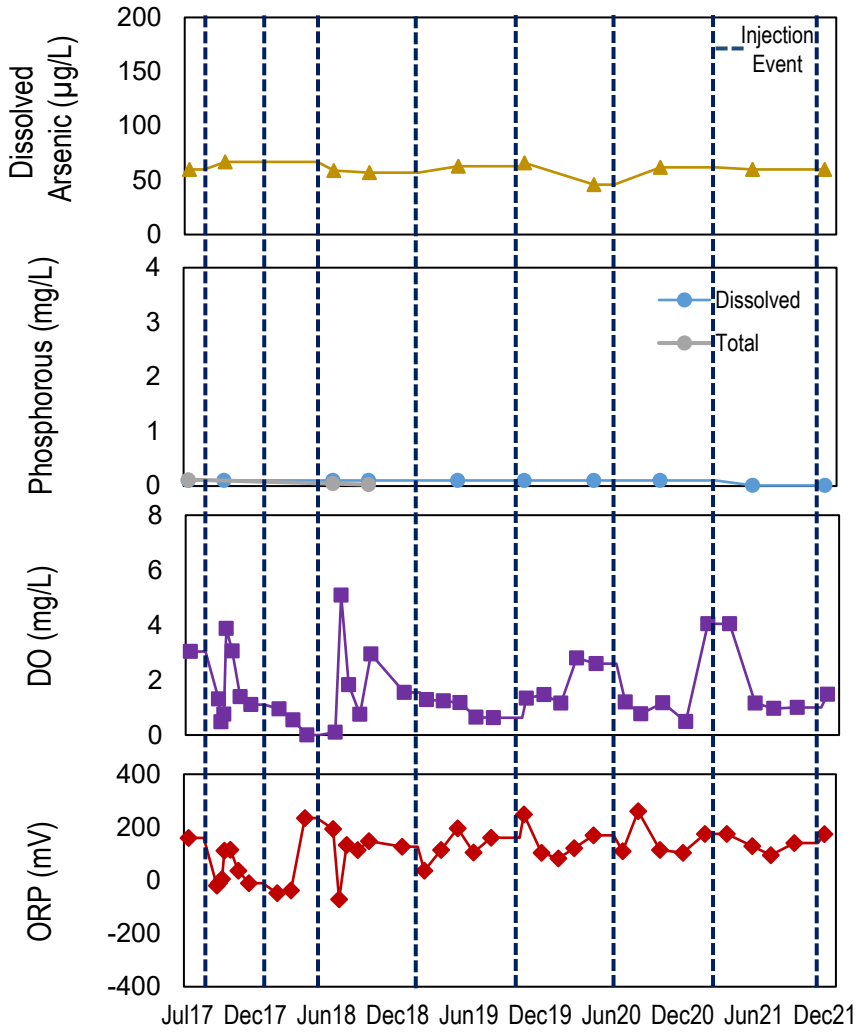
SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW23

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.32

\\tts100fs1\Shared TEN\Projects\Task M11 - Seep Well Field Bioremediation\Mod 6 Activities - Study Extension\2020 Annual Report\Appendix F\Appendix F - Concentration Trend Graphs.pptx





Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW24 is located approximately 450 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW24 is screened in the alluvium from 12.8 to 37.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW24 is approximately 121.0 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW24 were measured.

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SEEP WELL FIELD AREA BIOREMEDIATION TREATABILITY STUDY
2021 ANNUAL PROGRESS REPORT
HENDERSON, NEVADA

SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW24

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.33

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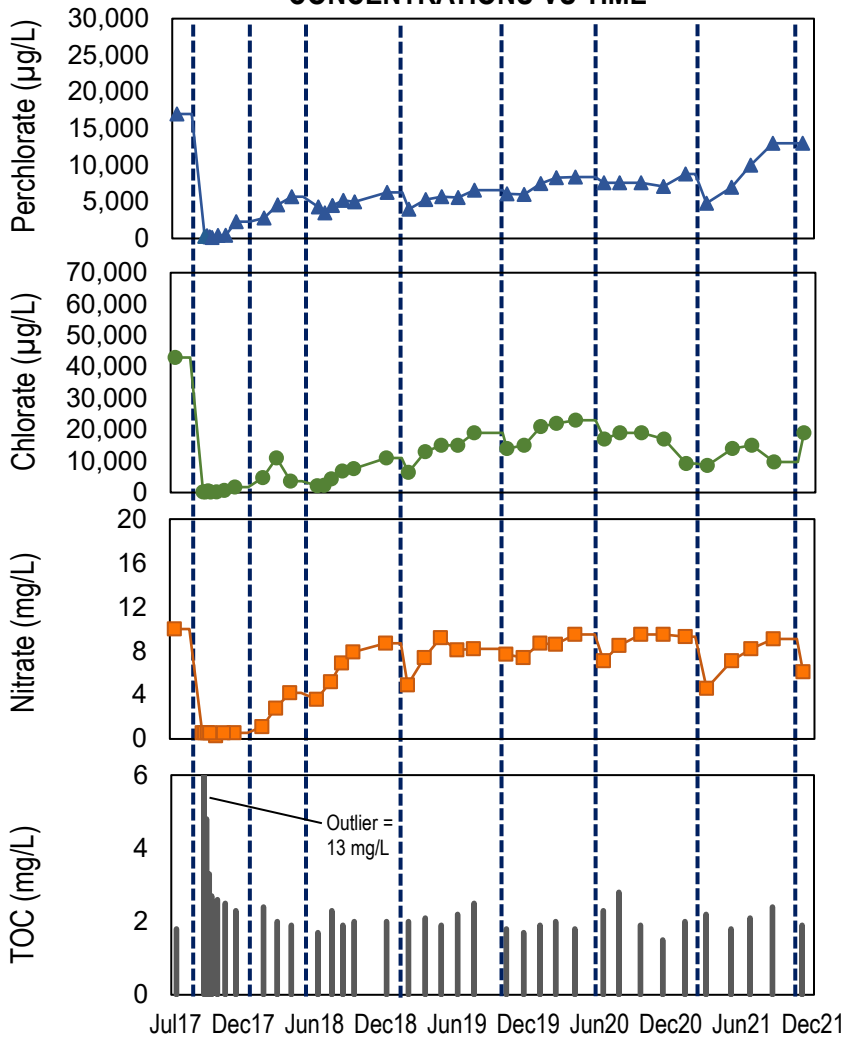

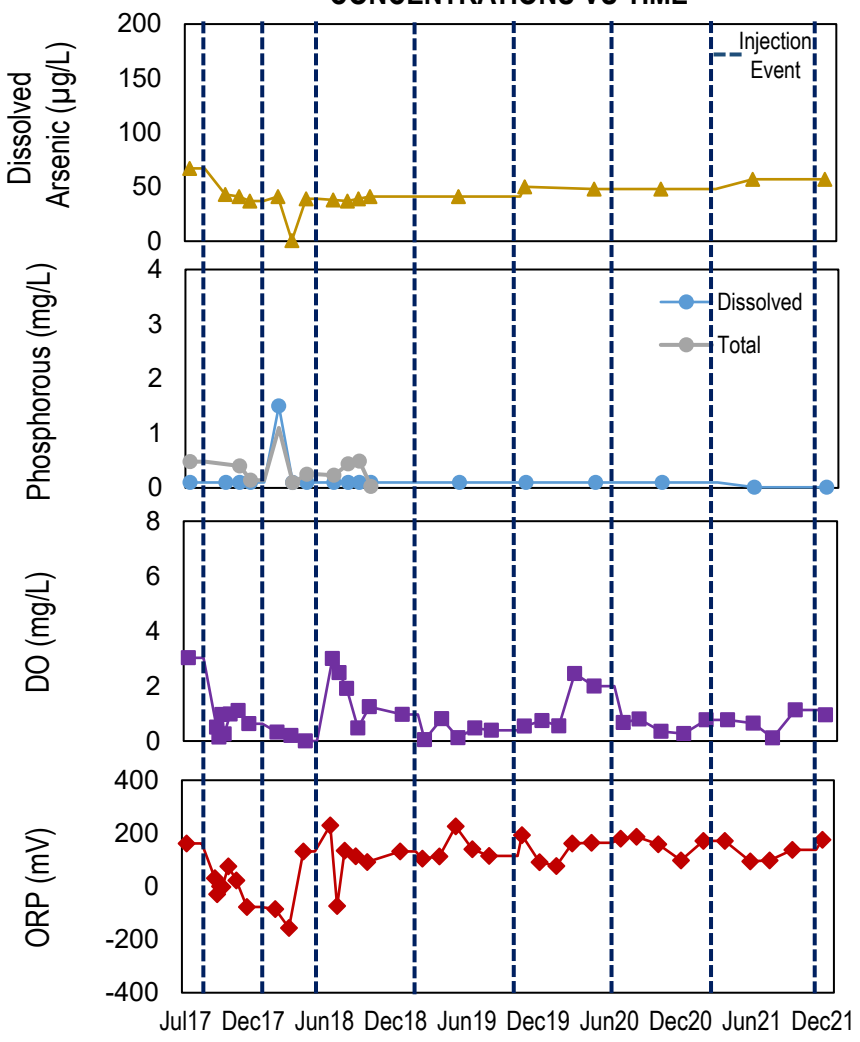

Notes:

1. Concentrations projected at time of each injection event are based on data from the previous sampling event.
2. SWFTS-MW25 is located approximately 600 feet downgradient of the injection well transects.
3. Monitoring well SWFTS-MW25 is screened in the alluvium from 12.8 to 42.6 feet bgs.
4. Slug testing suggests hydraulic conductivity at SWFTS-MW25 is approximately 59.1 to 86.2 feet/day.
5. No mobile porosity estimates at monitoring well SWFTS-MW25 were measured.

Abbreviations: µg/L – microgram per liter amsl – above mean sea level mg/L – milligram per liter TOC – Total Organic Carbon DO – Dissolved Oxygen ORP – Oxidation-Reduction Potential

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HENDERSON, NEVADA

SUMMARY OF EFFECTIVENESS MONITORING RESULTS FOR SWFTS-MW25

Project No.:	117-7502021-M11
Date:	MAY 18, 2022
Designed By:	SS

Figure No.
F.34

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Appendix G
Microbial Analytical Report

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: Dana Grady
Tetra Tech, Inc.
1093 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

Phone: 901-849-5742

Fax:

Identifier: 011TA **Date Rec:** 01/08/2022 **Report Date:** 01/19/2022

Client Project #: M11-CWP-03 WA8 **Client Project Name:** Bio-traps for NERT M11

Purchase Order #: 117-7502021-M11-CWP-03

Test results provided for: PLFA

Reviewed By:

Kate Clark

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

Results relate only to the items tested and the sample(s) as received by the laboratory.

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

PLFA

Client: **Tetra Tech, Inc.**
Project: Bio-traps for NERT M11

MI Project Number: **011TA**
Date Received: 01/08/2022

Sample Information

Sample Name:	**SWFTS-IW02A-20220107**	**SWFTS-MW07A-20220107**	**SWFTS-MW14-20220107**	**SWFTS-MW09B-20220107**
Sample Date:	01/07/2022	01/07/2022	01/07/2022	01/07/2022
Sample Matrix:	Std. Bio-Trap	Std. Bio-Trap	Std. Bio-Trap	Std. Bio-Trap
Analyst/Reviewer:	AT/KC	AT/KC	AT/KC	AT/KC

Biomass Concentrations

Total Biomass (cells/bead)	**4.75E+06**	**2.74E+04**	**2.65E+04**	**<1.66E+04**

Community Structure (% total PLFA)

Firmicutes (TerBrSats)	**12.02**	**0.00**	**0.00**	**0.00**
Proteobacteria (Monos)	**53.42**	**78.67**	**100.00**	**0.00**
Anaerobic metal reducers (BrMonos)	**2.21**	**0.00**	**0.00**	**0.00**
SRB/Actinomycetes (MidBrSats)	**1.69**	**0.00**	**0.00**	**0.00**
General (Nsats)	**28.05**	**21.34**	**0.00**	**0.00**
Eukaryotes (polyenoics)	**2.60**	**0.00**	**0.00**	**0.00**

Physiological Status (Proteobacteria only)

Slowed Growth	**0.30**	**0.70**	**0.85**	**0.00**
Decreased Permeability	**0.40**	**0.00**	**0.00**	**0.00**

Legend:
NA = Not Analyzed NS = Not Sampled

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

Client: **Tetra Tech, Inc.**
Project: Bio-traps for NERT M11

MI Project Number: **011TA**
Date Received: 01/08/2022

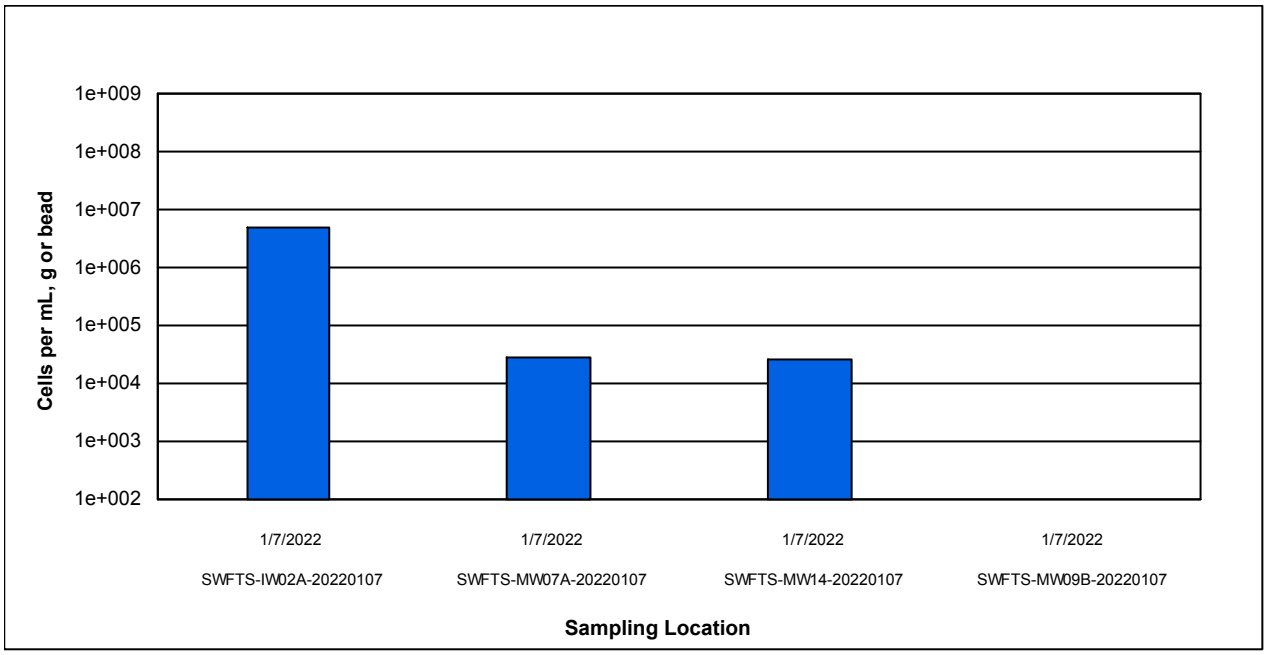

Figure 1. Biomass content is presented as a cell equivalent based on the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass

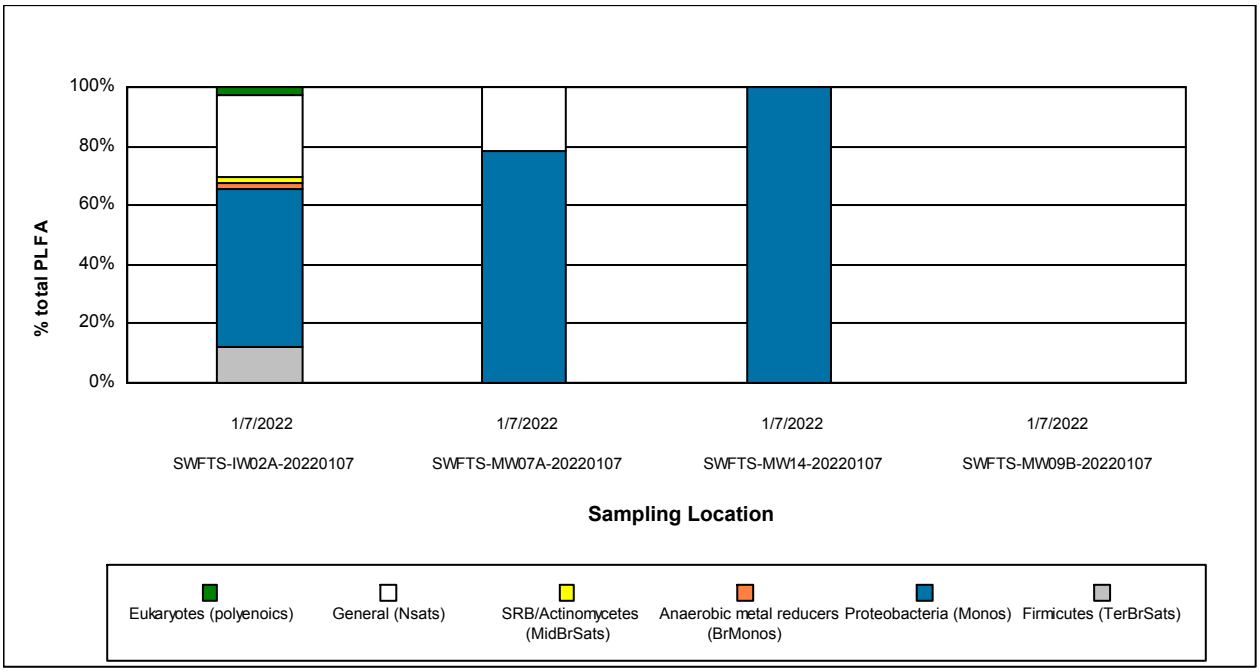

Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis.

Quality Assurance/Quality Control Data

Samples Received **1/8/2022**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
PLFA	01/08/2022	01/19/2022	6 °C	137%	non-detect	non-detect

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Identifier: 011TA **Date Rec:** 01/08/2022 **Report Date:** 01/19/2022

Client Project #: M11-CWP-03 WA8 **Client Project Name:** Bio-traps for NERT M11

Purchase Order #: 117-7502021-M11-CWP-03

Comments: Please note, results for samples SWFTS-MW07A-20220107, and SWFTS-MW14-20220107 fell between the reporting and detection limits for PLFA analysis. Results for SWFTS-MW09B-20220107 fell below the detection limit.

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client:	Dana Grady Tetra Tech, Inc. 1093 Commerce Park Drive Suite 100 Oak Ridge, TN 37830	**Phone:** **Fax:**	901-849-5742

Identifier: 011TA **Date Rec:** 01/08/2022 **Report Date:** 01/13/2022

Client Project #: M11-CWP-03 WA8 **Client Project Name:** Bio-traps for NERT M11

Purchase Order #: 117-7502021-M11-CWP-03

Test results provided for: CENSUS

Reviewed By:

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Results relate only to the items tested and the sample(s) as received by the laboratory.

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **Tetra Tech, Inc.**
Project: Bio-traps for NERT M11

MI Project Number: **011TA**
Date Received: 01/08/2022

Sample Information

Client Sample ID:		**SWFTS-IW02A-20220107**	**SWFTS-MW07A-20220107**	**SWFTS-MW14-20220107**	**SWFTS-MW09B-20220107**
Sample Date:		01/07/2022	01/07/2022	01/07/2022	01/07/2022
Units:		cells/bead	cells/bead	cells/bead	cells/bead
Analyst/Reviewer:		BB/CS	BB/CS	BB/CS	BB/CS
Functional Genes					
Perchlorate Reductase	pcrA	**6.98E+04**	**2.39E+03**	**2.91E+05**	<2.50E+02

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **1/8/2022**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
pcrA	01/08/2022	01/13/2022	6 °C	100%	non-detect	non-detect

REPORT TO:

Name: Dana Grady
Company: Tetra Tech
Address: 1093 Commerce Park Dr
Suite 100
Oakridge, TN 37830
email:
Phone: 865-483-9900
Fax:

INVOICE TO: (For Invoices paid by a third party it is imperative that all information be provided)

Name: Dana Grady
Company: Tetra Tech
Address:
email:
Phone:
Fax:

microbialinsights
10515 Research Dr
Knoxville, TN 37932
865-573-8188
www.microbe.com

Project Manager: Dana ~~G~~ Grady
Project Name: M11
Project No.:

Purchase Order No.
Subcontract No.
MI Quote No.

Please Check One:
☐ More samples to follow
☐ No Additional Samples

Report Type: ☑ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (35%)

EDD type: ☑ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information						Analyses				CENSUS: Please select the target organism/gene																						
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	Total Number of Containers	PLFA	NGS	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvc, tce, vcr)	DHBt (Dehalobacter)	DHG (Dehalogenimonas)	DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Dentrifiers-nirS and nirK)	AMO (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Napthalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR: Perchlorate reductase	RNA (Expression Option)*	Other:	Other:	Other:
011TA-1	SWFTS-MW02A-20220107	1/7/22	1217		1	X																						X	X			
2	SWFTS-MW07A-20220107	1/7/22	1226		1	X																						X				
3	SWFTS-MW14-20220107	1/7/22	1233		1	X																						X				
4	SWFTS-MW09A-20220107	1/7/22	1240		1	X																						X				

Relinquished by: Date 1/7/22
Received by: Date 1/8/22

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

* additional cost and sample preservation are associated with RNA samples.

**Saturday delivery: See sampling protocol for alternate shipping address.

Appendix H
Performance Criteria Tables

Table H.1. **Performance Criteria**

Performance Criteria	Description	Primary or Secondary
Contaminant Reduction	Evaluate the feasibility and effectiveness of implementing ISB to reduce the perchlorate and chlorate mass flux in an area located east of the Seep Well Field (SWF); Determined by evaluating concentration trends of the primary contaminants of perchlorate and chlorate.	Primary
Distribution and Implementability	• Estimate the overall influence of substrate injection and biodegradation achievable in the areas downgradient of the injections during the treatability study. • Evaluate the distribution of electron donor in groundwater through evidence of contaminant reduction and reducing and changing geochemical conditions in downgradient monitoring wells.	Primary
Carbon Substrate Longevity and Frequency of Injections	Estimation or extrapolation of the longevity of the carbon substrate and frequency of carbon substrate replenishment required to reduce perchlorate contamination immediately downgradient of the treatability study injection transect.	Primary
Factors Affecting Technology Performance	Hydrogeologic characteristics including: • Presence of paleochannels in select areas, • Hydraulic gradients, • Presence of low-permeability lenses or layers that may affect the vertical and lateral distribution of injected substrates, • Variable lithological characteristics that may result in zones where limited treatment may occur for a while until gradual attainment of reducing conditions throughout the area is achieved or addition of more injection points in perceived “dead or disconnected” zones can be established, and • Potential upflux of perchlorate and chlorate contamination from the UMCf into the overlying alluvium Chemical and biogeochemical characteristics including: • Contaminant concentrations and distributions, • Relatively high concentrations of chlorate and presence of nitrate as competing electron acceptors, • Presence of high quantities of sulfate, resulting in sulfate reducing conditions and over consumption of the carbon substrate, and • Secondary mobilization of key metals, such as iron, manganese, and arsenic.	Primary

Table H.1. **Performance Criteria**

Performance Criteria	Description	Primary or Secondary
Operations and Maintenance	Tasks associated with operations and maintenance (O&M) of the system include: • Monitoring injection rates and pressures at each injection well. • Evaluate injectate solution consistency during carbon substrate injections. • Evaluation of batch and in-line mixing operations. • Periodic Injection Well Maintenance (as required) to maintain long-term injectability.	Primary
Adaptability	An ISB system has been previously tested within a paleochannel for remediation of perchlorate and chlorate. With this study, the technology is being examined for ISB within a different geologic setting within the alluvium where there is still considerable heterogeneity. This study coupled with other future or on-going studies being conducted in a source area, large paleochannel near the Las Vegas Wash, and the UMCf will attest to the potential versatility of the ISB technology for remediation purposes.	Secondary
Scale-Up Considerations	The treatability study was designed to treat a relatively small area within the alluvium. Scale-up to meet the requirements of full-scale site remediation would involve treatability and/or pilot studies performed for a variety of site conditions that are likely to be encountered during full-scale remediation, such as source areas, deep and wide paleochannels, varying lithology of alluvium and/or UMCf, and unique geochemical conditions (i.e., high TDS and sulfate concentrations). Due to the high level of heterogeneity at the site, on-going treatability and pilot studies are being performed to evaluate the effectiveness of ISB in a variety of these settings.	Secondary

Table H.2. **Performance Metrics and Demonstrations**

Performance Criteria	Performance Metric	Performance Confirmation Method	Performance Demonstration
Primary Criteria (Quantitative)			
Contaminant Reduction	<u>Perchlorate:</u> • Reductions observed in perchlorate concentrations in groundwater samples collected from monitoring wells located in between and downgradient of the injection well transects. Effectiveness monitoring results will compare post-injection concentrations to baseline concentrations prior to injections. • Evaluation of the ability of ISB to achieve a reduction in perchlorate concentrations to less the perchlorate federal preliminary remedial goal (PRG) of 15 micrograms per liter (µg/L).	• EPA Standard Method 314.0 (Perchlorate)	• Significant reduction in perchlorate concentrations in groundwater samples collected from downgradient monitoring wells were observed during the reporting period. • Groundwater concentrations below the perchlorate PRG of 15 µg/L was attained and sustained at multiple groundwater monitoring well locations. • Mass estimates indicated that approximately 2,748 pounds of perchlorate were destroyed during the initial 14-month treatability study timeframe. Following the initial large mass reduction after the first injection event, the sustained average perchlorate mass flux treated was approximately 3 pounds per day. The mass destroyed during this reporting period of January through December 2021 was approximately 712 pounds (an average of 2 pounds per day). The upgradient influx was low during the first half of the reporting period but increased significantly during the second half of the reporting period. Therefore, even though the concentrations within the study area remained quite low and the biologically active zone continued, the actual amount available to treat was smaller. The continuing effectiveness of the biologically active zone was clearly shown when the concentrations coming in from the south increased up to 60 percent above baseline in the last half of the reporting period, yet the concentrations within the study area remained very low. Fluctuations in upgradient perchlorate concentrations are commonly observed within the study area and do not impact achieving the goals of the treatability study extension, which is focused on long-term operations and maintenance.
	<u>Chlorate and Nitrate:</u> • Reductions observed in chlorate concentrations in groundwater	• EPA Method 300.1 (Chlorate)	• Chlorate concentration trends followed a similar reducing pattern as the perchlorate concentration trends (up to 99% decrease when compared to baseline concentrations in groundwater from several

Table H.2. **Performance Metrics and Demonstrations**

Performance Criteria	Performance Metric	Performance Confirmation Method	Performance Demonstration
	samples collected from monitoring wells located in between and downgradient of the injection well transects. Effectiveness monitoring results will compare post-injection concentrations to baseline concentrations prior to injections. • Reductions observed in nitrate concentrations in groundwater samples collected from monitoring wells located in between and downgradient of the injection well transects. Effectiveness monitoring results will compare post-injection concentrations to baseline concentrations prior to injections. Nitrate is evaluated throughout the study since it is the most likely competing electron acceptor and perchlorate and chlorate biodegradation generally commences when denitrification is complete.	• EPA Standard Method 300.0 (Nitrate-N)	locations). Additionally, groundwater collected from 9 of the 16 monitoring wells located downgradient from the injection well transect indicated chlorate concentrations less than 100 μg/L during this reporting period. • Groundwater nitrate concentrations were observed at up to 18 milligrams per liter (mg/L) during baseline sampling. Following the seventh and eight injection events, nitrate concentrations in groundwater samples collected from 12 downgradient monitoring wells indicated a 50 percent reduction when compared to their baseline concentrations. Additionally, groundwater collected from 11 of the 16 monitoring wells located downgradient from the second injection well transect indicated nitrate concentrations less than 5 mg/L during this reporting period.
Distribution and Implementability	<u>Overall System Performance:</u> • Observe the overall influence of substrate injection and biodegradation achievable in the areas downgradient of the injection well transect through evidence of contaminant reduction and reducing conditions in downgradient monitoring wells.	• Experience from demonstration • EPA Standard Method 314.0 (Perchlorate) • EPA Method 300.1 (Chlorate)	• Perchlorate, chlorate, and nitrate concentration reductions have been observed in groundwater samples collected from monitoring wells located between the injection well transects as well as monitoring wells located up to 600 feet downgradient of the injection well transect immediately following the first injection event. Groundwater samples collected from three different monitoring wells indicated perchlorate concentrations below the PRG of 15 µg/L during several sampling events during the reporting period.

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Performance Criteria	Performance Metric	Performance Confirmation Method	Performance Demonstration
	• Evaluate the distribution of electron donor in groundwater and coating of the EVO to the soil grains.	• EPA Method 300.0 (Nitrate-N)	• Perchlorate concentrations in groundwater samples collected from SWFTS-MW14 and SWFTS-MW16 (located between the injection well transects) have continued to be greatly reduced compared to baseline through most of the reporting period. Following the seventh injection event, perchlorate concentrations in groundwater collected from SWFTS-MW14 and SWFTS-MW16 decreased to 790 μg/L and 2.4 μg/L, which represents approximate reductions of 97 and 99 percent compared to baseline concentrations. Perchlorate concentrations in groundwater began increasing in the summer of 2021, which is likely attributed to the shift in hydraulic gradients significant increases in upgradient groundwater concentrations. However, perchlorate concentrations in groundwater samples collected from both monitoring wells generally remained reduced by an average of 90 percent throughout the reporting period. These results indicate that injection of carbon substate is effective at reducing perchlorate, but the treatment efficiency is being affected by an exceptionally large upgradient influx and/or change in hydraulic gradients within the area. • Groundwater samples collected from monitoring well SWFTS-MW15 have historically indicated a delayed and mediocre response to injections, likely due to subsurface lithological and geochemical heterogeneity, potential UMCf back diffusion, and/or insufficient injection coverage in this immediate area. Despite this, the perchlorate concentration in groundwater from SWFTS-MW15 following the seventh injection was 7,900 μg/L, which represents an approximate 47 percent reduction compared to baseline concentrations. However, perchlorate concentrations generally increased for the remainder of the reporting period, and ultimately reached its highest concentration recorded during the treatability study of 23,000 μg/L. Perchlorate concentrations in groundwater at this well increased in tandem with significantly increasing perchlorate concentrations observed in samples from nearby upgradient monitoring wells SWFTS-MW08A

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Performance Criteria	Performance Metric	Performance Confirmation Method	Performance Demonstration
			and SWFTS-MW11, where perchlorate concentrations have increased to the highest ever recorded during the treatability study. As a result, monitoring results during this reporting period continue to indicate that local heterogeneity, along with unusually high upgradient concentrations, have prevented SWFTS-MW15 groundwater from being influenced as strongly by ISB injections. • Additional analysis is recommended during the 2022 reporting period to evaluate subsurface soil near the injection wells with respect to EVO distribution in the subsurface.
Carbon Substrate Longevity and Frequency of Injections	• Observe concentration rebounds following injection events to evaluate carbon substrate injection frequency to maintain a biologically active zone. • Monitor concentration reductions with varying injection quantities to determine optimal quantities of carbon substrate for subsequent injection events to maintain a biologically active zone.	• Experience from demonstration • EPA Standard Method 314.0 (Perchlorate) • EPA Method 300.0 (Nitrate) • EPA Method 300.1 (Chlorate) • SM5310B (TOC)	• The injection frequency has decreased over time (i.e., more months in between injection events) while still sustaining a biologically active zone that is degrading substantial perchlorate and chlorate in groundwater. Initial injections were spaced approximately four months apart but are now approximately once every eight months.
Factors Affecting Technology Performance	<u>Minimal Impacts to Downgradient Groundwater Geochemistry:</u> • Observe concentrations of sulfate since it as an electron acceptor and potential carbon substrate consumer with goal of minimizing the creation of sulfate reducing conditions. • Observe concentrations of metals to evaluate potential secondary mobilization of metals at downgradient locations.	• EPA Method 300.0 (Sulfate) • SW6010B/6020 (Dissolved Metals) • EPA Method 365.3 (Total Phosphorus)	• Limited sulfate reduction was observed in groundwater from downgradient monitoring wells during the reporting period. This is likely due to the employment of the slow release carbon substrate EOS, designed quantities of injectate, and relatively high groundwater flow rates that may not provide sufficient residence time for sulfate biodegradation to occur. Although sulfate reduction has been observed in groundwater from monitoring wells located in between the injection well transects, the level of sulfate reduction has decreased during the reporting period compared to previous reporting periods. • Minimal metals mobilization has occurred within the treatability study area and therefore, metals mobilization is unlikely to be a secondary issue during the implementation of ISB using EVO as the carbon

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Performance Criteria	Performance Metric	Performance Confirmation Method	Performance Demonstration
	• Observe concentrations of phosphorus since it is added to the injectate mixture to serve as a micronutrient to confirm that it is used as a nutrient, absorbed to the soil, or combined with cations such as calcium, rather than increasing its concentration in groundwater.		substrate. Select monitoring wells located in between or immediately downgradient of the injection well transects have observed temporary increases in concentrations of arsenic. However, these increases were observed by rapid declines likely because the geochemical conditions created can also promote the production of sulfide from sulfate (even in very small quantities), which likely resulted in the precipitation of arsenic as arsenic sulfide. During this reporting period, arsenic concentrations remain at or below the range of concentrations observed during baseline with the exception of arsenic concentrations in groundwater samples collected from SWFTS-MW18 and SWFTS-MW20, which were slightly elevated at 210 μg/L and 160 μg/L. These elevated dissolved arsenic concentrations in groundwater from SWFTS-MW18 and SWFTS-MW20 are likely to be transient, similar to those observed at SWFTS-MW14 in 2018, when dissolved arsenic in groundwater increased to 180 μg/L before decreasing considerably in subsequent years. Groundwater concentrations in samples collected from monitoring wells located farther downgradient from SWFTS-MW18 and SWFTS-MW20 remain at or below their baseline concentration for dissolved arsenic, which suggests that arsenic is not mobilizing in significant quantities to farther downgradient locations or migrating outside of the treatability study area. No significant trends were observed for iron, manganese, and selenium. • Dissolved phosphorus in groundwater was monitored during the reporting period because a phosphate solution is added to the injectate mixture to serve as a macronutrient for reduced acclimation time for the onset of perchlorate biodegradation. Dissolved phosphorus concentrations in groundwater were generally below the sample detection limit throughout the reporting period, which indicates that the augmented phosphorus was likely used as a nutrient, adsorbed to the soil, or combined with cations such as calcium, rather than increasing its concentration in groundwater. The only exception to this is groundwater collected from PC-91 indicated a phosphorus

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Performance Criteria	Performance Metric	Performance Confirmation Method	Performance Demonstration
			concentration of 0.6 mg/L following the eighth injection event. However, this concentration is below the maximum baseline concentration of 0.77 mg/L.
Operation and Maintenance	<u>Injection Wells:</u> • Observe injection pressures and injection rates during subsequent injection events • Perform maintenance on select injection well(s) if required (objective to examine maintenance methods and frequencies)	Measurement of pressures and flow in injection wells during injection operations	• The ability of the formation to accept substrate injections following eight injection events indicates ISB is a feasible long-term option for groundwater in the alluvium at this site. Over the course of the eight injection events, carbon substrate was injected in relatively the same time frames at flows generally greater than 5 gpm and pressures that were less than the maximum permissible pressure of 35 psi. During the seventh and eighth injection events, all injection wells received the complete targeted quantities of injectate solution and distribution water. • Eight injection events have been performed over 5 years as part of this treatability study. Of the 25 injection wells associated with the study, 14 injection wells have required no injection well maintenance and continue to accept injectate solution at low injection pressure to injection flow rate ratios of less than 5.0. Of the 11 injection wells that have received well maintenance, only three have received maintenance more than one time during the 5-year period. • All three well maintenance techniques (surge and bail, hydrojetting, and hydrojetting with chemical addition) have improved the injectability.
Secondary Criteria (Qualitative)			
Adaptability	• Use at other locations associated with the NERT site • Use with other lithological, chemical, and/or geochemical settings.	Experience from demonstration	This treatability study extension continues to evaluate implementation, effectiveness, and long-term operation and maintenance of ISB in an alluvial environment (as described in previous performance criteria). Other on-going studies will evaluate adaptability of ISB as follows:

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Performance Criteria	Performance Metric	Performance Confirmation Method	Performance Demonstration
			• Unit 4 Source Area Bioremediation Treatability Study – ISB applied in a source area with high concentrations of perchlorate, chlorate, hexavalent chromium, and total dissolved solids. • Las Vegas Wash Bioremediation Pilot Study – Applied in large deep paleochannels and deep UMCf/UMCf-cg.
Scale-up Considerations	• Equipment; • Injection and monitoring well layout; • Injection activities; • Analytical sampling evaluation criteria.	Experience from demonstration	Based on the work performed associated with this treatability study and lessons learned to-date, the following items should be considered when scaling up the ISB technology: • Extent of areas selected for ISB treatment; • Depths and lithology targeted in each area selected for ISB treatment (i.e., different carbon dosing and frequencies for alluvium, paleochannels, UMCf, etc); • Presence of buildings or other surface structures in the selected areas which make the installation of and access to injection wells more difficult; • RAOs selected (i.e., source reduction or downgradient barrier treatment to achieve a specified cleanup goal such as the federal PRG of 15 µg/L); • Potential combination of ISB with other technologies; • Supply and demand to various technology components, such as EVO; • Potential cost efficiencies/discounts gained through Trust negotiations with consultants and/or vendors. • Potential back diffusion or upflux from the UMCf and understanding its impact; • Pros and cons of batch versus in-line mixing and finalizing operational aspects; • Long-term understanding of substrate injection well pressures and flows; and • Injection well maintenance techniques and frequency required to keep ISB systems operational at NERT.