Addendum to the In-Situ Chromium Treatability Study Results Report Nevada Environmental Response Trust Site Henderson, Nevada

PREPARED FOR

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LIST OF ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
bgs	below ground surface
COPCs	contaminants of potential concern
DO	dissolved oxygen
DVSR	Data Validation Summary Report
EC	electrical conductivity
ft amsl	feet above mean sea level
ft/ft	feet per foot
IDW	investigation-derived waste
IWF	Interceptor Well Field
mg/L	milligrams per liter
mL	milliliters
mV	milliVolts
NDEP	Nevada Division of Environmental Protection
NERT or Trust	Nevada Environmental Response Trust
ORP	oxidation-reduction potential
PLFA	phospholipid fatty acids
PME	performance monitoring event
Qal	Quaternary Alluvium
QA/QC	quality assurance and quality control
QAPP	quality assurance project plan
Site	Nevada Environmental Response Trust Site
SRB	sulfate reducing bacteria
TDS	total dissolved solids
Tetra Tech	Tetra Tech, Inc.
ТОС	total organic carbon
UMCf	Upper Muddy Creek formation
UNLV	University of Nevada Las Vegas
VFAs	volatile fatty acids

CERTIFICATION

Addendum to the In-Situ Chromium Treatability Study Results 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 Environmenta **Response Trust Trustee** not individually

, not individually, but solely in his representative Signature of the Nevada Environmental Response Trust Trustee capacity as Presiden

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

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 Addendum to the In-Situ Chromium Treatability Study Results Report.

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January 23, 2019

Date

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Nevada CEM Certificate Number: 2167 Nevada CEM Expiration Date: September 18, 2020

1.0 INTRODUCTION

At the direction of the Nevada Environmental Response Trust (NERT or Trust), Tetra Tech, Inc. (Tetra Tech) has prepared this Addendum to the *In-Situ Chromium Treatability Study Results Report* to present the results of additional groundwater monitoring completed for the biological reduction study component of the In-Situ Chromium Treatability Study. The additional groundwater monitoring for the biological reduction study was performed to help finalize the evaluations of:

- groundwater velocity in the study area,
- carbon substrate longevity,
- the degree to which reduction of hexavalent chromium and other contaminants of potential concern (COPCs), such as chlorate, perchlorate, and chloroform, could occur in groundwater within the Upper Muddy Creek formation (UMCf), and
- confirm if geochemical conditions return to baseline conditions following completion of the treatability study.

The biological reduction study area is located within the Central Retention Basin at the NERT Site (Site), in Clark County, Nevada (Figure 1). Details of the treatability study procedures and initial results are presented in the *In-Situ Chromium Treatability Study Results Report, Revision 1* (Tetra Tech, Inc., 2018).

2.0 FIELD ACTIVITIES

Additional groundwater monitoring events were performed in March 2018 and June 2018 as part of the extended performance monitoring period discussed with the Nevada Division of Environmental Protection (NDEP) for the biological reduction study component of the In-Situ Chromium Treatability Study. The March 2018 groundwater monitoring event is identified as performance monitoring event (PME) #9 and the June 2018 groundwater monitoring event is identified as PME #10. For each groundwater monitoring event, groundwater levels were gauged using an interface meter at the six injection wells (CTIW-01S/D, CTIW-02S/D, and CTIW-03S/D) and 14 downgradient groundwater monitoring wells (CTMW-01S/D, CTMW-02S/D, CTMW-03S/D, CTMW-04S/D, CTMW-05S/D, CTMW-06S/D, and CTMW-07S/D) within the biological reduction study area (Figure 2). Gauging data and field observations were recorded on field data sheets (Appendix A). A comprehensive summary data table with the calculated groundwater elevations is provided in Appendix B.

As mentioned above, CTMW-07S and CTMW-07D were included in the extended performance monitoring period as both wells are located farther downgradient of the existing groundwater monitoring network and could provide additional information on the downgradient influence of the previous carbon substrate injections. These wells were installed from September 21 to 23, 2017, as part of the Remedial Investigation Modification No. 7, to further evaluate the distribution of perchlorate and other COPCs within the biological reduction study area (Tetra Tech, Inc., 2018). Shallow groundwater monitoring well CTMW-07S was screened in the Quaternary Alluvium (Qal) from 19 to 24 feet below ground surface (bgs), the same interval as the other shallow wells in the biological reduction study area. Deep groundwater monitoring well CTMW-07D was screened in the UMCf from 100 to 115 feet bgs, approximately 50 feet below the screened intervals of the other deep wells in the biological reduction study area. Additional details regarding the installation of CTMW-07S and CTMW-07D can be found in the *CTMW-07D and CTMW-07S Well Installation Technical Memorandum* (Tetra Tech, Inc., 2018), which is included as Appendix C.

During PME #9, groundwater samples were collected from 10 downgradient monitoring wells (CTMW-01S/D, CTMW-02S/D, CTMW-04S/D, CTMW-06S/D, CTMW-07S/D). During PME #10, groundwater samples were collected from eight downgradient monitoring wells (CTMW-01S/D, CTMW-02D, CTMW-04S/D, CTMW-06S/D, CTMW-07D). Although monitoring wells CTMW-02S and CTMW-07S were planned to be sampled during PME #10, groundwater samples could not be collected as insufficient groundwater was present within the monitoring wells. Groundwater monitoring wells CTMW-03S/D and CTMW-05S/D were not planned to be sampled in either performance monitoring event since they are located cross-gradient of the injection wells and analytical results from groundwater samples previously collected at these wells showed limited effects from the carbon substrate injections (Tetra Tech, Inc., 2018).

Groundwater sampling activities followed the procedures specified in *Field Sampling Plan, Revision 1* (Environ, 2014). A low-flow pump was used to purge each monitoring well at a rate between approximately 50 to 200 milliliters (mL) per minute to minimize drawdown and induce inflow of fresh groundwater. The pump discharge water was passed through a flow-through cell field water analyzer for continuous monitoring of field parameters (temperature, pH, turbidity, electrical conductivity [EC], dissolved oxygen [DO], and oxidation-reduction potential [ORP]). Field parameters were monitored and recorded on field sampling forms during purging (Appendix A). Purging was considered complete and the wells were sampled when the field parameter readings and water levels stabilized, or after a maximum of 1 hour of purging. The monitoring program for PME #9 and PME #10, including the field parameters and laboratory analyses, is provided in *Table 1*.

Parameter	Analytical Method	PME #9	PME #10
Field Parameters			
EC	Field Meter	Х	Х
рН	Field Meter	Х	Х
DO	Field Meter	Х	Х
ORP	Field Meter	Х	Х
Temperature	Field Meter	Х	Х
Turbidity	Field Meter	Х	Х
Laboratory Analyses			
Hexavalent Chromium	SW7199	Х	Х
Total Chromium	SW6010B	Х	Х
Alkalinity	SM2320B	Х	Х
TOC	SM5310B	Х	Х
Nitrate	E300.0	Х	Х
Sulfate	E300.0	Х	Х
Sulfide	SM4500S2D	Х	Х
Total Nitrogen	E351.2	Х	Х
Total Phosphorus	E365.3	Х	Х
TDS	SM2540C	Х	Х
Ferrous Iron	HACH Method 8146	Х	Х
Hardness	SM2340C	Х	Х
Manganese	SW6010B	Х	Х
Dissolved Methane	EPA Method RSK-175	Х	Х
Dissolved Metals ¹	SW6020	Х	Х
Volatile Fatty Acids	SW8015-Modified	Х	Х
Volatile Organic Compounds	EPA Method 8260B	Х	Х
Perchlorate	E314.0	Х	Х
Chlorate/Chlorite	E300.1B	Х	Х
Chloride	E300.0	Х	Х
PLFA	Microbial Insights Bio-Trap®		Х
Microbial Census	Microbial Insights Bio-Trap®		Х
Notes: PME - performance monitoring event EC - electrical conductivity DO - dissolved oxygen ORP - oxidation-reduction potential TOC - total organic carbon TDS - total dissolved solids PLFA - phospholipid fatty acids ¹ Dissolved metals include the followin chromium, cobalt, copper, iron, lead, in zinc.	ng: aluminum, antimony, arsenic, barium manganese, nickel, selenium, silver, thal	, beryllium, cadm lium, uranium, va	nium, anadium, and

Investigation-derived waste (IDW) generated during the groundwater monitoring events was managed according to applicable state, federal, and local regulations and as described in "Field Guidance Document No. 001, Managing Investigation-Derived Waste" in the *Field Sampling Plan, Revision 1* (Environ, 2014). IDW that was generated during the groundwater monitoring activities included personal protective equipment, equipment decontamination water, and groundwater. Wastewater generated during purging or decontamination activities was temporarily stored in 5-gallon buckets and transferred to the GW-11 Pond.

3.0 ANALYSIS OF RESULTS

As described in the *In-Situ Chromium Treatability Study Results Report, Revision 1*, three carbon substrate injection events were performed during the biological reduction study in April, June, and August 2017. In April 2017, approximately 2,849 gallons of carbon substrate solution were injected into the shallow injection wells and approximately 2,211 gallons of carbon substrate solution were injected into the deep injection wells. In June 2017, approximately 6,600 gallons of carbon substrate solution were injected into the shallow injection wells and approximately 6,600 gallons of carbon substrate solution were injected into the deep injection wells. In August 2017, the injections were primarily focused on providing carbon substrate to the deep wells with approximately 450 gallons of carbon substrate solution injected into the shallow injection wells and approximately 46 weeks following the first carbon substrate injection event (30 weeks after the last carbon substrate injection) and additional monitoring event PME #10 was conducted approximately 62 weeks following the first carbon substrate injection). The following subsections present the groundwater analytical results, field parameters, microbial results, and hydrogeological evaluation for additional monitoring events PME #9 and PME #10.

3.1 GROUNDWATER ANALYTICAL RESULTS

This section presents a detailed discussion of groundwater analytical results for hexavalent chromium, total organic carbon (TOC), nitrate, chlorate, perchlorate, chloroform, sulfate, sulfide, and metals. In addition, a more generalized discussion of other useful parameters, including total dissolved solids (TDS), alkalinity, chlorite, chloride, dissolved methane, total nitrogen, and volatile fatty acids (VFAs) is also provided herein. Tabulated groundwater analytical results from both PME #9 and PME #10 events are provided in Appendix D. Results from previous monitoring events associated with this treatability study are also included for comparison purposes. Graphical presentations of the results for the extended performance monitoring period are shown on Figures 3A, 3B, 4A, and 4B, which are similar to the figures in the original report appended to include the new PME#9 and PME#10 data.

When evaluating the groundwater data, it is important to recall that the general sequence in which constituents are biologically degraded in response to injection of carbon substrate, as demonstrated with bench-scale testing by the University of Nevada Las Vegas (UNLV) is:

chromium > nitrate > chlorate > perchlorate

A Data Validation Summary Report (DVSR) was prepared for the laboratory analytical data collected during the installation of monitoring wells CTMW-07S and CTMW-07D as well as the additional groundwater monitoring events described in this addendum. The DVSR is provided as Appendix E to this addendum. The data were verified and validated in accordance with the procedures described in the *Quality Assurance Project Plan, Revision 2* (Ramboll Environ, Inc., 2017). The samples were validated based on the quality assurance project plan (QAPP) in place at time of validation and the references contained therein. Analytical field sample results from groundwater and field quality blanks were validated to Stage 2A. Approximately ninety percent of the analytical results from soil were validated to Stage 2B and at least ten percent were validated to Stage 4. The DVSR was prepared to assess the validity and usability of laboratory analytical data from well installation activities and additional groundwater monitoring completed for the biological reduction study component of the In-Situ Chromium Treatability Study. Tetra Tech collected additional quality assurance and quality control (QA/QC) samples to aid in assessing data quality. Data associated with the In-Situ Chromium Treatability Study that were submitted previously as an appendix to the *In-Situ Chromium Treatability Study Results Report* (Tetra Tech, Inc., 2018) are not included in the current DVSR (Appendix E).

3.1.1 Hexavalent Chromium

Hexavalent chromium was analyzed to monitor changes in groundwater concentrations after injections in the Qal and UMCf to ascertain the long-term effectiveness of the technology. Hexavalent chromium concentrations are presented in Appendix D and on Figures 3A and 3B.

Overall, hexavalent chromium concentrations in groundwater samples collected during the extended performance monitoring period remained significantly reduced at three Qal downgradient monitoring wells (CTMW-01S, CTMW-02S, and CTMW-06S) 46 weeks following the first carbon substrate injection event (PME #9) and at two Qal downgradient monitoring well (CTMW-01S and CTMW-06S) 62 weeks following the first carbon substrate injection event (PME #10). Specifically, during PME #9, hexavalent chromium was below detectable concentrations in groundwater samples collected from monitoring wells CTMW-01S, CTMW-02S, and CTMW-06S, which is a continuing trend from the last sampling event in March 2018 (previously reported). During PME #10, hexavalent chromium remained below detectable concentrations in groundwater samples collected from CTMW-01S and CTMW-04S, which correlates with the depletion of TOC (a surrogate for the injected carbon substrate) at these monitoring wells. Insufficient water was present at CTMW-02S and CTMW-07S to collect samples during PME #10.

Although significant reduction in hexavalent chromium concentrations in groundwater was observed at CTMW-06S (approximately 34 feet downgradient of the nearest injection well), the limited data set suggests that there was no evidence of reduction in hexavalent chromium concentration in groundwater at CTMW-07S (approximately 70 feet downgradient of the nearest injection well) as concentrations during this single event were comparable to pre-injection conditions at upgradient wells. Analytical results from the groundwater sample collected from CTMW-07S (see Appendix D) indicate hexavalent chromium concentrations comparable to baseline concentrations from the shallow groundwater monitoring wells within the biological reduction study area. As a result, the downgradient extent of the reduction zone is estimated to be between 34 and 70 feet. The sustained reduction of hexavalent chromium concentrations in groundwater and length of the reduction zone created downgradient of the injection wells continue to support the long-term effectiveness of this technology in the Qal.

As shown on Figure 3B, groundwater samples collected during the extended performance monitoring period from deep monitoring wells screened in the UMCf also continued to show biological reduction with hexavalent chromium concentrations in response to the carbon substrate injections. Hexavalent chromium concentrations were reduced by approximately 73% at the closest downgradient monitoring well (CTMW-01D) and 85% at the farthest downgradient monitoring well (CTMW-06D) when compared to baseline concentrations. Specificially, during PME #9 and PME #10, hexavalent chromium concentrations in groundwater remained low or continued to decrease at CTMW-01D, CTMW-02D, CTMW-04D, and CTMW-06D. Hexavalent chromium concentrations at locations CTMW-01D, CTMW-04D, and CTMW-06D during PME #10 were the lowest since baseline sampling. Although reductions in hexavalent chromium concentrations in groundwater were at a slower rate in the UMCf as compared to the Qal, significant reductions of hexavalent chromium were still observed in groundwater in the UMCf as evidenced by the results from PME #9 and PME #10. The slower rate of hexavalent chromium reduction in the UMCf compared to the Qal is primarily attributed to reduced carbon substrate distribution due to lower groundwater flow velocity and hydraulic conductivity.

3.1.2 Total Organic Carbon

TOC analytical results are often used as a surrogate parameter to track the carbon substrate injectate in the groundwater. TOC results are also an important indicator to determine the appropriate timing for reinjection activities. As a result, TOC was analyzed throughout the treatability study to monitor changes in carbon concentrations in groundwater after injections. TOC results are presented in Appendix D and on Figures 3A, 3B, 4A, and 4B.

TOC concentrations in groundwater in the Qal during the extended performance monitoring period remained elevated in several monitoring wells when compared to baseline concentrations of less than 2.5 milligrams per liter (mg/L). TOC concentrations were as high as 1,200 mg/L in groundwater collected from CTMW-01S during PME #9. Although concentrations were substantially lower during PME #10, TOC concentrations in groundwater as high as 91 mg/L were observed. TOC results from this supplemental sampling indicate that the carbon substrate has continued to persist in the Qal following the last injection event performed in August 2017.

TOC concentrations in groundwater in the UMCf remained elevated at the downgradient monitoring well closest to the injection wells (CTMW-01D), with concentrations during the extended performance monitoring period generally similar to those observed following the August 2017 injection event (greater than 300 mg/L). Concentrations at the farther downgradient well CTMW-06D continued to decline to a concentration of 20 mg/L but remained elevated when compared to the baseline concentration of 3.5 mg/L. The limiting factors to TOC propagation in the UMCf include the groundwater flow velocity and hydraulic conductivity, both of which were less than in the Qal.

3.1.3 Nitrate

Nitrate concentrations were evaluated throughout the study since it is a competing electron acceptor and carbon substrate consumer. Nitrate results are presented in Appendix D and on Figures 4A and 4B.

During the extended performance monitoring period, nitrate concentrations in groundwater in the Qal remained below detectable concentrations at CTMW-01S, CTMW-02S, and CTMW-06S but increased to as high as 130 mg/Lat CTMW-04S, which is similar to baseline concentrations of 150 mg/L. At CTMW-07S, the nitrate concentration in groundwater during PME #9 was 66 mg/L; however, no baseline or subsequent sample results were available for comparison, as there was insufficient water present within the well to collect a sample. However, the groundwater nitrate concentration in CTMW-07S during PME #9 was within the range of baseline concentrations (55 mg/L to 160 mg/L) in groundwater samples collected from other shallow wells. Overall, nitrate concentrations in groundwater remained below detectable concentrations at three of the downgradient monitoring wells (CTMW-01S, CTMW-02S, and CTMW-06S) during the extended performance monitoring period, indicating that denitrification continued to occur in the Qal in the biological reduction study area.

Nitrate concentrations in groundwater in the UMCf remained generally constant at deep wells CTMW-01D, CTMW-02D, and CTMW-06D. Overall, nitrate concentrations in groundwater throughout the treatability study were reduced at three deep wells (CTMW-01D, CTMW-02D, and CTMW-06D) by approximately 75%, 50%, and 80% respectively, compared to baseline concentrations. There was no noticeable reduction in nitrate concentrations in groundwater at CTMW-04D, indicating that appreciable rates of denitrification were not occurring in groundwater at this well.

3.1.4 Chlorate

Generally, chlorate biodegradation precedes perchlorate biodegradation, although the two processes can also occur simultaneously, particularly in the presence of organic carbon. As a result, chlorate was monitored to assess potential secondary impacts of treatment. Chlorate concentrations are presented in Appendix D and on Figures 4A and 4B.

Overall, chlorate concentrations in groundwater in the Qal throughout the treatability study were reduced by over 99% at CTMW-01S, CTMW-02S, and CTMW-06S. Chlorate concentrations in groundwater remained significantly reduced during the extended performance monitoring period at three downgradient monitoring wells (CTMW-01S, CTMW-02S, and CTMW-06S) during PME #9, which was 46 weeks following the first carbon substrate injection event and at two of the five downgradient monitoring wells (CTMW-01S and CTMW-06S) during PME #10, which was 62 weeks following the first carbon substrate injection event. Well CTMW-02S was not sampled during PME #10 due to a lack of groundwater in the well. Specifically, chlorate concentrations in groundwater in the Qal remained at or just above detectable concentrations in groundwater at shallow wells CTMW-01, CTMW-02S, and

CTMW-06S. At CTMW-04S, chlorate concentrations in groundwater returned to baseline levels with concentrations of 2,600 mg/L and 3,500 mg/L during PME #9 and PME #10, respectively. The increasing chlorate concentrations in groundwater at CTMW-04S correlate with the depletion of TOC at this monitoring well. At CTMW-07S, the chlorate concentration in groundwater was 3,200 mg/L during PME #9. This chlorate concentration in groundwater is similar to the baseline chlorate concentrations in groundwater at the other shallow wells within the biological reduction study area and therfore, no indication of chlorate reduction was observed at CTMW-07S. It should be noted that chlorate concentrations in groundwater at CTMW-04S rebounded to above baseline concentrations during PME #9 and PME #10. The increased chlorate concentrations are attributed to the natural fluctuations in upgradient/cross-gradient groundwater concentrations and groundwater elevations within the shallow zone.

During the extended performance monitoring period, chlorate concentrations in groundwater in the UMCf continued to decrease at deep well CTMW-06D, decreased and then remained steady at CTMW-01D, and remained relatively consistent in groundwater samples collected from CTMW-02D and CTMW-04D. Overall, chlorate concentrations in groundwater in the UMCf were reduced by approximately 57% at CTMW-01D and by approximately 80% at CTMW-06D throughout the treatability study. At deep well CTMW-02D, chlorate concentrations in groundwater were reduced by approximately 60% by PME #4 but then increased to near baseline concentrations by PME #5.

3.1.5 Perchlorate

Perchlorate was analyzed throughout the treatability study in accordance with the *In-Situ Chromium Treatability Study Work Plan* and as part of the two additional monitoring events conducted during the extended performance monitoring period. Perchlorate concentration changes were evaluated over time to ascertain perchlorate degradation as a potential beneficial by-product of the technology. Perchlorate results from groundwater samples collected in the shallow (Qal) and deep (UMCf) wells are presented in Appendix D and on Figures 4A and 4B.

Perchlorate concentrations in groundwater in the Qal throughout the treatability study have been reduced by over 99.9% at CTMW-01S, CTMW-02S, and CTMW-06S. Specifically, perchlorate concentrations in groundwater remained significantly reduced when compared to baseline at three downgradient monitoring wells (CTMW-01S, CTMW-02S, and CTMW-06S) during PME #9, which was 46 weeks following the first carbon substrate injection event, with concentrations at these wells ranging from less than 0.0025 mg/L to 0.13 mg/L during this event. Perchlorate concentrations in groundwater also remained significantly reduced when compared to baseline at two of the first carbon substrate injection event, with concentrations in groundwater also remained significantly reduced when compared to baseline at two of the first carbon substrate injection event, with concentrations at these wells (CTMW-01S and CTMW-06S) during PME #10, which was 62 weeks following the first carbon substrate injection event, with concentrations at these wells of 0.15 mg/L and 0.066 mg/L, respectively, during this event. As noted previously, well CTMW-02S was not sampled during PME#10 due to a lack of groundwater in the well. At CTMW-04S, perchlorate concentrations in groundwater were above baseline values with a maximum concentration of 870 mg/L. The increased perchlorate concentrations are attributed to the natural fluctuations in upgradient/cross-gradient groundwater concentrations and groundwater elevations within the shallow zone. At CTMW-07S, the perchlorate concentration in groundwater during PME #9 was 510 mg/L, which is consistent with the baseline concentrations for the other shallow wells within the biological reduction study area. Therefore, there was no indication of perchlorate reduction at CTMW-07S.

With respect to perchlorate degradation in the UMCf, during the treatability study and the additional monitoring events, the perchlorate concentrations were reduced by up to approximately 36% at CTMW-01D (1,400 mg/L at baseline to 900 mg/L at PME #9), 33% at CTMW-04D (980 mg/L at baseline to 660 mg/L at PME #9), and 76% at CTMW-06D (1,000 mg/L at baseline to 240 mg/L at PME #10). No significant perchlorate reduction was observed at the remaining deep wells. Perchlorate concentrations in groundwater from deep well CTMW-01D hit an all-time low in PME #9 but increased by PME #10. CTMW-06D exhibited a steady and sustained decreasing trend during both PME #9 and PME #10. Perchlorate concentrations in groundwater at the remaining deep wells either increased or remained relatively consistent.

3.1.6 Chloroform

Chloroform was analyzed throughout the treatability study in accordance with the *In-Situ Chromium Treatability Study Work Plan* and as part of the two additional monitoring events conducted during the extended performance monitoring period. Chloroform concentration changes were evaluated over time to ascertain chloroform degradation as a potential beneficial by-product of the technology. Chloroform is also amendable to in-situ biological reduction and is expected to be reduced following the reduction of nitrate (Bouwer & McCarty, 1983). Chloroform results from groundwater samples collected in the shallow (Qal) and deep (UMCf) wells are presented in Appendix D and on Figures 5A and 5B.

Chloroform concentrations in groundwater in the Qal were reduced by over 98% at CTMW-01S, CTMW-02S, and CTMW-06S during the treatability study with baseline concentrations ranging from 0.670 mg/L to 0.950 mg/L at these wells to concentrations ranging from less than 0.00025 mg/L to 0.0049 mg/L during PME #10. During PME #9 and PME #10, chloroform concentrations in groundwater in the Qal remained substantially reduced or continued to decline at these shallow wells compared to baseline concentrations. Although chloroform concentrations in groundwater to 0.048 mg/L at PME #8), concentrations returned to near baseline values during the additional monitoring with a maximum concentration of 0.580 mg/L. At CTMW-07S, the chloroform concentration in groundwater during PME #9 was 0.830 mg/L, which is consistent with the baseline concentrations for the other shallow wells. Therefore, no indication of chloroform reduction was assumed at CTMW-07S.

During the treatability study, chloroform concentrations in groundwater in the UMCf at deep wells CTMW-01D, CTMW-02D, CTMW-04D, and CTMW-06D were reduced compared to baseline values, with some of the lowest concentrations observed during PME #9. Baseline concentrations at these wells ranged from 1.5 mg/L to 1.8 mg/L while concentrations at these wells during PME #9 ranged from 0.440 mg/L to 0.990 mg/L. During PME#10, chloroform concentrations in groundwater began to return to baseline concentrations at CTMW-01D, CTMW-02D, and CTMW-04D but continued to reduce at CTMW-06D to 0.270 mg/L. Overall, the maximum reduction in chloroform concentrations in groundwater in the UMCf at CTMW-01D, CTMW-02D, CTMW-04D, and CTMW-06D was 60%, 34%, 40%, and 82%, respectively, when compared to concentrations during the baseline or first sampling event.

3.1.7 Sulfate and Sulfide

Groundwater within the treatability study area has high native sulfate concentrations. Generally, sulfate reduction occurs only under very reducing conditions and after hexavalent chromium, nitrate, perchlorate, and chlorate reduction has occurred. Sulfide is a product of sulfate reduction and measurements of sulfide concentrations in groundwater can be used in conjunction with pH and ORP changes and changes in ferrous iron concentrations to understand if sulfate reduction is occurring. Sulfate and sulfide results are presented in Appendix D.

Sulfate concentrations in groundwater in the Qal remained decreased compared to baseline concentrations at shallow wells CTMW-01, CTMW-02S, and CTMW-06S. During PME #10, sulfate concentrations in groundwater increased at shallow wells CTMW-01S and CTMW-06S. At CTMW-04S, sulfate concentrations in groundwater returned to baseline levels with concentrations of 1,500 mg/L and 1,400 mg/L during PME #9 and PME #10, respectively. At CTMW-07S, the sulfate concentration in groundwater was 1,400 mg/L during PME #9. This sulfate concentration in groundwater is similar to the baseline sulfate concentrations in groundwater at the other shallow wells within the biological reduction study area and therfore no indication of sulfate reduction was assumed at CTMW-07S.

During the treatability study, sulfate reduction was observed in groundwater samples collected from monitoring wells CTMW-01S, CTMW-02S, and CTMW-06S and this general reducing trend continued during the additional monitoring. Although detectable concentrations of sulfide (a product of sulfate reduction) were also present in groundwater during several performance monitoring events at CTMW-01S, CTMW-02S, CTMW-04S, and CTMW-

06S, concentrations remained less than 1.0 mg/L indicating that sulfide was not accumulating. The decrease in sulfate concentrations and presence of sulfide indicate sulfate reduction was occurring and highly reducing conditions were present in the shallow treatment zone. Typically, sulfate reduction occurs when there is an abundance of carbon substrate and the ORP remains below -220 millivolts (mV). The primary concerns with sulfate reduction are the formation of hydrogen sulfide and the consumption of additional carbon substrate. During this treatability study, the accumulation of hydrogen sulfide was not observed. The results of this treatability study can be used to design future carbon substrate injections to limit sulfate reducing conditions.

Overall, there was limited sulfate reduction observed in the deep wells. The most significant reductions in sulfate concentrations in groundwater in the UMCf were observed at deep wells CTMW-01D and CTMW-06D, where concentrations were reduced from 1,900 mg/L to 990 mg/L (48% reduction) and from 1,500 to 860 mg/L (43% reduction), respectively. Sulfide was rarely detected in groundwater within the UMCf at a concentration above the detection limit, which corroborates with the data indicating that sulfate reduction was not occurring to a significant extent within the UMCf during the biological reduction study.

3.1.8 Metals

As presented in *Table 1*, a suite of dissolved metals was analyzed in groundwater samples collected as part of PME #9 and PME #10. Field measurements for ferrous iron were also collected as part of the performance monitoring events. Results of each parameter analyzed are presented in the comprehensive data tables provided in Appendix D. In general, metal concentrations such as iron and manganese decreased during PME #9 and #10, in the Qal, particularly in the farther downgradient wells, as geochemical conditions return to baseline levels. Arsenic concentrations remained elevated in some shallow wells but was detected in the range of baseline concentrations for the biological reduction study area at the farthest downgradient shallow monitoring well (CTMW-07S) indicating that arsenic increases are likely temporarily localized to the treatment area. In the UMCf, dissolved metal concentrations of arsenic, iron and manganese generally increased during PME #9 and #10. Any increases in metal concentrations such as arsenic, iron, and manganese within the treatment zone are spatially limited to groundwater within the biological treatability study area, and concentrations are expected to return to baseline concentration changes of three metals (arsenic, iron, and manganese) during PME #9 and PME #10 is provided below. Reducing conditions in the Qal and UMCf during the treatability study can cause these metals to become more soluble.

3.1.8.1 Arsenic

Arsenic can be released from minerals present in the saturated subsurface when reducing conditions are created following the injection of a carbon substrate. The potential for the release of arsenic from these minerals and subsequent transfer to groundwater is an important factor to understand when evaluating this technology for application in a particular geologic setting. In general, increases in arsenic concentrations in groundwater tend to be localized within the area of reducing conditions created by the carbon substrate injection and are temporary in nature. Once the reducing conditions created by the substrate injection dissipate and the original groundwater conditions return, or when groundwater from the reducing area flows to downgradient areas not influenced by the injections, arsenic concentrations tend to return to previous concentrations (The Interstate Technology & Regulatory Council, 2008). As the amount of carbon substrate in the injection area declines, arsenic concentrations in groundwater are also expected to decline and minimal arsenic will be released from the subsurface minerals (Borden, 2015). Furthermore, the presence of sulfate and biogenic sulfide generation under reducing conditions also tend to precipitate and immobilize arsenic over time as metal sulfides (Borden, et. al, 2015). Because the area of the biological reduction study is within the capture zone of the Interceptor Well Field (IWF) and a considerable distance upgradient of a receiving body of water, it is quite unlikely that temporal increases in arsenic in groundwater associated with the substrate injection area would impact arsenic concentrations farther downgradient.

The baseline groundwater sampling event conducted in April 2017 indicated that dissolved arsenic concentrations in groundwater within the Qal ranged from 0.065 mg/L to 0.12 mg/L in the biological reduction study area. Following carbon substrate injections, arsenic concentrations increased in several downgradient monitoring wells, with the highest arsenic detection of 0.91 mg/L in groundwater collected from CTMW-01S. As a result, arsenic was evaluated during the additional monitoring events to quantify the expected reduction in arsenic concentrations once the groundwater condition return to its natural state following depletion of carbon substrate. During PME #9 and PME #10, arsenic concentrations in groundwater started to decrease at downgradient well CTMW-01S but increased to 1.3 mg/L at CTMW-02S. Farther downgradient, the arsenic concentration in CTMW-04S decreased to 0.061 mg/L during PME #10, below the baseline concentration of 0.065 mg/L. The arsenic concentration in groundwater at CTMW-06S decreased between PME #9 and PME #10 but remained elevated above the baseline concentration. Overall, except at CTMW-02S, the arsenic concentrations in groundwater decreased during PME #9 and PME #10 at each downgradient shallow monitoring well from the maximum arsenic concentration in groundwater. Arsenic concentrations in groundwater at the farthest downgradient monitoring well, CTMW-07S, were 0.12 mg/L during PME #9, which is within the range of the baseline concentrations within the Qal at the biological reduction study area, indicating that the increase in arsenic concentrations observed during the treatability study are likely temporarily localized to the biological reduction study area.

The baseline groundwater sampling event conducted in April 2017 indicated that arsenic concentrations in groundwater within the deep monitoring wells ranged from below detectable concentrations to 0.100 mg/L in the biological reduction study area. During PME #9 and PME #10, arsenic concentrations in groundwater generally stayed within the range of the baseline concentrations with a maximum concentration in groundwater of 0.110 mg/L at CTMW-04D.

3.1.8.2 Iron

Iron can be reduced, mobilized, and precipitated out into the aquifer under anaerobic conditions, a phenomenon that can sometimes decreases hydraulic conductivity in the aquifer. Groundwater samples collected during PME #9 and PME #10 were analyzed for total and dissolved iron concentrations to evaluate the potential mobilization of iron. Field measurements for ferrous iron were also collected to evaluate the oxidation state of iron. Total and dissolved iron concentrations detected previously during the treatability study. Ferrous iron was detected in groundwater at the shallow wells at concentrations up to 4.0 mg/L during PME #9 and PME #10, above the maximum detected baseline concentration of 0.40 mg/L. The maximum concentration of ferrous iron was observed at CTMW-02S during PME #9.

Like groundwater in the Qal, dissolved and total iron concentrations within groundwater of the UMCf fluctuated throughout the performance monitoring events, but the magnitude of the fluctuations and concentrations in groundwater within the UMCf was one to two orders of magnitude less than in the shallow groundwater. Total iron concentrations in groundwater in the UMCf during PME #9 and PME #10 were generally less than concentrations detected previously during the treatability study, except for CTMW-06D which exhibited an increasing trend from less than 0.050 mg/L during PME #4 to a maximum concentration of 2.1 mg/L during PME #10. Dissolved iron concentrations in groundwater in the UMCf during PME #9 and PME #10 were generally less than concentrations detected previously during the treatability study and similar to baseline concentrations. Ferrous iron was not detected in groundwater at the deep wells during PME #9 and PME #10.

3.1.8.3 Manganese

Manganese was analyzed to assess the potential for biologically driven dissolution of manganese oxide on aquifer solids, which can cause a reduction in hydraulic conductivity. During PME #9 and PME #10, dissolved and total manganese concentrations in shallow groundwater decreased to a maximum concentration of 1.6 mg/L compared to a maximum concentration of 7.1 mg/L during previous performance monitoring events at the shallow wells. An increasing trend of dissolved and total manganese concentrations in groundwater decreased to a maximum concentration of 7.1 mg/L during previous performance monitoring events at the shallow wells. An increasing trend of dissolved and total manganese concentrations in groundwater was observed at deep

wells CTMW-01D, CTMW-02D, and CTMW-06D with a maximum concentration of 1.2 mg/L at CTMW-01D during PME #10.

3.1.9 Additional Analytes

Several other parameters were analyzed in accordance with the *In-Situ Chromium Treatability Study Work Plan* and as part of the two additional monitoring events conducted during the extended performance monitoring period. A summary of these parameters and their significance is presented below. Results of each parameter analyzed are presented in the comprehensive data tables provided in Appendix D.

- TDS was analyzed to assess the potential for elevated salt concentrations to delay the rate of hexavalent chromium biodegradation. Overall, TDS concentrations in groundwater ranged up to 20,000 mg/L throughout the biological reduction study. During PME #9 and PME #10, TDS concentrations in groundwater ranged between 3,500 and 10,000 mg/L in the shallow wells and 8,000 mg/L and 12,000 mg/L in the deep wells The reductions observed in hexavalent chromium concentrations in groundwater during the treatability study (similar to the bench-scale treatability study) indicate that TDS concentrations at these levels did not hinder microbial activity and biodegradation of hexavalent chromium.
- Alkalinity increases can occur from microbial respiration and the production of carbon dioxide, which in solution could combine with native calcium to form calcium carbonate. Throughout the biological reduction study, alkalinity values in groundwater at the shallow wells significantly increased when compared to baseline concentrations (less than 200 mg/L) with observed alkalinity concentrations as high as 6,300 mg/L. During PME #9 and PME #10, alkalinity values in groundwater ranged between 210 and 3,700 mg/L within the Qal and ranged between 180 mg/L and 1,400 mg/L in the UMCf. These increases in groundwater alkalinity compared to baseline concentrations indicate an increased level of microbial activity and serve as an indirect indicator of biodegradation. As expected, alkalinity concentrations are generally decreasing as groundwater geochemistry returns to natural conditions.
- Although the reduction of perchlorate should result in an increase in chloride concentrations, chloride may not be a useful indirect indicator of biodegradation because of its high native concentrations at the Site. Chloride concentrations in groundwater within the shallow wells ranged between 780 and 1,600 mg/L during PME #9 and PME #10. In general, chloride concentrations in groundwater within the shallow wells decreased or remained stable when compared to PME #8. However, when compared to baseline concentrations, an increase in chloride concentrations was observed in groundwater at five of the seven shallow wells. The most significant increase in chloride concentrations in groundwater within the shallow wells was at CTMW-02S, where chloride concentrations increased from a baseline concentration of 780 mg/L to 1,600 mg/L during PME #10. A similar pattern was observed in groundwater collected from the deep monitoring wells. Chloride concentrations in groundwater within the deep wells ranged between 1,200 mg/L and 2,700 mg/L during PME #9 and PME #10. When compared to baseline concentrations, chloride concentrations in groundwater increased at three of the seven deep wells (CTMW-01D, CTMW-02D, and CTMW-06D). The most significant increase was at CTMW-06D, where chloride concentrations in groundwater increased from a baseline concentration of 1,300 mg/L to 2,000 mg/L during PME #10. The increase in chloride concentrations in groundwater with the Qal and UMCf following carbon substrate injections provides supplementary evidence of perchlorate reduction.
- Methanogenic conditions (signified by biological methane production) require highly reducing conditions that are generally not necessary for hexavalent chromium biodegradation. Dissolved methane was sampled during the treatability study to determine if methanogenesis was occurring. In general, an increasing trend of dissolved methane concentrations in groundwater was observed at all monitoring locations within the Qal and UMCf when compared to baseline values or results from the first sampling event. However, based on dissolved methane concentration data, methanogenesis within the treatability study area was limited.

- Total nitrogen was only detected in groundwater samples collected from CTMW-01S, CTMW-02S, and CTMW-06S during PME #9 and PME #10. The highest total nitrogen concentration of 180 mg/L was measured in groundwater collected from CTMW-01S. During the treatability study, the total nitrogen concentration increased in groundwater at CTMW-01S, CTMW-02S, and CTMW-06S, which is attributed to the introduction of nutrients into the aquifer as part of the carbon substrate injections.
- High concentrations of carbon substrates in a highly reducing environment can lead to the generation of organic acids and intermediate fermentation-based products such as acetone and methyl ethyl ketone (Fowler, 2011). These products act as electron donors in the further degradation of electron acceptors under both aerobic and anaerobic conditions (Fowler, 2011). Overall, concentrations of acetone and methyl ethyl ketone in groundwater at the shallow wells increased following the carbon substrate injections but decreased over time to baseline or near baseline. Acetone concentrations in groundwater increased from less than 0.25 mg/L at all shallow wells during baseline to a maximum concentration of 2.8 mg/L during PME #2 in groundwater samples collected from CTMW-01S. Subsequent monitoring events indicated a decreasing trend in acetone concentrations, with groundwater concentrations decreasing at CTMW-01S to 0.054 mg/L during PME #10. Methyl ethyl ketone concentrations in groundwater were below 0.063 mg/L at all shallow wells during baseline and reached a maximum groundwater concentration of 11 mg/L during PME #8 at CTMW-01S. Methyl ethyl ketone concentrations in groundwater subsequently decreased to below 0.013 mg/L for all shallow wells sampled during PME #10. Within the deep wells, acetone and methyl ethyl ketone concentrations in groundwater increased from below detectable concentrations up to 0.51 mg/L and 1.3 mg/L at CTMW-01D. Concentrations of acetone and methyl ethyl ketone in groundwater samples collected from downgradient wells, CTMW-04D and CTMW-06D, were below detectable concentrations during PME #10, indicating that the increased concentrations of acetone and methyl ethyl ketone are localized.
- VFAs were analyzed during PME #9 and PME #10. These acids are produced continually during hydrolysis of the long-chain fatty acids of EOS_{PRO®} (part of the carbon substrate injected) and are more readily available organic compounds for biodegradation. Acetic acid, n-butyric acid, and propionic acid were all detected in Qal and UMCf groundwater samples at concentrations greater than baseline concentrations previously during the treatability study. VFAs returned to below detectable concentration levels during PME #10. Concentrations of VFAs in groundwater at the deep wells increased at CTMW-01D but were below detectable concentrations at the other deep wells during PME #10. The highest concentrations of VFAs observed in groundwater within the Qal and UMCf generally correlate to wells where substrate presence was observed based on increased TOC concentrations.

3.2 FIELD PARAMETERS

Several field parameters were analyzed in accordance with the *In-Situ Chromium Treatability Study Work Plan* and as part of the two additional monitoring events conducted during the extended performance monitoring period. A summary of these parameters and their significance is presented below. Results of each field parameter analyzed are presented in the comprehensive data tables provided in Appendix D.

DO measurements are a useful parameter to identify geochemical conditions in the groundwater. The
absence of dissolved oxygen is used to confirm that anaerobic conditions have been achieved and are
being sustained. Anaerobic conditions are essential for hexavalent chromium biodegradation since
hexavalent chromium reduction does not proceed under aerobic conditions. Although DO concentrations
decreased to levels indicative of anaerobic conditions during the treatability study, supplemental
monitoring events PME #9 and PME #10 indicate that DO concentrations in groundwater in the Qal were
generally reflective of aerobic conditions. During the study, the anaerobic conditions indicated by the DO
concentrations are consistent with the observed degradation of hexavalent chromium, perchlorate,
chlorate, and nitrate. During PME #9 and PME #10, DO concentrations in groundwater in the UMCf

indicated anaerobic conditions at deep wells CTMW-01D and CTMW-06D and reduced DO concentrations at CTMW-02D and CTMW-04D compared to baseline conditions. DO concentrations during PME #10 remained low (less than 0.86 mg/L), indicating anaerobic conditions remained approximately 62 weeks following the first carbon substrate injection event. DO concentration reductions in groundwater at CTMW-01D and CTMW-06D are consistent with the TOC increases observed at these wells.

- ORP readings may provide a valuable tool to identify 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 the reducing conditions that develop in response to the carbon substrate injections. It should be noted that in aquifers with several electron acceptors and electron pairs, such as iron pairs, nitrogen pairs, perchlorate/chlorate/chloride, and sulfur pairs, it is possible that interference may occur with respect to redox measurements. As with DO measurements, decreases in ORP measurements were observed during the study in groundwater in the Qal at shallow monitoring wells CTMW-01S, CTMW-02S, and CTMW-06S. ORP measurements were as low as -127 mV during PME #10 at CTMW-06S, indicating that reducing conditions generally remained within these wells. During PME #9 and PME #10, ORP measurements of groundwater samples collected from the deep wells were positive, indicating that the groundwater has returned to an oxidizing environment. As DO concentrations remained low in groundwater samples collected from the deep wells during PME #9 and PME #10, the increase in ORP is attributed to other changes in general groundwater chemistry. Decreases in ORP measurements in groundwater were observed during the biological reduction study in deep wells CTMW-01D, CTMW-02D, CTMW-03D, and CTMW-04D. In general, lower ORP measurements were observed during the performance monitoring event following carbon substrate injections #2 and #3, with measurements as low as -193 mV in groundwater at CTMW-03D during PME #4. During the PME #8 event, the ORP measurements were as low as -130 mV at CTMW-04D, which indicated reducing conditions were present.
- Groundwater pH and temperature are common environmental factors that could affect microbial activity, with microorganisms generally preferring a pH between 6 and 8 standard units and warmer temperatures. Biological reduction due to carbon substrate injection often leads to acid production, which then results in lowering of pH and causes potential stress on native microorganisms. Based on the sampling data collected during PME #1 through PME #10, groundwater pH and temperature within the biological reduction study area groundwater in both the Qal and UMCf generally remained within ideal ranges, with pH ranging from 5.1 to 8.7 standard units and temperatures greater than 20 degrees Celsius. Although lower pH values were observed in groundwater within the nearest downgradient shallow monitoring wells following the first injection event, subsequent injection events included sodium bicarbonate as a precaution to help buffer the solution and avoid large fluctuations in pH associated with the low pH industrial sugar wastewater solution and geochemical responses to the microbial activity.

3.3 MICROBIAL RESULTS

During the additional extended performance monitoring period, four new Bio-Trap[®] samplers were deployed in wells CTMW-01S, CTMW-01D, CTMW-03S, and CTMW-03D within the biological reduction study area on March 12, 2018. These wells were selected since they had previously been selected for microbial analysis as part of PME #5. The samplers were in place for over 3 months and were retrieved and shipped to Microbial Insights for analyses on June 21, 2018. The results for the microbial analysis associated with PME #10 groundwater monitoring are provided in **Table 2** and presented in Appendix F.

Baramatar	PME #10			
Falalletei	CTMW-01S	CTMW-01D	CTMW-03S	CTMW-03D
Sulfate Reducing Bacteria (cells/bead)	2.21 x 10 ⁴	<2.50 x 10 ²	7.88 x 10 ²	2.99 x 10 ¹
Perchlorate Reductase (cells/bead)	<2.50 x 10 ²			
Total Biomass (cells/mL)	2.72 x 10 ⁶	6.00 x 10 ⁴	7.75 x 10⁴	2.33 x 10 ⁵
Community Structure (% total PLFA)				
Firmicutes (TerBrSats)	12.50	32.56	0.00	0.80
Proteobacteria (Monos)	58.97	46.17	93.11	79.63
Anaerobic metal reducers (BrMonos)	0.70	6.41	1.52	3.15
SRB/Actinomycetes (MidBrSats)	0.93	0.00	0.00	0.00
General (Nsats)	25.61	14.86	5.37	15.90
Eukaryotes (polyenoics)	1.30	0.00	0.00	0.52
Physiological Status (Proteobacteria Only)				
Slowed growth	0.87	1.12	0.61	4.43
Decreased Permeability	0.05	0.00	0.00	0.82

Table 2 Bio-Trap® Results Collected During PME #10 Groundwater Monitoring

Total microbial biomass (cells per bead) in groundwater between PME #5 and PME #10 increased at CTMW-01S, decreased at CTMW-01D and CTMW-03S, and remained relatively consistent at CTMW-03D. Overall, the numbers indicate a reasonable microbial population given the challenging TDS concentrations and considering that the target contaminant for this biological study is chromium. However, the perchlorate reductase gene decreased to levels below the reporting limit in all four wells indicating a decline in the presence of perchlorate-reducing bacteria, likely due to the limited carbon substrate remaining at these wells.

The sizeable proportion of Proteobacteria in all four wells indicates a proliferation of the appropriate bacterial community that is gram negative, can utilize a variety of carbon sources, and has adapted easily to the groundwater environment. Generally, these proportions increased compared to the previous microbial sampling, except for CTMW-01D, where they decreased but are still significant at 46%. Firmicutes remained relatively consistent across the four wells except for CTMW-01D, where they increased from 6.06% of the community population to 32.56%, indicating the likelihood of a local increase in fermentable carbon substrates and resulting anaerobic fermenting bacteria at this well. Proportions of metal reducing bacteria and sulfate reducing bacteria (SRB)/actinomycetes remain low across the two events (less than 10%) indicating redox conditions that are not overly reducing, thereby limiting and controlling sulfate reduction. Eukaryotes percentages decreased from the previous microbial sampling, which indicates that these scavengers of valuable contaminant-reducing bacteria do not pose a significant threat in this groundwater.

Ratios for slowed growth and for decreased permeability of the cell membrane provide information on the "health" of the gram negative microbial community and how this population is responding to the conditions present in the environment. Higher numbers (i.e., greater than 0.5) are generally reflective of a community that is stressed and has become more toxic and not as supportive of the microbial community, due to a lack of available carbon substrate, increase in toxic conditions, or the presence of toxic intermediate degradation compounds. Lower ratios (less than 0.5) generally indicate availability of substrate and the creation of an environment that is supportive of a diverse microbial community. Results of the physiological status indicate that the ratios for slowed growth are on the higher side, indicating an environment that is likely to be lacking in carbon substrate. However, the ratios of decreased permeability are on the lower side, which indicates that toxicity itself may not be an inherent issue.

Generally, the ratios for slowed growth and for decreased permeability remained consistent across PME #5 and PME #10.

3.4 HYDROGEOLOGICAL EVALUATION

Groundwater level measurement data and calculated elevation data for the 20 wells (6 injection wells and 14 monitoring wells) gauged during the biological reduction study (including PME #9 and PME #10) are summarized in Appendix B. The groundwater elevation results for PME #9 and PME #10 are discussed below.

During the treatability study, groundwater elevations decreased by an average of 0.46 feet in the shallow wells and 0.55 feet in the deep wells from the baseline gauging event to PME #10. During PME #9, groundwater elevations ranged from 1,733.68 feet above mean sea level (ft amsl) at CTMW-07S to 1,735.51 ft amsl at CTIW-01S in the shallow wells. In the deep wells, groundwater elevations ranged from 1,733.87 ft amsl at CTMW-06D to 1,735.11 ft amsl at CTIW-01D. Water levels generally increased by an average of 0.50 feet in the shallow wells and 0.47 feet in the deep wells compared to the previous performance monitoring event, PME #8, conducted in October 2017. During PME #10, groundwater elevations ranged from 1,733.70 ft amsl at CTMW-06S to 1,734.99 ft amsl at CTIW-01S in the shallow wells. In the deep wells, groundwater elevations ranged from 1,733.45 ft amsl at CTMW-06D to 1,734.59 ft amsl at CTIW-01D. Water levels generally decreased by an average of 0.58 feet in the shallow wells and 0.54 feet in the deep wells compared to the previous performance monitoring event, PME #9. The groundwater elevation at CTMW-07D was 1,736.67 ft amsl, a decrease of 0.19 feet compared to the previous performance monitoring event, PME #9.

In general, a downward vertical gradient was observed at the biological reduction study area during PME #9 and PME #10 with the exception of CTMW-07S and CTMW-07D which exhibited an upward vertical gradient during PME #9 and CTMW-03S and CTMW-03D which exhibited an upward vertical gradient during PME #10. The average vertical hydraulic gradient between the shallow and deep wells at the biological reduction study area was approximately 0.0153 feet per foot (ft/ft) downward during PME #9 (excluding CTMW-07S and CTMW-07D)and 0.0156 ft/ft downward during PME #10 (excluding CTMW-03S and CTMW-03D), generally consistent with the average downward vertical gradient of 0.018 ft/ft observed during the biological reduction study. An upward groundwater gradient of 0.0022 ft/ft was also observed at well pair CTMW-03S and CTMW-03S and CTMW-03D during PME #10.

During PME #10, the overall groundwater flow direction across the biological reduction study area in the shallow zone (Qal) was to the north to northeast with a horizonal hydraulic gradient of 0.0123 ft/ft, and in the deep zone (UMCf) the overall flow direction was to the northeast with a horizontal hydraulic gradient of 0.0154 ft/ft (Figures 3A and 3B). During the treatability study, the average hydraulic gradient calculated in the study area for wells screened in the Qal was calculated to be 0.019 feet per foot (ft/ft) in the area around the monitoring wells and 0.055 ft/ft in the area between the injection and monitoring wells to the north and northeast. The average hydraulic gradient calculated to be 0.021 ft/ft to the northeast.

Locally, in the southeast portion of the biological reduction study area, near well CTIW-02S, the groundwater flow direction is north-northwest with a horizontal hydraulic gradient of 0.044 ft/ft. In the southwest portion of the biological reduction study area, the apparent groundwater flow direction is north-northeast with a hydraulic gradient of 0.0381 ft/ft. These two localized variations in the groundwater flow direction and horizontal hydraulic gradient in the vicinity of the injection wells are most likely related to local variations in hydraulic conductivity.

Groundwater levels, gradient, and flow direction obtained during PME #9 and PME #10 was used to further refine the groundwater velocity estimates for the biological reduction study area. For the purposes of refining the groundwater velocity estimates, hydraulic conductivity values were selected from the Specific Capacity Test Results for the shallow zone and slug test results for the deep zone, which are provided in Appendix C of the *In*-

Situ Chromium Treatability Study Results Report (Tetra Tech, Inc., 2018), Shallow hydraulic conductivity values were calculated by averaging the estimated hydraulic conductivity values (Theis, unconfined) for wells CTIW-01S, CTIW-02S, and CTIW-03S. Deep hydraulic conductivity values were calculated by averaging the mean hydraulic conductivity for wells CTIW-01D, CTIW-02D, and CTIW-03D. In the shallow (Qal) zone, the groundwater flow velocity, calculated using locations CTIW-01S, CTIW-02S, and CTIW-03S and downgradient wells CTMW-01S, CTMW-02S and CTMW-06S, was estimated to be approximately 6 to 20 ft/day. These high flow velocities are supported by the fact that significant concentrations of TOC were observed in wells CTMW-01S and CTMW-06S during the first sampling event (PME #1) after injection, so arrival of groundwater containing high TOC at these wells had likely occurred prior to that sampling event. For example, CTMW-01S TOC values increased from 2.4 to 2,300 mg/L within 2 weeks after the injection. It is highly unlikely that the groundwater containing high TOC arrived at these wells the same day as sampling; rather, the increased TOC concentrations likely occurred at these wells within the first week after injection. In the deep (UMCf) zone, the groundwater flow velocity, calculated using locations CTIW-01D, CTIW-02D, and CTIW-03D and downgradient wells CTMW-01D, CTMW-02D, and CTMW-06D, was estimated to range from about 0.1 to 0.4 ft/day. Based on the last injection date in August 2017, the arrival of groundwater containing increased TOC concentrations from that injection event was predicted to occur between October and December 2017, depending on the location. In fact, increased concentrations of TOC in groundwater were observed at well CTMW-02D in October 2017, as predicted.

As mentioned in the *In-Situ Chromium Treatability Study Results Report* (Tetra Tech, Inc., 2018), decreases in hydraulic conductivity were observed in the vicinity of shallow monitoring wells CTMW-01S and CTMW-02S and deep monitoring well CTMW-02D. These decreases were probably related to other factors such as the reduction in saturated thickness between aquifer test events and/or bioaccumulation associated with the injection events as opposed to the precipitation of metals. The data obtained for iron and manganese during PME #9 and PME #10 combined with the arrival of increased TOC concentrations provides evidence that the increase in iron and manganese concentrations were unlikely to have substantially impacted hydraulic conductivity.

4.0 CONCLUSIONS

The following is a summary of the general conclusions based on the extended performance monitoring conducted within the biological reduction study area:

- Consistent with the results from PME #1 through PME #8 presented in the In-Situ Chromium Treatability Study Results Report, data obtained from the extended performance monitoring period further demonstrates that in-situ treatment by biological reduction has been effective at reducing the concentrations of hexavalent chromium and other COPCs (such as nitrate, chlorate, perchlorate, and chloroform) in groundwater within the Qal and UMCf. In the Qal, hexavalent chromium, nitrate, chlorate, perchlorate, and chloroform concentration in groundwater were reduced by over 99% throughout the treatability study when compared to baseline concentrations. In addition, chromium, nitrate, chlorate, perchlorate, and chloroform concentrations in groundwater in the Qal remained reduced at several downgradient monitoring wells during PME #10, which was 62 weeks following the first carbon substrate injection event and 46 weeks following the last carbon substrate injection event. In the UMCf, hexavalent chromium, nitrate, chlorate, perchlorate, and chloroform concentration in groundwater were reduced by up to 85%, 81%, 80%, 76%, and 82% throughout the treatability study when compared to baseline concentrations. The COPC concentration reductions in groundwater in the UMCf were observed to occur more slowly and to a lesser extent than groundwater in the Qal, but significant reductions were still achieved and appear to be ongoing at the time of PME #10. The slower and limited COPC reduction in the UMCf compared to the Qal is primarily attributed to reduced carbon substrate distribution due to lower groundwater flow velocity and hydraulic conductivity.
- The additional TOC data obtained through the extended performance monitoring period allowed for further refinement of the estimated residence time of the selected combination of carbon substrates in groundwater. Based on observations of the TOC concentrations in groundwater between the third carbon substrate injection event and PME #10, the selected combination of carbon substrates appears to have a residence time of at least 46 weeks in the shallow groundwater. This conclusion is based on the observed TOC concentration of 91 mg/L during PME #10 at monitoring well CTMW-01S which is approximately 15 feet downgradient of injection well CTIW-01S. For the deep wells, the TOC concentration remained elevated in CTMW-01D during PME #10, which indicates that the residence time of carbon substrate in the deeper zone is also at least 46 weeks. In fact, the substrate residence time in the UMCf will likely be greater than 46 weeks as the TOC concentration remained high at 320 mg/L in well CTMW-01D at the time of PME #10.
- The additional metals data obtained through the extended performance monitoring period provided further . evidence that increases in dissolved metal concentrations associated with the biological reduction of hexavalent chromium were localized to the treatment zone and temporary in nature, with concentrations continuing to decrease as geochemical conditions return to baseline conditions. As presented in the In-Situ Chromium Treatability Study Results Report, dissolved metal concentrations in groundwater, such as arsenic, iron, and manganese, increased in groundwater at several downgradient monitoring wells during the initial monitoring period for the biological reduction study (i.e., PME #1 through PME #8). However, concentrations of dissolved metals generally decreased in these wells across PME #9 and PME #10. While arsenic concentrations in groundwater increased at several downgradient monitoring wells during PME #9 and PME #10, the concentrations in groundwater at the farthest downgradient monitoring well (CTMW-07S) was detected within the range of baseline concentrations, indicating that the increase in arsenic concentrations observed during the treatability study are likely temporarily localized. In general, concentrations have either decreased at or below baseline concentrations or have remained elevated above baseline concentrations but have decreased since maximum concentrations were observed during a prior PME. The overall decreasing trends in dissolved metal concentrations are expected to continue as geochemical conditions return to baseline conditions.

- CTMW-07D was included in the extended performance monitoring sampling to provide additional information on the potential for downward vertical migration of the COPCs and/or carbon substrate. Since the well was installed as part of Remedial Investigation Modification No. 7 in September 2017 at the conclusion of the initial treatability study period, this analysis was not previously included in the *In-Situ Chromium Treatability Study Results Report*. Concentrations of COPCs in groundwater were generally an order of magnitude lower in groundwater adjacent to CTMW-07D than in the other deep wells within the biological reduction study area. The top of the screen interval for CTMW-07D was installed approximately 46 feet deeper than the bottom of the nearest deep monitoring well (CTMW-06D). Based on the results of the performance monitoring events, there does not appear to be downward vertical migration of the COPCs or carbon substrate to CTMW-07D.
- The additional water level readings obtained through the extended performance monitoring period allowed for further evaluation of groundwater elevations and vertical gradient between the Qal and UMCf in the treatability study area. Water levels increased by an average of 0.50 feet in the shallow wells and 0.47 feet in the deep wells from PME #8 to PME #9 and decreased by 0.58 feet in the shallow wells and 0.54 feet in the deep wells by PME #10. In general, there is a downward vertical gradient at the Site observed throughout all performance monitoring events. The average downward vertical gradient was approximately 0.0153 feet per foot (ft/ft) downward during PME #9 and 0.0156 ft/ft downward during PME #10, generally consistent with what was observed previously during the treatability study as reported in the *In-Situ Chromium Treatability Study Results Report*. An upward groundwater gradient of 0.0022 ft/ft was observed at one well pair CTMW-03S and CTMW-03D during PME #10.
- The additional water level readings obtained through the extended performance monitoring period allowed for further evaluation of groundwater flow direction and hydraulic gradient. Consistent with what was presented in the *In-Situ Chromium Treatability Study Results Report*, the groundwater direction and hydraulic gradient vary across the Site in the Qal, but in general the groundwater flow has a northerly to northeasterly direction, with a hydraulic gradient of 0.0123 ft/ft. Variations in groundwater flow direction within the shallow zone are most likely related to local variations in hydraulic gradient of 0.0154 ft/ft. The direction and gradients observed are generally consistent with those observed previously during the treatability study.

Overall, the results from the extended performance monitoring period strengthen many of the conclusions presented in the *In-Situ Chromium Treatability Study Results Report* and confirm trends observed near the end of the initial performance monitoring period. Additionally, the supplemental data obtained from the extended performance monitoring period provides valuable information and insight to guide future larger-scale implementation at the Site.

5.0 REFERENCES

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Figures





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Appendix A Gauging & Purge Logs
Gauging Logs

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TETRATECH

WELL WATER LEVEL MEASUREMENT LOG

Page ____ of ____

NERT, Henderson, NV Project

Task Name: In-Situ Chromium Tr	eatability Study	Task No: M1	2		Date: 3/5/18
Task Manager Arul Ayyaswami		Field Sample	r(s): Jeff Richeson		Recorded by: Jeff Richeson
Equipment Model/Ty	/pe:		Serial Number	*	Last Calibration Date:
Heron Interface	Meter			2	
Well Identification	Describe Measuring Point	Time (hrs)	Depth to Static Water Level (ft BMP)	Well Sounding Depth (ft BMP)	Condition of Well and Well Seal
CTIW-01S	TOC	0839	21,90		6000
CTIW-01D	TOC	0837	22,23		
CTIW-02S	TOC	0835	22,02		
CTIW-02D	TOC	0833	22,35		
CTIW-03S	тос	0832	22,25		
CTIW-03D	TOC	0831	22.91		
CTMW-01S	TOC	1825	22.17	N a	
CTMW-01D	тос	0827	22.27		
CTMW-02S	TOC	0829	22,65		0
CTMW-02D	TOC	0830	22,90	No.	
CTMW-03S	TOC	0821	22,37		
CTMW-03D	TOC	0820	22.45		
CTMW-04S	TOC	0817	22,48		a the
CTMW-04D	TOC	0819	22.61		A.M. N
CTMW-05S	TOC	0814	22.85		1. ·
CTMW-05D	TOC	0816	22,98		
CTMW-06S	TOC	0810	23.18		1
CTMW-06D	TOC	08/2	23.55	*	
CTMW-07S	TOC	0807	23.82		TD= 24,60, 6000
CTMW-07D	тос	0803	20,52		6000
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WELL WATER LEVEL MEASUREMENT LOG

Page <u></u> of <u></u>

NERT, Henderson, NV Project

Task Name: Unit 4 Source Area Bi	o T.S.	Task No: +#	et MIZ		Date: 6/21/18
Task Manager Arul Avvaswami		Field Sample	er(s): Jolf Richeson	D.Krad.	Becorded by: Jeff Bicheson D Kal
Equipment Model/Typ	e:		Serial Numbe	r:	Last Calibration Date:
Solinst Interface mote	r 122		287869		NA
	Describe		Depth to Static	Well Sounding	
	Measuring	Time	Water Level	Depth	Condition of Well and
well Identification	Point	(hrs)	(ft BMP)	(ft BMP)	Well Seal
(TIW-OIS	100	0915	22.92		6000
CTIW-OID		0414	22.75		
CTTW-025		0415	72-61		
CTIW-02D		0417	22.92	/-	
CTLW-035		0421	4.71	/	
CTIW-03D		0122	23.25		
OTMW-OIS		0423	22.72	8	
CTMW-01D		0424	22.90	1	
CTMW-025		0425	23,32	J. J	
CTMW-02D	other sold and	0426	23,93	×	
CTMW-03S		0427	23.02	¥	· · · · · · · · · · · · · · · · · · ·
CTMW-03D		0429	23.01		
CTMWL OUS		0421	23.05		
CTMW-04D		0432	23.16		
Ctmw-055		0434	23,44		
CTMW-OSD		0435	23.66		5. ST.
CTMW-065		0437	27.73		
CTMW-06D		0438	23.97		1000
CTMW-075		0443	24.79		
CTMW-07D	-	0445	20.71	1	17
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BGS = Below Ground Surface

BMP = Below Measuring Point

MP = Measuring Point

and the second

TOC = Top of Casing (Well Riser)

Purge Logs

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TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name:	In-Situ	Chromium T	reatability Stud	lv	Task Manag	er: Anil Avv	aswami			Tack No: M	10			Wellin of		
Field Sample	rs: Jel	f Richeson			in the second	an raarryy	2011011			Recorded by	u: leff Dichor			Well ID: CT	MW-015	
Nell Depth (f	t BGS)	:	MP D	istance AGS	(ft):		Well Denth	H BMPI: 23.7	R	Scrooned/O	y. Jell niches			Date: 3	15/18	
Nell Diamete	er (in):	2	PID/F	ID Readings I	Beneath Inner	Can (nnm co	le akh).			Screened/O	pen interval 1	op.		(11 BGS)	1	9 (It BMF
Pump and Tu	ibing T	vpe: Mega M	onsoon Pump	with Poly Tut	ing Diago	All Py	Pumn Intake	Denth:		(# BCS)	pen intervai d		(0.01.00)	(IT BGS)	2	4 (ft BMF
Equipment D	econ. N	Aethod: 3 Bu	cket Rinse with	h Liquinox	what	batter,	Denth to Wa	ter Before Pun	n Installatio	(IL DGS)		23.5	(IT BMP)	MP Descripti	ION: TOC	
	Lamitik et				- AND AND ADDRESS		Deptil to We	iter beidie Full	np mstanatio	n (il DMP):	20111	rime;	0825	GW Disposa	I: GW-11 Pond	-
	RGING		emp. (*C)	l (pH	oH Units)	Spec Co	nductivity (cm)	Horr be	l Oxygen ng/L)	Redox ORP	Potential (mV)	Tur (N	bidity NTU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	Dd v	S READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(m)/
0855	X	22.85		7.29		9.25		1,28/2,09	3	-133		33/		100	23.17	
0900	X	27,25		7.46		9.17		1.59/1.2		-158	-	424		100	2210	0.5
0905	X	26.87		7.39		8,83		107/1.07	2	-149	1	639	-	100	723.5	11
0910	X	26 20		7.38		8.75		0.84/1	Ĵ	-135	1	257		100	717 0	16
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ample ID:	CTN	12-015	-2018030	,5	Duplicate ID	÷		107		QA/QC Sam	ples/ID:				COC Time:	0930
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	Mate	nal						Field Decon	tamination:		Field Filtered	: Y/N)	COC Numbe	er:		
Number	Coo	e Volu	me Pro	eservative	Intended /	Analysis and	or Method	Comments:		17						·
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± 0.1 for	pH:	± 3% for	Specific (Conductiv	vity and Te	emperatu	-Dingo Ani	my for Pe	day Pote	ı antial: -	10% for	Dissolve	d Owwar	and Turk		
BGS	Below	Ground Surf	ace	C - Centiora	de	GS - Grou	ind Surface	ma/l - millia	iram/l iter	min - Minu	10 /0 101	MP - Honor	uing Point			
1P	Below	Measuring P	oint	COC - Chair	of Custody	ID - Identi	lication	mV - milli Ve	olts	ml - millilit	er	NTU - Measu	nuy runt alometric ∐nit	c	OC Quality A	ssurance

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TETRA TECH

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

Task Name:	In-Situ	Chromium Tr	reatability Stud	у	Task Manag	er: Arul Ayy	aswami		Task No: M	112			Well ID: CTI	WW-01D	
Field Sample	ers: Jef	f Richeson							Recorded by	y: Jeff Riches	on		Date: 2	1/18	
Well Depth (It BGS):		MP Di	stance AGS (ft):		Well Depth (It BMP): 49.41	Screened/O	pen Interval T			(ft BGS)	<u> }.[].</u>	34 (ft BMP)
Well Diameter	er (in): 🗄	2	PID/Fi	ID Readings I	Beneath Inner	Cap (ppm co	je akb):	1	Screened/O	pen Interval B	ottom:		(ft BGS)		49 (ft BMP)
Pump and T	ubing T	ype: QED Sa	mple Pro with	Poly Tubing			Pump Intake	Depth:	(ft BGS)		41.5	(ft BMP)	MP Description	on: TOC	
Equipment C	econ. N	Aethod: 3 Bu	cket Rinse with	Liquinox			Depth to Wa	ter Before Pump Installation	n (ft BMP):	22,27	Time: 0	827	GW Disposal	: GW-11 Pond	
	RGING		emp. (°C)	t (pH	H Units)	Spec Co	nductivity Vcm)	Dissolved Oxygen	Redox	Potential (mV)	Turt (N	oidity FU)	Purge Rate	Depth to Water	Cum. Vol.
Time	PUI	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	
1125	X	26.15		7.93		4.16		6.45/2.02	99	1	265		200	72,27	
1130	X	27.06		7,26		8.20		2.67/2.42	117		61.4		200	22.47	11.
1135	X	27,00		7.21		9.03		176/1.96	123		7517		200	12115	21
1140	X	26.98	1	7.18		9.19	1	125/158 1	1894		9 U		200	21.07	aL D/
1145	X	26,88		7.15		9.26	1	1.10/147	122		6.7		244	22/1/	30
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	Mate	rial						Field Decontamination:	Y N	Field Filtered	(Y) N	COC Numbe	r ==polycinyk r:		obecnàl
Number	Cod	e Volu	me Pre	eservative	Intended /	Analysis and	/or Method	Comments:	11			0.52			
	1 100	-						Ferrous Iron= 0,0 M	17/1	. /					
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BGS	- Below	Ground Surfa	ace	C - Centigrad	ie d Ourit i	GS - Grou	and Surface	mg/L - milligram/Liter	min - Minu	ute	MP - Measuri	ng Point		QA - Quality A	SS'
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LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

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Page ___ of ___

Task Name	: In-Situ	Chromium 1	reatability Stu	idy .	Task Manad	er: Anil Avv	aswami		te tarr	Tool Mar. 1				N	ERI, Hender	rson, NV Projec
Field Sampl	lers: Jeff	Richeson				, and subscript				Task Ivo: M	V12			Well ID: CT	'MW-02S	
Well Depth	(It BGS):		MPI	Distance AGS	(#).		Well Donth		-	Hecorded	by: Jeff Riches	боп		Date: 3	6/18	
Well Diame	ter (in): 2		PID/	FID Readings	Reneath Inner	Can (nom o	men Depin	(ILDMP): 23.7	1	Screened/C	Open Interval 1	ор:	2000	(It BGS)		19 (ft BMP
Pump and T	ubing Ty	pe: Hand B	ailer	ie rituelinge	Seriedan miler	oah (hhu c	Dump totak	e Dentha		Screened/C	Open Interval E	Bottom:		(ft BGS)		24 (ft BMP
Equipment I	Decon. M	ethod: 3 Bi	icket Rinse wi	th Linuinov			Pullip Intaki	e Depin:		(ft BGS)		/	(It BMP)	MP Descripti	ion: TOC	
and the state	(5				-			ater Belore Pul	mp Installatio	n (ft BMP):	22.65	Time:	0829	GW Disposa	I: GW-11 Pon	d
	RGING	T	emp. (*C)	l (pH	oH Units)	Spec Co (uS	nductivity S/cm)	Dissolve DO (I	d Oxygen mg/L)	Redox	Potential P (mV)	Tui ()	rbidity (TU)	Purge	Depth to	Cum. Vol.
Time	PL S	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(mi)
0615	X	2071		7.33	1	8,39	1	1.17	1	- 61		67			((iiii)
		purg	ied a	NA	0620	1~	11 1	wal		01		87,0			20,65	IL
0635	×	wei	11 rech	arged	10	22.	831	stoc.	Coll	ret	Samp	ste c	TIN	-025-	2018	2306
											/					
											-					
Sample ID:	CTM	W-029	- 20181	1306	Dunlicate ID:		114									
Sa	mple Co	ntainer	0110-	100	ouplicate (D.		1/1		1 1101	QA/QC Sam	ples/ID:	NA			COC Time:	0635
a mark com	Materia	[]						Field Deers	des: VUA = 4	0 ml glass vi	al; AG =Amber	r Glass; CG	=Clear Glass;	PE=polyethyle	еле; O=Other (Specify)
Number	Code	Volu	me Pr	eservative	Intended A	nalysis and/	or Method	Comments: Ferrous Iron	= 4 m	9/1.	Field Filtered		COC Numbe	r;		
	In-Si	u Chromi	um Treatab	ility Study S	ampling Bo	ottle Set		Sulfide = Groundwate	o, / r Color is 3	mg// lightly	YEllowis	h Gray	w/ sli	ght fern	nenting	ador
INDICATO	R PARA	METERS H	AVE STABI	IZED WHFN	3 CONSEC				s):	YK	R					
± 0.1 for	pH;	: 3% for	Specific (Conductiv	ity and Te	mperatu		my for De	day Data	/ ntinl:	100/ -	2007			ini ya kutata Ma	
BGS - BMP -	Below G	round Surfa	ce	C - Centigrad	e of Custodu	GS - Grou	nd Surface	mg/L - millig	am/Liter	min - Minu	te 1	Dissolved MP - Measur	I Oxvgen	and Turbic	dity QA - Quality As	Surance
				SOC - Onalli		iu - identili	Catton	mv - milli Vo	lls	ml - millilite	er l	VTU - Nephe	Iometric Units	(QC - Quality C	ontrol

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LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

		<u></u>		. 1		m Amil Arm-				Tack No: M	10	-		Well ID: CT	WW-02D	
Task Name:	In-Situ (Chromium Tr	eatability Study	1	l ask Manage	er: Arui Ayya	swami			December 1	12			Date: 2	E/10	
Field Sample	ers: Jeff	Richeson								Hecorded by	: Jen Hicnes				<u>>//8</u>	
Well Depth (It BGS):		MP Di	stance AGS (I	t):		Well Depth (It BMP): 49.1	8	Screened/U	pen interval 1	op:		(11 805)		
Well Diamet	er (in): 2		PID/FI	D Readings B	eneath Inner	Cap (ppm cg	e akb):			Screened/O	pen Interval B	ottom:		(It BGS)		19 (IT BMP
Pump and T	ubing Ty	pe: QED Sa	Impre Pro (blad	der) with poly	tubing		Pump Intake	Depth:		(ft BGS),	22.00	41	(IT BMP)	IMP Descripti		
Equipment C)econ. M	lethod: 3 Bu	cket Rinse with	Liquinox			Depth to Wa	Iter Before Pu	mp Installation	n (ft BMP):	22.70	Time: d	0830	GW Disposa	I: GW-11 Pond	
	GING	Т	emp. (*C)	p (pH U	H Jnits)	Spec Col	nductivity /cm)	Dissolve	d Oxygen mg/L)	Redox ORF	Potential P (mV)	Tur (N	bidity ITU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	PUH	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	-(mi) Z
1340	X	126,94	1	7.05		10.9		3.55/3,40		137		58:1		200	22,90	0
1245	X	27.UL		7.02		10.4		1.68/1,3	1	141		47.7		200	3,3	14
1210	X	27.56		L 99		11 1		1.01/0.9	0	145		18.3		200	23.15	22
17/2	X	2711		711		111	1	058/0-	7/	149		7.5		200	23.16	36
12.7	3	+1,71		1.00		1012		05) 10	->	151		110		200	23,16	41
1499	5	31,77		6,77		11.2		0,02,00	16	10		4,0	-	240	12.15	61
1402		1175		6.97		17.0	-	0120/01	6]	DA	1	11.2		100	2)115	36
	+	+					1	-				-			-	
		-		-								1				
						_	<u> </u>					-		-	-	
-																
			-					1								
								1			-	-				
					_				1			L				1
						V										
													1			10.00
Sample ID:	CT.	MW-02	10-2018	0305	Duplicate II	D:				QA/QC Sa	mples/ID:				COC Time:	1405
1	Sample	Container	shares com	A REAL PROPERTY OF	Medition of the state	and the state of a		Material C	Codes: VOA =	40 ml glass	vial; AG =Amb	er Glass; CG	6 =Clear Glas	s; PE=polyethy	ylene; O≃Other	(Specify)
	Mate	orial						Field Dec	ontamination:	() N	Field Filtere	d:()) N	COC Num	oer:		
Number	Co	de Vol	iume P	reservative	Intended	Analysis and	Vor Method	Comment	is:	all						
								Ferrous li	ron= $0,0$	mili						
					O a ser a la constante da la	Table Oat		- Sumoe =	0,01 atar Color in	mail	1	1.1				
		Situ Chror	nium I reata	bility Study	Sampling t	Some Set		Groundw	ater color is .	Tellow	I NO Q	/0/				
				ale aleren				Signatu	re(s):	m	CR					
MINDICAT			HAVE STAP		N 3 CONSE	CUTIVE RE	ADINGS A	RE WITHIN:		1					00	
+01 fo	r pH:	± 3% fc	or Specific	Conducti	vity and 1	emperat	ure: ±1	0 my for I	Redox Pol	tential:	± 10% for	Dissolv	ed Oxvge	n and Tur	bidity	
BG	S - Belo	w Ground Su	irface	C - Centior	ade	GS - Gro	und Surface	mg/L - m	illigram/Liter	min - Mi	nute	MP - Meas	suring Point		QA - Quality	Assurance
BM	P - Belo	w Measuring	Point	COC - Cha	in of Custody	ID - Iden	tilication	mV - mill	i Volts	ml - mill	iliter	NTU - Nep	helometric U	nits	QC - Quality	Control

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LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

<u> </u>										Taal: Max. M	10			Wall ID: CTN	W.OAS	
Task Name:	In-Situ	Chromium Tr	eatability Study	Y	Task Manage	er: Arul Ayya	swami			Task No: M	12			Deter D. CTW	-2/10	
Field Sample	rs: Jef	f Richeson								Hecorded by	Jen Richesi	<u></u>		Uale: 37	1118	0 (0.0140)
Well Depth (f	t BGS)		MP Di	stance AGS ((t):		Well Depth (It BMP): 24.0		Screened/O	pen Interval 1	op:		(IT BGS)		9 (ILBMP)
Well Diamete	er (in):	2	PID/FI	D Readings E	Beneath Inner	Cap (ppm cg	e akb):			Screened/O	pen Interval B	ottom:		(ft BGS)	2	24 (It BMP)
Pump and Tu	ibing T	ype: Mega M	onsoon Pump	with poly tubi	ng		Pump Intake	Depth:		(ft BGS)		23.75	(ft BMP)	MP Description	on: TOC	
Equipment D	econ. I	Method: 3 Bu	cket Rinse with	Liquinox			Depth to Wa	ter Before Pu	mp Installation	n (ft BMP):	22.48	Time: e	817	GW Disposal	: GW-11 Pond	
	GING	T(emp. (°C)	F (pH	H Units)	Spec Co	nductivity /cm)	Dissolve Horidoo (ed Oxygen mg/L)	Redox I ORP	Potential (mV)	Turl (N	bidity TU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	PUR	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(mail) - C
0%00	X	22.22	1	7.26		12.4		1.92/1.13	?	128		86.1		200	22.48	oL
0405	X	15.50		6.74		4.51		246/0.8	12	138		13,0		200	22,60	14
na 10	X	25.45		6-77	1	10 5		025/0	66	143	1	2.9		200	22.71	26
0010	X	2105		1 77		12 6		219/24	9	100		29	1	700	57.LE	3/
0815	V	2110		6, / /		1010	·	100	d	ICU		77		200	21-11	11/
0820		20.18		6.71	1	1210		0.17/0.	2.0	13-1				200	\sim	75
0825	X	26.40		6.75		12.5		0.18/0	56	157		3.4		200	22112	54
								1								
													_	1		
1																
							-		-							
Sample ID:	11	ald- olls	-20100	207	Duplicate I	D:	NIA			QA/QC Sar	mples/ID:	NA	,	1807)	COC Time:	0825
S	ample	Container	2010-	201_	A Street West Vor		10/13	Material C	Codes: VOA =	40 mL glass v	/ial; AG =Amb	er Glass; CG	=Clear Glass	; PE=polyethy	lene; O=Other	(Specify)
	Mat	erial			1.000			Field Dec	ontamination:	(Y) N	Field Filtere	X YN	COC Numb	er:		
Number	Co	ode Vol	ume P	reservative	Intended	Analysis and	d/or Method	Comment	ts:							
								Ferrous I	ron = 0 U	mg []						
								Sulfide =	0,0 M	91111	Jellahl 1	No of	or			
	In	-Situ Chron	nium Treata	bility Study	Sampling 6	Bottle Set		Groundw	ater Color is	nyni	1010 - 1	100 000				
	_							-	. (.).	NAM.	R R					
									re(s):	<u> </u>						
INDICAT		HAMETERS	HAVE STAE			CUTIVE H	ADINGS AF	15 WITHIN: 0 my for I	Redox Dot	ontial	+ 10% for	Discolve	ad Oxyger	and Turb	nidity	
(<u>± U,1 10</u>	Pala	± <u>3% 10</u>	r Specific	C Contin	ndo			ma/l - m	illioram/l iter	min - Mir	nute	MP - Meas	uring Point		QA - Quality	Assurance
BG	o - Belo P - Belo	w Ground Su w Measuring	Point	COC - Cha	in of Custody	ID - Iden	tification	mV - milli	i Volts	mi - milii	liter	NTU - Nep	helometric Un	its	QC - Quality	Control

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LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

ask Name:	In-Situ (Chromium Tr	eatability Stud	<u>y</u>	Task Manage	er: Arul Ayya	iswami			Task No: M	12			Well ID: CT	MW-04D	
field Sample	rs: Jeff	Richeson			×					Recorded by	y: Jeff Riches	on		Date: 3/-	7/18	
Vell Depth (I	t BGS):		MP Di	stance AGS (h):		Well Depth	(ft BMP): 48.99	9	Screened/O	pen Interval T	ор:		(It BGS)	3	4 (ft BMP)
Vell Diamete	er (in): 2		PID/F	D Readings E	leneath Inner	Cap (ppm cg	je akb):			Screened/O	pen Interval B	ottom:		(ft BGS)	4	9 (ft BMP)
Pump and Ti	bing Ty	pe: QED Sa	mple Pro (blac	lder) with poly	tubing		Pump Intake	e Depth:		(ft BGS)		41	(It BMP)	MP Descript	ion: TOC	
quipment D	есоп. М	ethod: 3 Bud	cket Rinse with	n Liquinox			Depth to Wa	iter Belore Pun	np Installatio	n (ft BMP):	22,6	[Time:	0819	GW Disposa	I: GW-11 Pond	
	APLING APLING	Te (emp. (*C)	P (pH l	H Jnits)	Spec Co	nductivity (cm)	Dissolved	l Oxygen ng/L)	Redox ORP	Potential (mV)	Turi (N	bidity TU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	PUF	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(ant) L
0690	X	23.72		7.57		11,6		3.00 0.85		145		51.3		150	22.6/	OV
0925	X	25,06		7.49		11.7		1.40 0.71		149		43.7		150	22,85	0.75
0930	X	25.17		7,46		11.7	F	2.49/0.6	1	152		22.5		150	22,90	1.5
0935	X	25.16		7.45		12.0		0.77/0.5	7	154		9.0		150	22,89	2.25
0940	X	25,23		7.45		11.6		0.66/0.54	4	155		9.1		150	22,87	3.0
0945	X	25.29		7.46		11.6		0.64/0.5	3	156		9.0		150	22,89	275
0959	X	15,32		7.46		11,6		0,60/0,	52	157		8.3		150	22,88	4.5
Imple ID:	CTM	W-04D	-20190	507	Duplicate ID	: NI	4		00000	QA/QC San	nples/ID;	1 ovel	40	0	COC Time:	0950
Si	Mater Cod	ial Volu	ime Pr	eservative	Intended	Analysis and	Vor Method	Material Co Field Decor	ides: VOA = intamination:	40 ml glass v	ial; AG =Ambo Field Filtered	er Glass; CG d: (Y) N	=Clear Glass	; PE=polyethy er:	rlene; O=Other (Specify)
	In-S	Situ Chrom	ium Treatab	bility Study	Sampling B	lottle Set		Ferrous Iron Sulfide = Groundwat	n= 0.0 0.0 m er Color is	mg/1 19/1 yellow	No a	dol	·	ı		
NDICATO	PAR pH: - Below - Below	AMETERS ± 3% for Ground Surf Measuring F	HAVE STAB Specific lace	LIZED WHE Conductiv C - Centigra COC - Chair	I N 3 CONSEC vity and To de n of Custody	CUTIVE RE emperati GS - Gro ID - Ident	ADINGS AF ure: ±1(und Surface ification	E WITHIN: My for Re mg/L - milli mV - milli V	edox Pot gram/Liter /olts	ential: min - Min ml - millili	± 10% for ute iter	Dissolve MP - Measu NTU - Neph	d Oxvgen uring Point nelometric Uni	and Turb	Didity QA - Quality A QC - Quality C	ssurance

LOW FLOW GROUNDWATER SAMPLING LOG

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NERT, Henderson, NV Project

Task Name	: In-Si	tu C	hromium Tr	eatability Stud	<u> </u>	Task Manag	er: Arul Ayya	iswami			Task No: M	12			Well ID: CT	MW-06S	
Field Samp	ers: J	elf F	licheson								Recorded by	: Jeff Riches	on		Date:	16/18	
Well Depth	(It BGS	5):		MP Di	stance AGS (ft):		Well Depth ((t BMP): 24.4	ļ	Screened/O	pen Interval T	op:		(ft BGS)	101.0	19 (ft BMP)
Well Diame	ler (in)	: 2		PID/FI	D Readings E	Beneath Inner	Cap (ppm cg	e akb):			Screened/O	pen Interval B	ottom:		(ft BGS)		24 (ft BMP)
Pump and 1	ubing	Тур	e: Mega M	onsoon Pump	with poly tubi	ng		Pump Intake	Depth:		(ft BGS)		24	(It BMP)	MP Descripti	on: TOC	
Equipment	Decon.	. Me	thod: 3 Bud	cket Rinse with	Liquinox			Depth to Wa	ter Before Pu	mp Installation	n (ft BMP):	23.18	Time:	2810	GW Disposa	I: GW-11 Pond	d
The start	3GING	APLING	Te (emp. (*C)	۹ Hq)	iH Units)	Spec Cor (uS	nductivity /cm)	Dissolve Hor DO (d Oxygen mg/L)	Redox I ORP	Potential (mV)	Turi (N	oldity TU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	P	SAN	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	LEHT L
1130	X		25,00		7.04		5.48		3,06/1,0	1	-100	1	51.9		200	23.18	01
1135	X		26.87		6.97		5.43		1.35/0.7	7	-119	-	40.5		200	23.37	11
1140	X		26.99		7.09		5.42		010/0-	70	-134		36,4		200	23.39	21
1145	X		26,84		7.13		5.47		0.00 10:	7)	-136		22.7		700	77 40	21
1150	X		25.9h		7.14		5.53		o notoi	76	-120		17 8		200	עריגת	
1155	X		26.03		7.14		C.Sh		0.00/01	79	121		1) 1		300	27.71 27.4/A	76
1200	X		15.49		7.17		5.60	1111	0.00/0	.93	-130		12.7		200	12 (7)	56
10.29			1 9.20		1117	-	2100		0.0010		170		1712		200	43170	66
		1	1							1			1		+	-	
								1	11.2	1				-			
									-	1		-					
																	-
-	11	1															
		-							. Barr				-				
		1													1		
Sample ID:	(1)	ML	1-045-	201803	oh	Duplicate ID		1/1			OA/OC Sam	nlec/ID:	NIA		L	COC Times	12.0
S	ample	Co	ntainer	201000					Material C	odes: VOA = 4	40 ml class vi	al: AG =Ambe	er Glass: CG	=Clear Glass	· PF=nolvethvl	ene: O=Other	(Specify)
Parks Barton	Ma	teria	HERE	States and					Field Deco	entamination: (() N	Field Filtered	I(Y) N	COC Numb	er:		
Number	C	ode	Volu	me Pre	servative		Analysis and/	or Method	Comments Ferrous Iro Sulfide =	s: on= ે. <i>જિ</i> (૦,૦	omg/1 7 mg/						
	In	n-Sil	u Chrom	ium Treatab	ility Study	Sampling B	ottle Set		Groundwa	ter Color is	Gray 1	~ stri	ny fr	ment	ing ada		
									Signature	e(s): N	YR	R	~		1 500		
"INDICATO	DR PA	RA	METERS	HAVE STABL	IZED WHE	V 3 CONSEC	CUTIVE RE/	ADINGS AR	E WITHIN:		1						
± 0,1 fo	pH;	÷	± 3% for	Specific C	Conductiv	vity and To	emperatu	<u>re: ±10</u>	mv for R	edox Pote	ential; =	10% for	Dissolve	d Oxygen	and Turb	idity	
BGS	i - Belo - Belo	ow G ow M	iround Surfi leasuring P	ace Point	C - Centigra COC - Chair	de of Custody	GS - Grou ID - Identil	nd Surface lication	mg/L - mill mV - milli '	igram/Liter Volts	min - Minu ml - millilit	ute er	MP - Measu NTU - Neph	ring Point elometric Uni	ls	QA - Quality / QC - Quality (Assurance Control

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LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

Task Name:	In-Sit	u Chromium Ti	reatability Stud	у	Task Manag	er: Arul Ayya	iswami			Task No: N	V12			Well ID: CTI	WW-06D	
Field Sample	ers: Je	eff Richeson								Recorded t	by: Jeff Riches	ion		Date: 3/	7/18	
Well Depth (ft BGS	i):	MP Di	stance AGS (it):		Well Depth ((It BMP): 54.3	25	Screened/C	Open Interval T	ор:		(ft BGS)		34 (ft BMP)
Well Diamet	er (in):	2	PID/F	D Readings I	Beneath Inner	Cap (ppm cg	e akb):			Screened/0	Open Interval E	Bottom:		(ft BGS)		54 (ft BMP
Pump and T	ubing [·]	Type: QED Sa	imple Pro (blac	lder) with poly	/ tubing		Pump Intake	e Depth:		(ft BGS)		, 44	(ft BMP)	MP Descripti	on: TOC	
Equipment [)econ.	Method: 3 Bu	cket Rinse with	Liquinox			Depth to Wa	iter Before Pu	Imp Installation	n (ft BMP):	23.55	Time: c	5812-	GW Disposal	: GW-11 Pond	3
	BUID		emp. (*C)	F (pH	oH Units)	Spec Co m5 (u6	nductivity /cm)	Dissolve	ed Oxygen (mg/L)	Redox OR	Potential P (mV)	Turi (N	bidity TU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	E E	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	-(mi)_L
0640	X	22.18		7,20		12,0		2.44/1.09	/	100		84.4		150	23.55	T O L
0645	X	23,74		7.16		12,0		1.15/0,8	5	100		77,1		150	23.79	0.75
0650	X	23.99		7.11		12,0		0.66/0.	74	99		52.9	7	150	27.82	1.5
0655	X	24.00		7,08		12.0		0.49/21	69	104		35.7		150	23.81	2,25
0700	X	24,25		7.05		12.0		038/0	65	109		29.4		150	23,80	3.0
0705	X	24,30		7.03		12,1		0,35/0.	62	112		27,5		150	23.81	3.75
0710	X	24,30		7.02		12,2		0.38/00	61	115		28,3		150	23.83	4.5
	11												1			
						-	1									
										1						
				1								1			1	
			1									1	1			
Sample ID:	(1	MW-06D	- 20180	307	Duplicate II	D: //	114			QA/QC Sa	imples/ID:	N/A	Class Class	. DC. estuation	COC Time:	<u>0710</u>
	Ma	terial						Field Dec	contamination:	AU III glass	Field Filtere	er Glass; CG	COC Numb	s; r⊏=polyetny ier:	iene; O=Oiner	(Specity)
Number	C	ode Voi	ume Pi	eservative	Intended	Analysis and	Vor Method	Comment	ls:	11		0	1			
	T							Ferrous I	ron= $\mathcal{C}_t \mathcal{O}_t$	mg						
								Sulfide =	0.0 1	n9/1	1 m	der				
	lr T	1-Situ Chron	nium Treatal	oility Study	Sampling E	Bottle Set		Groundw	ater Color is	Yeller	~ 1 10	QUEI				
	-							Signatur	reis):	m	RR	\sim				
INDICAT	DR PA	ARAMETERS	HAVE STAB	LIZED WHE	N 3 CONSE		ADINGS AF	RE WITHIN:								
± 0.1 fo	r pH	± 3% fo	r Specific	Conducti	vity and T	emperate	ure: ± 10	0 mv for F	Redox Pot	ential:	± 10% for	Dissolve	d Oxyger	n and Turb	idity	
BG	S - Bel	ow Ground Su	face	C - Centigra	ade	GS - Gro	und Surface	ma/L - mi	illigram/Liter	min - Mi	inute	MP - Meast	uring Point		QA - Quality	Assurance
BM	r - Bel	ow Measuring	Point	COC - Cha	in of Custody	ID - Ideni	Incation	mv - milli	Volts	mi - mil	inter	NHU - Nept	neiometric Un	4(5	uc - Quality	Control

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LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

Task Name:	In-Situ (Chromium Tr	reatability Stud	ly	Task Manag	er: Arul Ayy	aswami			Task No: A	112			Well ID: CT	MW-000 07	5
Field Sample	ers: Jeff	Richeson								Recorded b	y: Jeff Riches	ดก		Date: 3	6/18	
Well Depth (ft BGS):		MP Di	istance AGS (ft):		Well Depth	(ft BMP): 24.4	1	Screened/C)pen Interval T	op:		(ft BGS)		19 (ft BMP)
Well Diamet	er (in): 2		PID/F	ID Readings I	Beneath Inner	Cap (ppm co	je akb):			Screened/C)pen Interval B	ottom:		(ft BGS)	(24 (ft BMP)
Pump and T	ubing Ty	pe: Mega M	onsoon Pump	with poly lubi	ng		Pump Intak	e Depth:		(ft BGS)		24	(ft BMP)	MP Descript	ion: TOC	
Equipment D	Decon. M	ethod: 3 Bu	cket Rinse witl	h Liquinox			Depth to Wa	ater Before Pu	mp Installatio	n (ft BMP):	23.82	کر Time:	0807	GW Disposa	II: GW-11 Pond	t
	GING	T	emp. (*C)	i (pH	oH Units)	Spec Co (uS	onductivity S/cm)	Dissolve	d Oxygen mg/L)	Redox ORI	Potential P (mV)	Tu (I	rbidity NTU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	PUH	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(m)) L
0935	X	25,17		795		9.62		4,12/2,1	ц	137	1	268		100	23,82	24
0940	X	24.97		7.67	1	9.64		2.95/2.7	0	143		275		100	23.48	0.51
AQUE	X	26.12		754		970		2.27/2.8	2	IUL		47.9		100	2402	11
- 950	×	25.7		7 110		1.10	1 1 1	2 20/2.4	T.	10		794		100	JUNE	161
075	X	25.01		7115		7.11		174/2	10	150		2117		100	24 07	1156
1000	X	2010		7.40	1	9.62		2110/20	6/1	135		010		100	21/28	201
1000	C	24177		- 20		710)	1	4142/21	18	160		7.1		100	24,00	x,5C
1995	~	24.91		7,50		9.60		237/2	96	16.2		817	<u>+</u>	100	29,00	36
						1			s							
					ļ											·
							<u></u>	1000			-					
					1											
		_														
													(MS)	(MSD)		
Sample ID:	CTM	1-075-	2018030	16	Duplicate II	$\sim Nl$	4			QA/QC Sa	mples/ID: 🔍	St .C	TMW 075	-20180306	COC Time:	1005
S	ample C	Container	120			A.		Material C	odes: VOA =	40 ml glass v	ial; AG =Amb	er Glass; CO	3 =Clear Glass	; PE=polyethy	lene; O=Other	(Specify)
	Mater	ial						Field Dec	ontamination:	<u>(Y) N</u>	Field Filtere	#: <u>(Y) N</u>	COC Numb	er:		
Number	Code	e Volu	ime Pr	reservative	Intended	Analysis and	Vor Method	Comment	s:	nall		0				
								- Ferrous In	on= DiD	mgjj						
	l In-S	itu Chrom	ium Troatat	allity Study	Sampling F	lottla Sat		- Sume =	0,0 M Itar Color in	711		1100				
				Jiity Study		Joure Ser				Yellow	W/ NO.	600				
								- Signatur	e(s):	m	R R		\			
INDICATO	R PAR	AMETERS	HAVE STAB	LIZED WHE	N 3 CONSE	CUTIVE RE	ADINGS AF	RE WITHIN:		l						
± 0.1 for	pH;	± 3% for	Specific	Conductiv	vity and T	emperate	ure: ±10	mv for F	edox Pot	ential:	± 10% for	Dissolve	ed Oxygen	and Turb	oidity	
BGS	- Below	Ground Sur	lace	C - Centigra	de	GS - Gro	und Surface	mg/L - mil	ligram/Liter	min - Mir	nute	MP - Meas	uring Point		QA - Quality /	Assurance
BMP	- Below	Measuring F	Point	COC - Chai	n of Custody	ID - Ident	lification	mV - milli	Volts	ml - millil	iter	NTU - Nep	helometric Uni	ts	QC - Quality (Control

Tt

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name:	In-Situ C	Chromium Tr	eatability Stud	v	Task Manao	er: Arul Avva	aswami		Task	k No: M	112			Well ID: CT	MW.and o7	2	
Field Sample	rs: Jeff I	Richeson			<u> </u>				Reco	orded b	v: Jeff Riches	on		Date:	3/1/10		
	BGS):		MP Di	stance AGS (ft):		Well Depth ((LBMP): 3488 110	Scre	ened/C) Den Interval T	DD:		(ft BGS)	90	*	(# E
Nell Diamete	r (in): 2		PID/F	D Readings I	, Beneath Inner	Cap (ppm co	je akb):		Scre	ened/C	Den Interval B	ottom:		(It BGS)	110	1	(f) B
Pump and Tu	bing Typ	be: QED Sa	mple Pro (blac	Ider) with poly	tubing		Pump Intake	Depth:	(ft B	GS)	/	00 #	(ft BMP)	MP Descripti	on: TOC		
Equipment D	econ. Me	ethod: 3 Bu	cket Rinse with	Liquinox			Depth to Wa	ter Before Pump Inst	allation (ft B	MP):	20,52	Time: 🖉	1803	GW Disposa	I: GW-11 Pon	đ	
	GING	Temp. pH Method: 3 Bucket Rinse with Liquinox Temp. pH (*C) (pH Units READ CHANGE* READ CH 21.59 10.02 23.63 9.74 23.63 9.74 23.63 9.74 23.63 9.74 23.63 9.74 24.05 9.72 24.05 9.74 24.05 9.72 24.01 9.69 24.01 9.69 9.74 0.02 24.05 9.726 0.02 0.02 24.05 9.74 0.02 0.02 24.05 9.74 0.02 0.02 24.05 9.706 0.02				Spec Co	nductivity /cm)	Dissolved Oxy	gen R	edox ORF	Potential P (mV)	Tur (N	bidity ITU)	Purge	Depth to Water	Cum.	. Ve
Time	SAM	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	HEAD CHA	NGE* R	EAD	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)		усс 1)_
0420	X	21.59		10.07		1.50		3,12/408		0		98)		50	20.52		_
2825	X	27.63		9.74		1.44		202/1.15	0	10		743		50	22.14		<
azo	X	12 (1		9 71		<u> </u>		1.92 0.97		1 <u>0</u> ~7		115		50	211 5	010	-
425	X	7101		9 -1				11/2/060		22		00		50	17,50	013	
	<u>v</u>			010		1.44	<u>.</u>	1.50/0.80	5	-1		112		50	2408	0,1	2
0000	\mathbf{x}	27,01		7,67	 	1.44	-	1.90/0.75		- 0		818		50	20100		
2845	<u> </u>	23.99		7168		1.44		1.4//0,75	9	26		615		50	27,11	1,25	2
							-								-		
					-												
														_			
																	_
Sample ID:	CTML	J-07D-	-201803	06	Duplicate ID	: NA			QA/	QC Sar	nples/ID:	NA			COC Time:	0845	_
Sa	mple C	ontainer		X TO I		2		Material Codes: V	0A = 40 ml	glass v	ial; AG =Ambe	r Glass; CG	=Clear Glass	; PE=polyethy	lene; O=Other	(Specify)	
	Materi	ai						Field Decontamina	ation: (Y)	N	Field Filtered	Y) N	COC Numb	er:			
Number	Code		me Pr	eservative	Intended	Analysis and	/or Method	Comments:		11		-					
								Ferrous Iron= 0		1							
	ln-Si	itu Chrom	ium Treatab	ility Study	Sampling P	ottle Set		Sum denotes Color		acl	nont						
				mity Study		01110 301		Cionnomater Colo		,							
		-						Signature(s):	NK	R							
INDICATO	R PARA	METERS	HAVE STAB	IZED WHE		CUTIVE RE	ADINGS AR	E WITHIN:	1		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						—
± 0.1 for	pH;	± 3% for	Specific	Conductiv	ity and T	emperatu	Ire: ±10	my for Redox	Potentia	al:	± 10% for	Dissolve	d Oxvaen	and Turb	idity		
PCC	Bolow (Ground Surf	909	C - Centinra	de	GS - Gro	ind Surface	mall_milliorom/	tor m	in - Min	uto	MD Maaai	in Date		01 0 1	4	-

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

Page 📙 of 💄

Task Name	TAC	k-n	012-50	-5.2 10	E.c.	Task Manage	er: Anil Avv	aswami			Task No: M	124047			Well ID:	mu/~ou	c la
Field Sample	ers:	Joff [Richeson	N Keeden	1.20	r don manage	a. rusiriyy				Recorded b	w: leff Richos	n	- 1	Doto:	1110-01	2
Well Denth ('ft Re	351		MP Dist	ance AGS (i)		Well Depth /f		_	Scroopod/0	non Interval T		eady	Uale. 6.	21.10	(4.0140)
Well Diamet	er (ir			PID/FIF	Beadings R	enesth Inner (Can (nom ci	no akb):	rowirj.		Sereened/O	pop lotonial P	νμ. 				(ILBMP)
Pump and T	uhin	η. <u>-</u> η Τνη	a 02	People LL P			cah (hhii ci	ge ako)	Dopthy		June Col	pen mervai bi	Juom:		(ILBGS)		(IT BMP)
Equipment [2000	9 '7P		c fei uta pre fe	In Marian	lilone i Viliv	2-	Fump make	Depui.	na la stallata				(II BMP)	MP Description		
Cquipment L	1000	AD. TAIC	uilou. 3 Bu					Depth to wat	er belore Pu	mp installatio	n (IT BMP):	_	l ime:		GW Disposal	GW-11 Pond	
	GING	IPLING	т	emp. (*C)	p (pH l	H Jnits)	Spec Co	onductivity S/cm)	Dissolve	d Oxygen mg/L)	Redox ORF	Potential P (mV)	Tur (N	bidity ITU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	J.	SAN	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(mi/min)	(ft BMP)	(ml)
0919	X		31.85	1	7.94		8.03		6.82		39		534				- NIOOn /Ani
0950		X	>90%	RECHARGE	· (el.1.)	ET san	nele.						-01				1 contraction
	1		- <u>r p</u>	0.00	1		11 10-					_			[
1			0 0.00 00 mm														
								1			<u>1</u>		3				
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·	+																
	Λ		-														
										<u>`</u> ъ							
		Ν															
						/					$\overline{)}$				C		
	1				/										. 1		
											-			2	0		
	+-													0	\checkmark		
														-			
Sample ID:	G	m	W-01	5-201806	21	Duplicate ID:	-	-		361	QA/QC San	nples/ID:				COC Time:	0970
S	amp	le Co	ontainer						Material Co	des: VOA'=	40 ml glass vi	ial; AG =Ambe	r Glass; CG	=Clear Glass;	PE=polyethyle	ene; O=Other (Specify)
New York	M	lateria	1						Field Deco	ntamination:	Y N	Field Filtered	: Y N	COC Numbe	er:		
Number		Code	Voiu	ume Pres	servative	Intended /	Analysis and	Vor Method	Comments								
									Ferrous Iro	n=1.[9	myll						
		In-Si	tu Chrom	ium Treatabi	ity Study S	Sampling Bo	ottle Set		Sulfide=	0.52 m	FIL						
									Groundwat	er Color is 🏅	nurky ye	lougre	en				
	+									~	SON						
									Signature	(s):		\sum					
INDICATO	PH P	'ARA	METERS	HAVE STABL	ZED WHEN	3 CONSEC	UTIVE RE	ADINGS ARE	WITHIN:	. ~	V						
± 0.1 for	ph		± 3% for	<u>Specific C</u>	onductiv	ity and Te	mperati	ure: ±10	my for R	edox Pot	ential:	± 10% for	Dissolve	<u>d Oxygen</u>	and Turbi	dity	
BGS	- Be	eiow (around Sur	iace	U - Centiorad	18	GS - Gro	und Surface	ma/L - milli	oram/Liter	min - Min	ute	MP - Measu	ring Point		OA - Quality A	ssurance

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

Task Name	1	- 1	1017 - 1	Chice T	c	Task Manage	er: Anil Avaa	ewami			Task No: 🛧	12- 12			Well ID: C-	mW-01	
Field Sampl		Joff F	lichason	> Kendus	7	Task Manage	a. ruurnyye				Recorded b	v: Jeff Riches	m' 35 140	adu	Date: C	71-18	
Well Denth	ift RG	SI-	lionecon	MP Dis	ance AGS //	t)·		Well Denth /f	t BMP)		Screened/C	Onen Interval To			(ft BGS)		(ft BMP)
Well Diamet	er lin	10 <i>j</i> . 1. 2			Readings R	eneath Inner (Cap (nom co	e akh):	tonic p		Screened/C	Onen Interval Br	nttom:		(ft BGS)		(ft BMP)
Pump and T	uhinr	<u>יי -</u> ו דעח	P. DED	Rindard	the out	O.L. Tilus	- -	Pump Intake	Denth:		(ft BGS)			(ft BMP)	MP Descriptio	on: TOC	
Fauinment	Decor	n Me	thod: 3 Buc	ket Rinse with	iquinex	aly jumi	7	Depth to Wat	er Before Pu	no Installation	(ft BMP):	22.10	Time:	2424	GW Disposal	GW-11 Pond	
Equipment	20001				Enquinox						- (Description 1		1.1.11	lett stebeen		
	DN	LING	16	emp. •C)	p (pH)	l'i Inite)	Spec Co	nouctivity (cm)	Dissolve	a Oxygen	ORI	Potentiai P (mV)		Diality THI	Purge	Depth to	Cum. Vol.
Timo	URG	AMP	READ	CHANGE*	BEAD	CHANGE*	READ	CHANGE*	READ	CHANGE*	BEAD	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(ml)
11110		S	77.07		<u> </u>		170		404/200		1113		1/ 0		780	7787	(1)
0155	-V		6777		(7(16.8		1.07 .07		140		163		200	26.15	
0758	X		2494		6.34		<u> </u>		0.77 1.85		199		102		200	22.18	1000
0175	X		4.39		6.42		19.7		1.32		137		63.7		200	23.04	2000
0748	X		27.40		6.52		19.5		• 1 /1.28		128		6.2		200	25.10	000
0755	X	<u> </u>	27.42		6.52		143		0.39/1.25		119		9.8	t c l	280	23.12	Y 000
0758	X		27.44	✓	6.52	\checkmark	14.2		0.38/1.2	2 V	X09		3.6	V (47)	200	23.12	2000
0810		X	STAB	KIZED:	COLLE	TOT SA	mple										
							-										
														.V			
					/								.2				
	T												VO				
		5					-					X					
																	·
	-																
Sample ID:	11	Mb	-010	7-10062		Ouplicate ID	: CTMW	-010-201	10621-1	2	QA/QC Sa	mpies/ID:	_	1	1	COC Time:	0810
S	amp	le Ci	ontainer	2018/062	Tel la la la				Material C		40 ml glass v	vial: AG =Ambe	r Glass; CG	=Clear Glass	: PE=polyethyl	ene: O=Other	(Specify)
	M	ateria	al 🛛						Field Deco	ntamination:	Y N	Field Filtered	: Y N	COC Numbe	er:		
Number		Code	Volu	me Pre	servative	Intended /	Analysis and	/or Method	Comments								
	1								Ferrous Iro	ял = 0.00 и	mil						
		n-Si	tu Chromi	ium Treatabi	lity Study	Sampling B	ottle Set		Sulfide=	9.00 mg	IL						
									Groundwa	ler Color is	yellow-	green; no	odor				
		•							Cianature		GI						
			METERS	HAVE STAR							+ t	K					
± 0.1 fo	roH	1:	± 3% for	Specific C	onductiv	vity and To	emperatu	ire: ±10	mv for R	edox Pote	ential:	± 10% for	Dissolve	d Oxvaen	and Turb	idity	
BGS	S - Be	low (Ground Surf	ace	C - Centigra	de	GS - Gro	und Surface	mg/L - mill	igram/Liter	min - Mir	nute	MP - Measu	ring Point		QA - Quality A	Assurance

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

Page <u>)</u> of ___

Task Name:	Tas	KN	12-	In-Si	TU CT.S	Task Manage	er: Arul Ayya	iswami			Task No: 🕈	121-MIZ			Well ID: C	TMW-0	zs
Field Sample	rs: Jef	- Riches	H-D	Keady			_				Recorded b	y: Joff Richese	PD.K	eady	Date: 6 ·Z	1.18	
Well Depth (f	t BGS)			MP Dis	stance AGS (f	i):		Well Depth (it BMP):		Screened/C	Open Interval To	p:		(ft BGS)		(ft BMP)
Well Diamete	er (in): 🛛	2		PID/FI) Readings B	eneath Inner	Cap (ppm cg	e akb): 🛛 🛶			Screened/C	Open Interval Bo	ottom:		(ft BGS)		(ft BMP)
Pump and Tu	ubing T	/pe: P ;	ne feri	74/12 =	JS/cor	e fitms		Pump Intake	Depth:		(ft BGS)			(ft BMP)	MP Description	on: TOC	
Equipment D	econ. N	lethod: -	3 Bucket	Hinse with	Liquinox N	ia O		Depth to Wa	ter Before Pur	np Installation	n (ft BMP):	23.32	Time:	0425	GW Disposal	GW-11 Pond	
	GING		Tem (°C)	p.)	pi (pH L	H Inits)	Spec Co	nductivity /cm)	Dissolver	d Oxygen ng/L)	Redox ORI	Potential P (mV)	Tur (N	bidity ITU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	PUR	RE	AD C	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(ml)
0544	X	T	SUFF	CIENT	WATER	RECHA	RUE RA	TE FDR	Las FLO	w.						·	
0550	X	N	URD	Nev	100000	CIL	PUPIFI	1)									
0.620)		SILRA	THOO	ED T	22.48	FT	a	0+ (A)	nao							
0620		31.	64		7.11	VJ- 10	8.42		678	140.	-88		7.0	1			1000
									<u>.</u>		00						1
															-		
		1															
											1						
							· · · · ·										
-#== 1																	
								1									
Commis ID:			MC A			D. II. ID											
Sample ID:		<mark>∩w~ (</mark>	<u>125-2</u>	218067	2(Duplicate ID	•		Material Ca		QA/QC Sai	mples/ID:	01 00	01	DE subulhi l	COC Time:	0 7 1
00	Mate	rial							Field Decor	des: VUA = 4	40 mi glass v	Field Filtered	V N	=Clear Glass	; PE=polyetnyk	ene; O=Other (Specity)
Number	Coo	le	Volume	Pre	servative	Intended /	Analysis and	or Method	Comments	kanination.				1000 Numb	JI.		
	1								Ferrous Iro	n =							
	In-	Situ Ch	romium	n Treatabi	ility Study S	ampling B	ottle Set		Sulfide=								
									Groundwate	er Color is							
	Deta		00.114						Signature	(s):			·				
	H PAP	AMETE	HS HA	VESTABL	IZED WHEN	I 3 CONSEC		ADINGS AR	E WITHIN:	alay Date	a materia	. 100/ 4	Neesburg	-	- and the second		
	Polou	Groups	Surface	pecific C	C . Centiarad		GS - Grou		mail milli	aram/Litor	min Mir	± 10% 10ľ L	JISSOIVE	a Oxvgen	and lurb		

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

Task Name:	Task /	112-50	-sau co	T.C.	Task Manag	er: Arul Ayya	Iswami			Task No: N	121 M12			Well ID: CT	MIN -DZ.D	
Field Sample	ers: Joff-I	Richeson-]	>. Kendy							Recorded b	y: Joff Riches		ete	Date: 6.2	1-18	
Well Depth (ft BGS):	-	MP Dis	stance AGS (ft):		Well Depth (t BMP):		Screened/C	Dpen Interval T	op:	T	(ft BGS)		(ft BMF
Well Diamet	er (in): 2	1	PID/FII	D Readings E	Beneath Inner	Cap (ppm cg	e akb): 🔔			Screened/C	Open Interval B	ottom:		(ft BGS)		(It BMP
Pump and T	ubing Typ	18: QES 🕻	ladder w	Poly T.	1 mg		Pump Intake	Depth:		(ft BGS)			(ft BMP)	MP Descripti	on: TOC	
Equipment D	econ. Me	ethod: 3 Bu	cket Rinse with	Liquinox	0		Depth to Wa	ter Before I	Pump Installatio	n (ft BMP):	23.43	Time: 🕻	1426	GW Disposal	: GW-11 Pond	1
	GING	T	emp. (*C)	F (pH)	oH Units)	Spec Co M (xIS	nductivity /cm)	Dissol	ved Oxygen (mg/L)	Redox ORF	Potential P (mV)	Tur (N	bidity ITU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	PUR	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(ml)
0616	X	27.80		6.85		12.5		2.7/1.	06	122		124		200	24.21	ø
A621	X	77.59		6.86		13.2		1.56/1.	37	17.5		69.8		200	24.37	10-
0626	X	2755		6.87		13.2		1.64/1.	57	132		48.8		200	24.47	2000
0631	X	77.57		(0.88		13.1		1.72/0:	17	131		21.7		709	24.56	3000
0636	X	27.56		6.90		13.0		1.65/0.	91	140	1	10.2		200	24.66	4000
0641	X	27.57		6.91		12.9		1.62/0-	92. 🗸	145	1	4.2	1 40	7.00	24.75	Con
0650	X	STARI	12ATION	· 616	15 0000	n 5'					-	1.0			61.75	300
<u> </u>	r	0.110.	40/7 14	fund	CI SHITH				-							
	<u>+</u>			/							1./				<u> </u>	
						$\mathbf{\lambda}$					1-19					
				/	:					- te	Y					
					1					Ø		1				
	\mathbf{X}						\mathbf{X}					4				
				_							1					
Sample ID:	CHIMAL	1-070	-2-12.04		Dunlicate IF	•				OA/OC Sar	mpiee/ID•				COC Time:	A
S.	ample C	ontainer	-20 IX 00	21	Duplicate in			Material	Codes: VOA =		vial: AG =Ambr	ar Glass: CG	-Clear Glass	· PE-nolvethyl	ene: O-Other	(Specify)
	Materi	al						Field De	contamination:	Y N	Field Filtered	1: Y N	COC Numbe	er:	une, o-outer ((opcony)
Number	Code	Volu	ime Pre	servative	Intended	Analysis and	/or Method	Comme	nts:							
								Ferrous	Iron = 0,00	mgl						
		itu Chrom	ium Treatabi	ility Study	Sampling B	ottle Set		Sulfide=	0,00 7	r(K						
								Ground	vater Color is	yellow-8	preen; No	odor				
		_						Signati	re(s):	191	\mathbf{V}					
INDICATO	R PARA	METERS	HAVE STABL	IZED WHE	N 3 CONSE	CUTIVE RE	ADINGS AR		:	+ K Y	1					
± 0.1 for	pH:	± 3% for	Specific C	Conductiv	vity and T	emperatu	ure; ± 10	my for	Redox Pot	ential:	± 10% for	Dissolve	d Oxygen	and Turb	idity	
BGS	- Below	Ground Surf	ace	C - Centiora	de	GS - Grou	und Surface	ma/L - n	nillioram/Liter	min - Min	nute	MP - Measu	uring Point		OA - Quality /	Assurance

LOW FLOW GROUNDWATER SAMPLING LOG

NERT Henderson NV Project

Task Name	14	ck	10012 - 1	Tarlice	to	Task Manag	or: Anil Assus	ewami			Took NowM	<u>at</u> . A				M. Colle	
Field Sample	<u>1 0</u>		ichoson t	N MAR (N	10.	i dək manayı	si. niui nyya	SWAITH			Recorded by			/	Weil ID:)
Well Donth (H RGS	21-				41.		Wall Dapth //	4 DMD\+		Recorded by	realistanual T		indy		01.18	(0.0140)
Well Diemet	n baa	. n			Deedines [ly.		wen Depin (i	1 DMP): -	-	Screened/O	pen interval 10	pp:		(ILBGS)		- (IT BMP)
Pump and T	er (m): ubioo	; <u> </u>	. 0.		n Headings c	erieatri inner	cap (ppm cg	Bakd):	D (b		Screened/U	peri interval B	ottom:	(0.0140)	(IT BGS)		(ft BMP)
Fullp and T	long	туре	* VML	rerotatio	kunb m/?	lione The	¥	Pump Intake	Depth:		(IT BGS)	-2 /		(IT BMP)	MP Description	on: TOC	
cquipment L	recon.	. mei		cket Minse Wiln	Liquinox		·	Depth to wat	er Belore Pun	np installation	n (It BMP): 🍾	65.05	l ime: 🤇	931	GW Disposal	: GW-11 Pond]
	GING	PLING	Te (этр. *С)	ې (pH ۱	H Jnits)	Spec Cor M (#S	nductivity (cm)	Dissolved	l Oxygen ng/L)	Redox I ORP	Potential (mV)	Turt (N	oidity TU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	ľ,	SAN	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(ml)
1303	X	<u> </u>	38.80		6.69		9.77		0.4 1.01		177		0.0		150	23.16	Ø
1308	X		35.18		6.67		10.3		0.50/0.80		174		0.0		150	23.20	700
1313	X		34.23		6.69		64		Latings		1-2-4		Q.0		150	23.7.3	1560
1318	X		34.29	J	6.70	\checkmark	0.4		1.03/0.92		174	\checkmark	00			23.75	2.765
1330 X STABILIZED; COLLECT SAMPLE.																	
1550 A DIPIS ILIZED; (OLLECT OTIMPLE.														/			
-+																	
-+													. 25	10			
					/			\backslash			1		V				
	+				/							-	X				
	\mathbb{A}																
	+																
		\checkmark															
									_								
0				2.0	-	-											~
Sample ID:	()	m	W- 04)	20190	621	Duplicate ID	\sim		Material Ca		UA/UC Sam	iples/ID: -		01	05	COC Time:	530
	Ma	teria							Field Decor	ues: vUA = 4	40 mi glass vi V N	al; AG =Ambe	V N	COC Numbe	PE=polyeiny	ene; O=Other (Speciry)
Number	C	ode	Volu	me Pre	servative	Intended	Analysis and/	or Method	Comments:		1 14				<i>i</i> 4,		
	1		1						Ferrous Iror	= 0.00 v	made						
	In	n-Sit	u Chromi	ium Treatabi	lity Study	Sampling B	ottle Set		Sulfide=	0.00 m							
									Groundwate	er Color is	yellow-gr	en, no od)~				
			_							T	n K	/					
	0.04	(DA1	HETERCI						Signature(s):	$\mathbf{x} \mathbf{\gamma}$	<u> </u>					
	nH.	AMAI	NETERS I	Specific C	Conduction	v J CONSEL	UTIVE HE/		t WITHIN:	day Det		10% for	Discolute	d Oxunen	and Turk	alles a	
L ± 0.1 for pH: ± 3% for Specific Conductivity and Temperature: ± 10 mv for Redox Potential: ± 10% for Dis BGS - Below Ground Surface C - Centiorade GS - Ground Surface mg/L - millionam/Liter min - Minute MP												MP - Measu	rina Point		QA - Onality A	Assurance	

LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

Task Name:	Taskn	112-Ins	TUCE T.S.		Task Manag	er: Arul Ayy	aswami			Task No: 1	121 M/2			Well ID: CT	mw-04	D
Field Sampl	ers: Jeff	licheson-	D.Kealy							Recorded b	y: Jelf Riches	on D.Kee	rch.	Date: 6	21.18	
Well Depth	(ft BGS):		MP Øi	stance AGS	(ft):		Well Depth ((t BMP): 🛛 🛥	-	Screened/C	Open Interval T	op:	1	(ft BGS)		(ft BMP
Well Diamet	ter (in): 2		PID/FI	D Readings	Beneath Inner	Cap (ppm c	ge akb):			Screened/C	Open Interval B	ottom:		(ft BGS)		(ft BMP
Pump and T	ubing Typ	ie: 👀	Bladder P	inp us Bl	yThing		Pump Intake	Depth:	_	(ft BGS)			(ft BMP)	MP Descripti	on: TOC	
Equipment (Decon. Me	thod: 3 Bu	cket Rinse with	Liquinox			Depth to Wa	ter Before Pun	np Installatio	n (ft BMP):	23.4	Time: 🙋	H32	GW Disposa	I: GW-11 Ponc	t
E T	GING	T	emp. (*C)	(pH	pH Units)	Spec Co	nductivity Vcm)	Dissolved	d Oxygen mg/L)	Redox	Potential P (mV)	Tur (N	bidity ITU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	PUR	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(mi/min)	(ft BMP)	(ml)
1106	X	3356		6.76	·	1.1		2.74 1.13		1d4		649		200	23.22	Ø
HD	X	30,40		7.05		10.5		0.69/0.81		118		543		7.00	23.29	000
1116	X	29.72		7.22		10.5		050/0.77		117		505		200	23.35	2000
1121	X	29.29	1	7.24		10.5		0.46/072		118		388		200	23.37	3000
1/26	X	29.38		7.25		10.5		0.41/071		170		192.		200	25.58	4000
1131	X	29.26		7.27		10.5		0.38/0.69		119		64.3		200	73.38	5000
1136	X	29.11	2	7.29		10.6		0.36 0.60		17.0		29.9		200	Z3-38	6000
1141	X	29.10	1	7.30		0.6		0.35/A.LL	\checkmark	120		22-	V (ust	700	73.30	7000
1150	X	STAR	11-20	: (011	- TTA	DRIF		-/				3.000				
(- oco	7 0000						1		-				
													-1.18		+	
												\sim	6.0.0			
												A	1			
				-												
Sample ID:	(TMI	1-04D	-2-12062		Duplicate ID); 🚤		4		QA/QC Sar	mples/ID: 7	mw-04	D-701206	21-05/01	COC Time:	1150
S	ample C	ontainer						Material Co	des: VOA =	40 ml glass v	vial; AG =Ambe	er Glass; CG	=Clear Glass;	PE=polyethyl	ene; O=Other	(Specify)
	Materi	al						Field Decor	ntamination:	Y N	Field Filtered	I:YN	COC Numbe)r:		
Number	Code	Volu	ime Pro	servative		Analysis and	Vor Method	Comments:								
		L Chrom	ium Treatab	ility Study	Sampling P	ottle Set		Suffide-	0.00	mili						
				inty olddy				Groundwate	er Color is	JAC .	A . A .					
	1				1					A EIDEN-	green					
								Signature	(s):	1101						
INDICATO	DR PARA	METERS	HAVE STABL	IZED WHE	N 3 CONSE	CUTIVE RE	ADINGS AR	E WITHIN:	0	0						
± 0.1 for	r pH:	± 3% for	Specific (Conducti	vity and T	emperatu	ure: ±10	my for Re	dox Pote	ential:	± 10% for	Dissolve	d Oxygen	and Turb	idity	
865	> - Reiom (around Surf	ace	U - Centigra	IOE	GS - Gro	und Surface	ma/L - millio	gram/Liter	min - Min	nule	MP - Measu	unna Point		OA - Quality /	Assurance

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LOW FLOW GROUNDWATER SAMPLING LOG

NERT, Henderson, NV Project

Task Name:	In-Sit	lu Ch	romium Tr	eatability Stud	у	Task Manag	er: Arul Ayya	iswami			Task No: M	112			Well ID: CT	W-06S	
Field Sample	ers: Je	eff Ri	cheson			2 M					Recorded by	y: Jeff Riches	on		Date: 🖌	122/18	
Well Depth (i	It BGS	S):		MP Di	stance AGS (it):		Well Depth ((ft BMP): 24.4		Screened/O	pen Interval T	op:		(ft BGS)		19 (ft BMP)
Well Diamete	er (in):	2		PID/FI	D Readings E	eneath Inner	Сар (ррт сд	e akb):			Screened/O	pen Interval B	ottom:		(ft BGS)		24 (ft BMP)
Pump and Ti	ubing	Туре	: Mega M	unsoon Pump	with poly tubi	ng Perist	altic a	Pump Intake	Depth:		(ft BGS)	·	24	(It BMP)	MP Descriptio	on: TOC	
Equipment D	econ.	Meth	hod: 3 Buc	ket Rinse with	Liquinox			Depth to Wa	ater Before Pu	mp Installation	n (ft BMP):	23.71	Time:	0500	GW Disposal	: GW-11 Pond	
	GING	IPLING	Te (emp. °C)	F (pH (H Jnits)	Spec Co	nductivity /cm)	Dissolve	d Oxygen mg/L)	Redox ORF	Potential P (mV)	Tur (N	bidity ITU)	Purge Rate	Depth to Water	Cum. Vol. Purged
Time	J.	SAA	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(ml)
0515	×		\$.37		7.03		6.63		1.07/2	ъ	-166	1	65.4		200	23,71	0
0520	X		27,84		6.97		6.69		0.52/13	6	-146		57.2		100	23.87	11
0525	X	2	8.16		7,03		6.72		0.96/2.1	6	-136		59.4	3	100	23,97	1.51
0530	X		28.29		7.06		6.69		1.01/2:	4	-131		58.1		100	23,98	21
0535	X		38.35		7.09		6.68		1.04/2.	ا د	-127		57.8	-	100	23.99	2.5/
0535	1	X															
						-											
									1		1			1			
				-													
Sample ID:	(1)	MY	1-065	- 20180t	122	Duplicate ID	$\sim v$	14		13 14	QA/QC San	nples/ID: /	NA			COC Time:	0535
Sa	ample	e Cor	ntainer					100 3	Material Co	odes: VOA =	40 ml glass v	ial; AG =Ambe	er Glass; CG	=Clear Glass	; PE=polyethyl	ene; O=Other (Specify)
Number	Ma	terial	Volu	Der Der		International		In the state	Field Deco	ntamination:	<u>(Y) N</u>	Field Filtered	<u>I(Y)N</u>	COC Numbe	er:	_	
NUTIDEL		DOGE	AOID		servauve		Analysis and	or Method	Comments		n mal	'					
							· · · · · · · · · · · · · · · · · · ·		Sulfide =			<i>'</i> ,					
	ـــــــــــــــــــــــــــــــــــــ	-Siti	u Chromi	ium Treatab	ility Study	Sampling B	ottle Set		Groundwat	ter Color is	clear	'w/	Sligh	tor	av cla	uding	
									-		-1001	<u> </u>			1 010		
									Signature	<u>(s):</u>	<u>11</u>	<u>CR</u>					
*INDICATO	R PA	RAN	AETERS I	HAVE STABL	IZED WHE	V 3 CONSEC	CUTIVE RE	ADINGS AR	E WITHIN:		1				erre e marcua	19.55	1
± 0.1 for	pH:		: 3% for	Specific (Conductiv	nty and To	emperatu	I re: ±10	mv for R	edox Pote	ential: :	± 10% for	Dissolve	d Oxygen	and Turbi	idity	
602	- pelo	w al	iouna suna	ace	U - Cernigra	16	G2 - GIOL	inu Sunace	mg/L - milii	yiam/Liter	min - Min	ule	MH - Measu	inna Point		QA - Quality A	SSURANCE

LOW FLOW GROUNDWATER SAMPLING LOG

TETRA TECH

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Task Name	: In-Situ	I Chromium T	reatability Stud	dv	Task Manac	er Anil Ave	acurami						N	ERT, Hender	son, NV Project
Field Samp	lers: Jei	ff Richeson		-1	- don manag	jei. niui nyy			Fask No: N	/12			Well ID: CT	MW-06D	
Well Depth	(It BGS)	;	MP D	istance AGS	((1))		Mall Dent	(1) DAID) - 5 (Recorded b	y: Jeff Riches	son		Date: 6/	22/18	
Well Diame	ter (in):	2	PID/F	ID Readings	Repeath Inner	Contracto	well Depth	(ITBMP): 54.25	Screened/C	Open Interval 1	ор:		(ft BGS)		34 (ft BMP)
Pump and 1	Tubina T	VDe: QED S:	ample Pro (bla	rider) with no		Cap (ppm c	ge akb):		Screened/C	Open Interval E	Bottom:		(ft BGS)		54 (ft BMP)
Equipment	Decon. I	Vethod: 3 Bu	icket Binse wit	h Liquinov	iy iubiriy		Pump Intak	e Depth:	(It BGS)		44	(ft BMP)	MP Descript	ion: TOC	
			lokot tillise mil				Depth to W	ater Before Pump Installatio	n (ft BMP):	23,97	Time:	0438	GW Disposa	I: GW-11 Pond	3
	IRGING MDI INK		emp. (°C)	(pH	pH Units)	Spec Co (uS	nductivity S/cm)	Dissolved Oxygen	Redox	Potential P (mV)	Tur (N	bidity ITU)	Purge Bate	Depth to	Cum. Vol.
Time	1.0	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ CHANGE*	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(ml)
0655	X	27.81		7.24		10.2		4.10/0.63	-11		15.9		200	200	()
0700	X	27,92		7.18		9.87		3 20/2/11	-211	1	01		200	13.75	0
0709	X	27,99		7.14		9.98		270/01/0	-27	1	7.		200	24,13	IL
0710	X	28.07		6.98		10 3		230/044	- 4/		811		200	24.17	26
0715	X	28.14		6.95	1	10.4		101/01/01	07	1	8.4		200	24,18	34
0720	X	28.14		Lall	10000	10.7		0.00/0.36	86		811		200	24.19	46
0725	X	28.17		1 07		10.3	-	1,99/0.36	88		8.3		200	24,18	56
2100	Î	0-0117		0:72	1	19.3		1.91/0.35	92	-	8,0		200	24,19	66
	11														
-					_										T
															1.02
0															
Sample ID:	CTM	W-06D	- 20180	622	Duplicate ID	:	~		QA/QC Sam	ples/ID:				COC Time:	075
	Motor	int l					1. 200 1.23	Material Codes: VOA = 4	l0 ml glass vi	al; AG =Ambe	Glass; CG =	Clear Glass;	PE=polvethyle	ene: O=Other (!	Specify)
Number	Code	a Volu	me Pre	convotivo	Interneted 4	mahuata an di	a a k Ø a than 1	Field Decontamination:	() N	Field Filtered	(V) N	COC Number	n		opeony)
		1	110	001701170		vnalysis and/	or Method	Comments:			anten anten an				
								Sulfide = 0 , 0	NY / /						
	In-S	iitu Chromi	um Treatabi	lity Study S	Sampling Bo	ottle Set		Groundwater Color is	light	4110	in				
0.000 0.000	-							1			, -				
INDICATO	R PAR	AMETERS	AVE STAR					Signature(s):		$\Delta - h$	10				
± 0,1 for	pH:	± 3% for	Specific C	conductiv	ity and Te	moerate		: WITHIN:	-	4.004		-			
BGS	- Below	Ground Surfa	ice	C - Centiorar	ie	GS - Grou		mail millicromit inc	<u>nual; ±</u>	10% for E	Dissolved	Oxygen	and Turbi	dity	
RMP	. Ralow	Maariina D	nint	000 0L	20.19		Na Cunace	order - mundtattivritet	min - Minu	ie i	MP - Measuri	na Point		OA - Ouslity Ac	CURSOA

LOW FLOW GROUNDWATER SAMPLING LOG

NERT Henderson NV Project

Task Name:	In-Situ C	hromium Tr	eatability Stud	у	Task Manag	er: Arul Ayya	aswami		_	Task No: M	12			Well ID: CTM		
Field Sample	rs: Jeff F	licheson								Recorded b	y: Jeff Richeso	on		Date: 1/2	2/10	
Well Depth (f	BGS):		MP Di	stance AGS	(ft):		Well Depth (ft BMP):	4.58	Screened/O	pen Interval To	DD: 17	5	(ft BGS)	4/10	(it BMI
Well Diamete	r (in): 2		PID/F	D Readings	Beneath Inner	Cap (ppm cg	ge akb):			Screened/O	pen Interval Be	ottom: בי	4.5	(ft BGS)		(it BMI
Pump and Tu	ibing Typ	e: QED Sa	mple Pro (blac	lder) with pol	y tubing		Pump Intake	Depth:		(ft BGS)	·		(ft BMP)	MP Descriptio	n: TOC	
Equipment D	econ. Me	thod: 3 Bud	cket Rinse with	n Liquinox			Depth to Wa	ter Before Pu	mp Installation	n (ft BMP):	24,27	Time: a	420	GW Disposal	GW-11 Pond	
- 200295 - 11 - 1	, O	Te	emn.		ъН	Spec Co	nductivity	Diesolue	d Oramon	Peder	Detential	Turk	- Lallan			
	PLIN		*C)	(pH	Units)	(uS	Vcm)	DISSOIVE DO (ma/L)	ORP	(mV)	(N	Maity TU)	Purge	Depth to	Cum. Vol.
Time	NIR	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	BEAD	CHANGE*	BEAD	CHANGE!	(mi/min)	(ft BMP)	(ml)
1445	X										UTRIVOL		UINITUL	(()
addf.		1.4		2.000	1 2	. /	-710	1 1		the second			J		- / /	n.
0110		00		u198	a DI	7	Ine	Wat		7 201	Wa	5 11	74	e We		
			as ju	ist 1	200/20	on	boti	mon	Cap	- 10	o m/	pur	red b	ctare		
		6	"I we	nt d	(1				/			<i>v</i> .				
					1											
				1		1										
		-				 	1									
Sample ID:					Duplicate ID):				QA/QC San	ples/ID:				COC Time:	
Sa	mpie Co	ntainer						Material C	odes: VOA = 4	10 mt glass vi	al; AG =Ambe	r Glass; CG :	Clear Glass	; PE=polyethyle	ene; O=Other (Specify)
	Materia			1. 30 - 10				Field Deco	ntamination:	Y N	Field Filtered	: Y N	COC Numbe	er:		
Number	Code	Volu	me Pr	eservative	Intended	Analysis and	/or Method	Comments	t							_
								Ferrous Iro	n=							
		Chan and		alla - Ostada	0			Sulfide =								
	11-51			mity Study	Sampling B	onie Set		Groundwa	ier Color is							
								Cinnature	1-2-							
									(s):							
+ 0.1 for	nH· -	- 3% for	Specific (Conductio	tity and T	onverate			adox Dote	ntial	100/ fer	Disachust	0	and Trucks		
	Rolow C	round Sud		C - Contion	da	CS. Grou				min Min	E_1076 10F1			and lurbi		

LOW FLOW GROUNDWATER SAMPLING LOG

Task Name:	In-Situ	Chromium T	reatability Stud	у	Task Manag	er: Arul Ayya	swami		Task No: N	112			Well ID: CT	MW-07D	
Field Sample	rs: Jel	f Richeson							Recorded b	y: Jeff Riches	on		Date:	81/22/18	
Well Depth (f	t BGS)	:	MP Di	stance AGS (it):		Well Depth	(ft BMP):	Screened/C	pen Interval T	op:		(ft BGS)	1 alart 1 v	(ft BM
Well Diamete	er (in):	2	PID/F	D Readings E	Beneath Inner	Cap (ppm cg	e akb):		Screened/C	pen Interval E	lottom:		(ft BGS)		(ft BMI
Pump and Tu	ubing T	ype: QED Sa	imple Pro (blac	lder) with poly	tubing		Pump Intake	e Depth:	(ft BGS)			(ft BMP)	MP Descript	ion: TOC	
Equipment D	econ. I	Vethod: 3 Bu	cket Rinse with	n Liquinox			Depth to Wa	ater Before Pump Installatio	n (ft BMP):	20.71	Time:	2445	GW Disposa	I: GW-11 Pond	
	IGING	T	emp. (*C)	р (рН 1	H Jnits)	Spec Col	nductivity Tcm)	Dissolved Oxygen	Redox	Potential P (mV)	Tur (N	bidity ITU)	Purge Bate	Depth to Water	Cum. Vol.
Time	PUF	READ	CHANGE*	READ	CHANGE*	READ	CHANGE*	READ CHANGE	READ	CHANGE*	READ	CHANGE*	(ml/min)	(ft BMP)	(ml)
0900	X	27,35		8.37		0,913		5.41/0.95	63		12 7		100	30.71	0
0405	X	26.93		7.82		0.903		3.48 0.89	93		11.5		100	21 90	<u> </u>
0910	x	27.03		7.82		0.895		303/0.69	ad		9.9	1	50	34 .7	500
0915	X	27.15		778		0.894		3.90/015	10)		02		50	7/0/	12
0920	X	2720		770		0 097		292/26	102		09		50	20.13	1,051
VIN	1	0.1139		1.10		9.011		2.11/0.00	10 7		811		30	28,03	1.56
ample ID:	CT,	MW-0	70-2018	6622	Duplicate ID):			QA/QC San	nples/ID:			·	COC Time:	0920
Sa Number	Mate Coc	Container rial Volu de Volu	ium Treatab	eservative	Intended Sampling B	Analysis and/	or Method	Material Codes: $VOA =$ Field Decontamination: Comments: Ferrous Iron= O_{i} (Sulfide = \circ , O Groundwater Color is	40 m glass v Y N N mg / cied	ial; AG =Ambo Field Filtered	er Glass; CG I: (Y)N	=Clear Glass	; PE=polyethy er:	lene; O=Other (Specify)

Appendix B Summary of Groundwater Elevations – Biological Reduction Study

Appendix B - Summary of Groundwater Elevations - Biological Reduction Study In-Situ Chromium Treatability Study

Well ID	Screen Interval	TOC Elevation	Date	Week	Depth to Product	Depth to Water	Product Thickness	GW Elevation ¹
	(reer bgs)		04/03/17	Baseline		22.26		1,735.15
			04/18/17	Injections		22.31		1,735.10
			05/16/17	PME1 PME2		22.15		1,735.12
			05/31/17 06/19/17	PME3 PME4		22.16 22.03		1,735.25 1,735.38
CTIW-01S	18.5 - 23.5	1,757.41	07/17/17	PME5		22.25		1,735.16
			08/22/17 09/19/17	PME6 PME7		22.19 22.33		1,735.22
			10/03/17	PME8	22.39	22.80	0.41	1,735.00
			03/05/18	PME9 PMF10		21.90 22.42		1,735.51
			04/03/17	Baseline		22.21		1,735.13
			04/18/17 05/02/17	Injections PME1		22.26 22.41		1,735.08 1,734.93
			05/16/17	PME2 PME3		22.48		1,734.86
	22 20	4 757 04	06/19/17	PME4		22.30		1,735.13
CTIW-01D	33 - 38	1,757.34	07/17/17	PME5 PME6		22.39 22.95		1,734.95
			09/19/17	PME7		NM ²		
			10/03/17	PME8 PME9		22.68		1,734.66
			06/21/18	PME10		22.75		1,734.59
			04/03/17 04/18/17	Baseline Injections		22.49 22.51		1,734.96 1,734.94
			05/02/17	PME1		22.20		1,735.25
			05/16/17	PME2 PME3		22.32		1,735.13
CTIW-02S	19 -24	1,757.45	06/19/17	PME4		22.13		1,735.32
			08/22/17	PME5 PME6		21.40		1,736.05
			09/19/17	PME7		NM ²		
			03/05/18	PME9		22.02		1,735.43
			06/21/18	PME10 Basolino		22.61		1,734.84
			04/03/17	Injections		22.32		1,734.82
			05/02/17 05/16/17	PME1 PME2	 22.71	23.21 23.70	0.99	1,734.10 1.734.56
			05/31/17	PME3		23.20		1,734.11
CTIW-02D	34 - 49	1,757.31	07/17/17	PME4 PME5		22.70	0.01	1,734.61
			08/22/17	PME6		22.76		1,734.55
			10/03/17	PME8		22.83		1,734.48
			03/05/18	PME9		22.35		1,734.96
			06/21/18 04/03/17	Baseline		22.92		1,734.39
			04/18/17	Injections PME1		22.56 22.35		1,734.76
			05/16/17	PME2		22.44		1,734.88
			05/31/17 06/19/17	PME3 PME4		22.51 22.24		1,734.81 1,735.08
CTIW-03S	19 - 24	1,757.32	07/17/17	PME5		22.69		1,734.63
			09/19/17	PME6 PME7		21.75		1,735.57
			10/03/17	PME8		22.79		1,734.53
			03/05/18	PME9 PME10		22.25		1,735.07
			04/03/17	Baseline		22.80		1,734.68
			05/02/17	PME1	23.65	23.79	0.14	1,733.82
			05/16/17 05/31/17	PME2 PME3	23.59	23.76 23.33	0.17	1,733.88 1,734.15
CTIW-03D	34 - 49	1.757.48	06/19/17	PME4		23.25	0.20	1,734.42
•••••••		.,	08/22/17	PME5 PME6		23.18		1,734.30
			09/19/17	PME7		24.11		1,733.37
			03/05/18	PME8 PME9		23.41		1,734.07
			06/21/18	PME10		23.35		1,734.13
			04/03/17	Injections		22.21		1,734.95
			05/02/17	PME1 PME2		22.25 22.13		1,734.91
			05/31/17	PME3		22.28		1,734.88
CTMW-01S	19 - 24	1,757.16	07/17/17	PME4 PME5		22.24		1,734.92
			08/22/17	PME6		22.50		1,734.66
			10/03/17	PME8		22.67		1,734.49
			03/05/18	PME9		22.17		1,734.99
	1		04/03/17	Baseline		22.37		1,734.44
			04/18/17 05/02/17	Injections PME1		22.37 22.43		1,734.77 1.734.71
			05/16/17	PME2		22.54		1,734.60
			05/31/17	PME3 PME4		22.46 22.48		1,734.68 1,734.66
CTMW-01D	34 - 49	1,757.14	07/17/17	PME5		22.63		1,734.51
			09/19/17	PME7		23.77		1,733.37
			10/03/17	PME8		22.74		1,734.40
			06/21/18	PME9 PME10		22.27		1,734.87
			04/03/17	Baseline		22.47		1,734.74
			05/02/17	PME1		22.53		1,734.68
			05/16/17 05/31/17	PME2 PME3		22.90 22.85		1,734.31 1,734.36
CTMW-02S	19 - 24	1.757 21	06/19/17	PME4		22.75		1,734.46
	27	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	08/22/17	PME5 PME6		22.96	Well is dry	1,734.25
			09/19/17	PME7		23.21		1,734.00
			03/05/18	PME9		22.65		1,734.56
			06/21/18	PME10		23.32		1,733.89



Appendix B - Summary of Groundwater Elevations - Biological Reduction Study In-Situ Chromium Treatability Study

Well ID	Screen Interval (feet bgs)	TOC Elevation (feet amsl)	Date Gauged	Week	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Product Thickness (feet)	GW Elevation ¹ (feet amsl)
			04/03/17	Baseline		22.72		1,734.54
			04/18/17	Injections		22.71		1,734.55
			05/02/17	PME1		22.96		1,734.30
			05/31/17	PME2 PME3		23.08		1.734.18
			06/19/17	PME4		23.12		1,734.14
CTMW-02D	34 - 49	1,757.26	07/17/17	PME5		23.22		1,734.04
			08/22/17	PME6		23.36		1,733.90
			09/19/17	PME7		23.40		1,733.86
			10/03/17	PME8		23.36		1,733.90
			03/05/18	PME9		22.90		1,734.36
			06/21/18	PME10		23.43		1,733.83
			04/03/17	Baseline		22.36		1,734.85
			04/18/17	PMF1		22.44		1,734.77
			05/16/17	PME2		22.45		1,734.76
			05/31/17	PME3		22.47		1,734.74
CTMM/ 020	10 04	1 757 01	06/19/17	PME4		22.40		1,734.81
CTMVV-035	19 - 24	1,757.21	07/17/17	PME5		22.59		1,734.62
			08/22/17	PME6		22.64		1,734.57
			09/19/17	PME7		22.73		1,734.48
			10/03/17	PME8		22.74		1,734.47
			03/05/18	PME9		22.37		1,/34.84
			06/21/18	PME10 Populing		23.02		1,734.19
			04/03/17	Injections		22.43		1,734.60
			05/02/17	PME1		22.56		1.734.67
			05/16/17	PME2		22.57		1,734.66
			05/31/17	PME3		22.58		1,734.65
	24 40	1 757 00	06/19/17	PME4		22.58		1,734.65
CTIVIVV-03D	34 - 49	1,757.25	07/17/17	PME5		22.75		1,734.48
			08/22/17	PME6		22.80		1,734.43
			09/19/17	PME7		22.88		1,734.35
			10/03/17	PME8		22.85		1,734.38
			05/05/18	PME9		22.45		1,734.70
			00/21/18	Baseline		22.01		1,734.22
			04/18/17	Injections		22.41		1.734.59
			05/02/17	PME1		22.61		1,734.39
			05/16/17	PME2		22.71		1,734.29
			05/31/17	PME3		22.69		1,734.31
CTMW-04S	19 - 24	1 757 00	06/19/17	PME4		22.66		1,734.34
		1,1 01100	07/17/17	PINE5 DME6		22.80		1,734.20
			09/19/17	PME0		22.09		1,734.11
			10/03/17	PME8		22.98		1,734.02
			03/05/18	PME9		22.48		1,734.52
			06/21/18	PME10		23.08		1,733.92
			04/03/17	Baseline		22.62		1,734.38
			04/18/17	Injections		22.64		1,734.36
			05/02/17	PME1		22.75		1,734.25
			05/16/17	PME2		22.88		1,734.12
			05/31/17	PME3 PME4		22.80		1,734.14
CTMW-04D	34 - 49	1,757.00	07/17/17	PME5		23.01		1.733.99
			08/22/17	PME6		23.07		1,733.93
			09/19/17	PME7		23.13		1,733.87
			10/03/17	PME8		23.12		1,733.88
			03/05/18	PME9		22.61		1,734.39
			06/21/18	PME10		23.16		1,733.84
			06/19/17	PME4		23.18		1,734.06
			07/17/17	PME5		23.28		1,733.96
OT1011 07-	40.04	4 757 64	08/22/17	PME6		23.36		1,733.88
CIMW-05S	19 - 24	1,757.24	09/19/17	PME7		23.38		1,733.86
			10/03/17	PIVIEO		23.42		1,733.82
			03/03/10			22.00		1,134.39
			00/21/10			23.44 23.36		1,733.00
			07/17/17	PME5		23.48		1.733.77
			08/22/17	PME6		23.53		1,733.72
CTMW-05D	34 - 54	1,757.25	09/19/17	PME7		23.56		1,733.69
	-		10/03/17	PME8		23.54		1,733.71
			03/05/18	PME9		22.98		1,734.27
			06/21/18	PME10		23.66		1,733.59
			06/19/17	PME4		23.41		1,734.02
			07/17/17	PME5		23.53		1,733.90
			08/22/17	PME6		23.59		1,733.84
CTMW-06S	19 - 24	1,757.43	09/19/17	PME7		23.64		1,733.79
			10/03/17	PME8		23.65		1,733.78
			03/05/18	PME9		23.18		1,734.25
			06/21/18	PME10		23.73		1,/33.70
			07/17/17			23.74		1,733.68
			08/22/17	PME6		23.96		1,733.46

							1
CTMW-06D	34 - 54	1,757.42	09/19/17	PME7	 23.95		1,733.47
			10/03/17	PME8	 23.95		1,733.47
			03/05/18	PME9	 23.55		1,733.87
			06/21/18	PME10	 23.97		1,733.45
			10/09/17	PME8	 Well is dry		
CTMW-07S	19 - 24	1,757.50	03/05/18	PME9	 23.82		1,733.68
			06/21/18	PME10	 Well is dry		
			10/09/17	PME8	 21.15		1,736.23
CTMW-07D	100 - 115	1,757.38	03/05/18	PME9	 20.52		1,736.86
			06/21/18	PME10	 20.71		1,736.67

Notes:

- amsl Above mean sea level
- bgs btoc EVO PME
- Below ground surface Below top of casing Emulsified Vegetable Oil Performance Monitoring Event Not Measured
- - Groundwater elevations for wells with EVO product are corrected using an average specific gravity of 0.965
- 2 Interface probe was unable to obtain any reading due to injectates in the well.



Appendix C CTMW-07D and CTMW-07S Well Installation Technical Memorandum



TECHNICAL MEMORANDUM

To:	Arul Ayyaswami, Tetra Tech
Cc:	Dana Grady, Tetra Tech
From:	Carl Lenker, Tetra Tech
Date:	January 12, 2018
Subject:	CTMW-07D and CTMW-07S Well Installation, Remedial Investigation Phase 2 Modification No. 7

1.0 INTRODUCTION

On behalf of the Nevada Environmental Response Trust (NERT or Trust), Tetra Tech, Inc. (Tetra Tech) has prepared this technical memorandum documenting the recent installation of groundwater monitoring wells CTMW-07S and CTMW-07D in the Central Retention Basin at the NERT site (Site), located in Clark County, Nevada (Figure 1). This technical memorandum presents a summary of the well installation and sampling activities performed for the installation of monitoring wells CTMW-07S and CTMW-07D in accordance with the NDEP-approved *RI Phase 2 Modification No. 7* (Tetra Tech, Inc., 2017).

2.0 MONITORING WELL INSTALLATION

Monitoring wells CTMW-07S and CTMW-07D were installed within the Central Retention Basin to better understand the vertical distribution of perchlorate and other chemicals of potential concern (COPCs) in the Upper Muddy Creek Formation (UMCf) within the Central Retention Basin. This section presents details of the installation activities, field observations, and data collected for these wells.

2.1 Installation Activities

Field work associated with the installation of monitoring wells CTMW-07S and CTMW-07D was conducted from September 21 to September 23, 2017. Locations of the monitoring wells are presented in Figure 2.

2.1.1 Pre-Drilling Activities

Tetra Tech, on behalf of NERT, prepared and submitted all required applications and obtained required permits prior to the installation of the two monitoring wells. A Monitoring Well Drilling Waiver (Nevada Administrative Code [NAC] 534.441) and a Notice of Intent to Drill Card (NAC 534.320) were submitted to

the Nevada Division of Water Resources (NDWR). The Monitoring Well Drilling Waiver also included a completed, signed, and notarized Affidavit of Intent to Plug a Monitoring Well as a required attachment.

Prior to performing intrusive field work, a geophysical survey was performed to identify any potential subsurface utilities at each boring location. The geophysical survey was conducted by Ground Penetrating Radar Systems, Inc. of Las Vegas, Nevada. In addition, all boring locations were cleared for subsurface utilities to a depth of 8 feet or to the top of a competent soil layer using a vacuum excavation rig operated in air mode. The vacuum excavation rig was operated by Cascade Drilling, LP (Cascade) of Las Vegas, Nevada.

2.1.2 Monitoring Well Installation

Two soil borings, designated CTMW-07S and CTMW-07D, were drilled within the Central Retention Basin using the hollow stem auger method by Cascade. Soil borings for CTMW-07S and CTMW-07D were advanced to a depth of 25 and 130 feet below ground surface (bgs), respectively. The soil borings were logged by a trained geologist in general accordance with ASTM International (ASTM) Standard D-2488-09 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) (ASTM International, 2009a). The soil boring logs are provided in Attachment A.

During drilling activities, soil samples were collected from the deep boring only at approximately 10-foot intervals starting at a depth of 60 feet bgs to the total depth of the boring. Soil samples were transported to TestAmerica Laboratories and analyzed for perchlorate (Method E314.0), hexavalent chromium (Method SW7199), chlorate (Method 300.1B), total chromium (Method 6010B), and chloroform (Method 8260B). Soil analytical results are presented in Table 1 and copies of the laboratory reports are provided in Attachment B. These results will be included in a data validation summary report submitted as part of the forthcoming *In-Situ Chromium Treatability Study Results Report*.

Two undisturbed soil samples were also collected at 22 feet bgs from soil boring CTMW-07S and 108 feet bgs from soil boring CTMW-07D using a 2.5-inch inside diameter, 18-inch long California split barrel sampler lined with three six-inch long, 2.5-inch diameter stainless steel sleeves. Upon retrieval from the borehole, the lowermost sleeve was removed from the sampler and the ends of the sleeve were covered with Teflon[™] sheets and tightly-fitting plastic caps. Samples were analyzed for physical properties (dry bulk density, grain density, porosity, and moisture content) by PTS Laboratories (PTS) of Santa Fe Springs, California. A copy of the PTS laboratory report is provided in Attachment C.

Grab groundwater samples were collected from the soil boring CTMW-07D at depths of 50 and 70 feet bgs to further assess the vertical distribution of contaminants in groundwater within the Central Retention Basin. A SimulProbe sampler was utilized to target the specific saturated intervals. The SimulProbe sampler was driven into the ground at the selected intervals by a hammer. The SimulProbe sampler was then lifted up a few inches, which opened up a hidden compartment and provided a pathway for water to channel into the canister. The water canister was closed by back pressurization and utilized compressed gas to lift the water sample to the surface through a network of tubing and check valves. Grab groundwater samples were transported to TestAmerica Laboratories for analysis of chlorate (Method 300.1B), chloroform (Method 8260B), hexavalent chromium (Method 7199), perchlorate (Method 314.0), and total chromium (Method 6010B). Grab groundwater analytical results are presented in Table 2 and laboratory reports are provided in Attachment B. These results will be included in a data validation summary report submitted as part of the forthcoming *In-Situ Chromium Treatability Study Results Report*.

After drilling to the target depth, the soil borings were converted into groundwater monitoring wells constructed of 2-inch Schedule 80 polyvinyl chloride (PVC), with screened intervals constructed of 0.010-inch slotted, 2-inch Schedule 80 PVC. Groundwater monitoring well CTMW-07S was constructed with a screen interval of 19 to 24 feet bgs. Groundwater monitoring well CTMW-07D was constructed with a screen interval of 100 to 115 feet bgs. Both wells were constructed utilizing a #2/16 sand filter pack,

placed from approximately 1 foot below to 2 feet above the screened intervals. A 5-foot hydrated bentonite seal was added above the top of the sand filter pack. Wells were cemented in place utilizing a neat cement grout consisting of 5% bentonite and 95% portland cement and completed with flush-mounted well vaults.

After installation, monitoring well CTMW-07D was developed from October 3 to October 5, 2017 following industry standard operating procedures. The well was developed using a surge block and bailer to swab and surge the filter pack and remove sediment. This process was followed by pumping with a submersible pump to purge the well of fine-grained sediment. Well development was considered complete when three to ten casing volumes of water had been removed from the well and index parameters (consisting of pH, specific conductivity, turbidity and temperature) were stable over three consecutive measurements.

Once all monitoring well installation activities were complete, a licensed land surveyor surveyed the horizontal coordinates of each well relative to North American Datum 83 with an accuracy of 0.1 foot. The elevation of the ground surface and top of well casing measuring point relative to North American Vertical Datum 88 was surveyed with accuracies of 0.1 foot and 0.01 foot, respectively. The survey data is included on the boring and well construction logs provided in Attachment A.

2.1.3 Management of Investigation-Derived Wastes

Investigation-derived waste generated during the well installations were managed according to applicable state, federal, and local regulations and as described in Field Guidance Document No. 001, Managing Investigation-Derived Waste (Environ, 2014). The investigation-derived waste that was generated during the well installations includes soil cuttings, equipment decontamination water, groundwater generated during depth-discrete groundwater sampling, and well development. Investigation-derived soil waste was stored in plastic-lined roll-off bins. Solids were characterized by collecting representative samples, as necessary, to determine disposal options. Waste water generated during well development or decontamination activities were temporarily stored in 250-gallon totes and 5-gallon buckets with lids and transferred into the GW-11 Pond. Soil bins were labeled with "pending analysis" labels, the date accumulation began, contents, source, and contact information, and stored in a designated area.

3.0 REFERENCES

- ASTM International. (2009a). Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). Standard D-2488-06.
- ASTM International. (2009b). Standard Test Method for Infiltration Rate of Soils in Field Using Double Ring Infiltrometer. ASTM Standard D3385-09.
- Environ. (2014). Field Guidance Document No. 001, Managing Investigation-Derived Waste.
- Ramboll Environ. (2015). Annual Remedial Performance Report for Chromium and Perchlorate, Nevada Environmental Response Trust Site, Henderson, Nevada.
- Ramboll Environ. (2016a). *Remedial Investigation Data Evaluation, Nevada Environmental Response Trust Site, Henderson, Nevada.* Technical Memorandum.
- Tetra Tech, Inc. (2017). *RI Phase 2 Modification No. 7, Nevada Environmental Response Trust, Henderson, Nevada.*

Tables

Table 1 Summary of Soil Analytical Results

Remedial Investigation Phase 2 Modification No. 7

Boring ID	Sample Depth (ft bgs)	Sample ID	Sample Date	Chlorate by USEPA Method 300.1B (mg/kg)	Perchlorate by USEPA Method 314.0 (mg/kg)	Hexavalent Chromium by USEPA Method 7199 (mg/kg)	Total Chromium by USEPA Method 6010B (mg/kg)	Chloroform by USEPA Method 8260B (mg/kg)
	60.0	CTMW-07D-60.0-20170921	09/21/17	290	140	0.19	15	0.061
CMTW-07D	70.0	CTMW-07D-70.0-20170921	09/21/17	140	70	<0.094	27	0.021
	80.0	CTMW-07D-80.0-20170921	09/21/17	2.7	1.2 J-	<0.21	13	<0.0028
	90.0	CTMW-07D-90.0-20170921	09/21/17	0.18 J	0.079	<0.21	34	<0.0028
	90.0	CTMW-07D-90.0-20170921-FD	09/21/17	0.18 J	0.091	<0.21	34	<0.0029
	100.0	CTMW-07D-100.0-20170921	09/21/17	2.8	5.8	<0.23	35	<0.0030
	110.0	CTMW-07D-110.0-20170921	09/21/17	6.5	3.0	<0.23	170	<0.0036
	120.0	CTMW-07D-120.0-20170922	09/22/17	0.67	0.36	<0.27	58	<0.0035
	130.0	CTMW-07D-130.0-20170922	09/22/17	0.94	0.40	<0.22	28	<0.0029

Notes:

- ID Identification
- USEPA United States Environmental Protection Agency
- ft bgs Feet below ground surface
- mg/kg Milligram per kilogram
- < Denotes concentration is less than the laboratory method detection limit indicated.
- 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.
- FD Field Duplicate

Table 2 Summary of Groundwater Grab Sample Analytical Results

Remedial Investigation Phase 2 Modification No. 7

Boring ID	Sample Depth (ft bgs)	Sample ID	Sample Date	Chlorate by USEPA Method 300.1B (mg/L)	Perchlorate by USEPA Method 314.0 (mg/L)	Hexavalent Chromium by USEPA Method 7199 (mg/L)	Total Chromium by USEPA Method 6010B (mg/L)	Chloroform by USEPA Method 8260B (mg/L)
CTMW-07D	50.0	CTMW-07D-50.0-20170921	9/21/2017	2,800	880	11	11	0.72
	70.0	CTMW-07D-70.0-20170921	9/21/2017	2,000	700	<0.00025	3.5	0.5

Notes:

- ID Identification
- USEPA United States Environmental Protection Agency
- mg/L Milligram per liter
- ft bgs Feet below ground surface
- < Denotes concentration is less than the laboratory method detection limit indicated.

Figures




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Attachment A Boring and Well Construction Logs

	T	b ™	TRA T	Teen 17 Irv Teen 5	etra Tec 7885 Vc vine, CA elephon	ch on Kar A 9261 e: (94	man Avenue, Suite 500 4 9) 809-5000 5010	BORING	NUM	BER CTMW-07D PAGE 1 OF 6		
	CLIEN	IT Neva	da Environr	mental Res	sponse	Trust ((NERT)	PROJECT NAME NERT RI Phase 2	Mod. 7			
	PROJ		IBER 117-	-7502918				PROJECT LOCATION Henderson. N	V			
	DATE	STARTE	D 9/21/17		COM	IPLET	ED 9/23/17	NORTHING: 26719284.26 US feet	EASTI	NG: 828212.828 US feet		
	DRILL	ING CON	TRACTOR	Cascade	Drilling	1		GROUND ELEVATION 1757 377 ft	HOLE	SIZE 8 in		
		ING MET	HOD Holl	ow Stem A	uger	,		GROUND WATER LEVELS		<u> </u>		
			leff Riches	on	CHE	CKED	BY M Crews	∇ AT TIME OF DRILLING : 22.50	ft / Flev 1	1734 88 ft		
	NOTE	S Well (completed v	with and 18	 " traffic	-rated	well box	\mathbf{V} AFTER DRILLING: 21.15 ft / E	lev 1736	23 ft		
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3P.J	o DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTA DATA	GRAPHIC LOG		MATI	ERIAL DESCRIPTION	Ca	CONSTRUCTION DIAGRAM		
ENTAL BH - GINT STD US.GDT - 1/14/19 18:07 - P.\87600M12-18\WORKING\IN-SITU CR TREATABILITY TESTFIELD PROGRAMBORING LOGS(GINT)(ALL) NERT LOGS.GPJ						10.0	(SM) Silty SAND, (1) brown, fine to coarse dense, dry. (Alluviun (SM) Silty SAND with 7.5YR 6/4 light brow grained sand, dense (SW) SAND with Silt 10YR 4/4 dark yellov sand, gravel <3" SA (SW) SAND with Gra dark yellowish browr grained sand, dense	0, 65, 25, 0) (50, 30, 20), 7.5 YR 5/4 e grained sand, gravel <3" A/SA, n) h Gravel, (15, 55, 30, 0) (60, 40, 0), n, gravel <1.5" A/SR, fine to medium , dry. (Alluvium) t and Gravel, (15, 70, 15, 0) (30, 40, 30), wish brown, fine to coarse grained /SR, dense, moist. (Alluvium) avel, (15, 80, 5, 0) (25, 35, 40), 10YR 4/4 h, gravel <2" SA/SR, fine to coarse e, moist. (Alluvium)	Ca	sing Type: Schedule 80 PVC		
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		E) ⊥E	TRA T	Te 17 ECH Irv	etra Tec '885 Vo vine, CA	h n Ka 926	rman Avenue, Suite 500 14	NUN	IBER CTMW-07D PAGE 2 OF 6
_				Te Fa	elephon ax: (949	e: (94) 809	49) 809-5000 I-5010		
		T <u>Neva</u>	da Environn	nental Res	ponse	Trust	(NERT) PROJECT NAME NERT RI Phase 2 M	/lod. 7	
Ľ	ROJ		IBER _11/-	-/502918 			PROJECT LOCATION _Henderson, NV	/	
Ē	UEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTA DATA	GRAPHIC LOG		MATERIAL DESCRIPTION		CONSTRUCTION DIAGRAM
ENVIRONMENTAL BH - GINT STD US.GDT - 1/14/19 18:07 - P:\87600M12-18\WORKINGIN-SITU CR TREATABILITY TESTFIELD PROGRAMBORING LOGS\GINT\(ALL) NERT LOGS\GPJ		o SS	22-21-24 (45)			22.0 22.5 24.0 25.0 40.0	 (SW) SAND, (5.85, 10, 0) (30, 50, 20), 10YR 6/3 pale brown, gravel <1" SA/SR, fine to coarse grained sand, dense, moist. (Alluvium) (continued) (SM) Silty SAND, (0.75, 25, 0) (30, 45, 25), 10YR 6/3 pale brown, fine to coarse grained sand, cemented, very dense, moist. (Alluvium) (SW) SAND, (10, 80, 10, 0) (30, 40, 30), 10YR 6/3 pale brown, gravel <3" SA/SR, medium dense to dense, wet. (Alluvium) (ML) SILT with Sand, (0, 25, 75, 0) (100, 0, 0), 10YR 6/3 ight brown, nedium to high plasticity, firm to stiff, moist. (UMCf) (ML) Clayey SILT, (0, 1, 74, 25) (100, 0, 0), 7.5 YR 6/3 light brown, medium to high plasticity, cemented nodules <0.5" SR present throughout interval, stiff, moist. (UMCf) (ML) Clayey SILT, (0, 1, 74, 25) (100, 0, 0), 7.5 YR 6/3 light brown, high plasticity, cemented nodules <1" SA/SR present throughout interval (~20% of sample white cemented nodules), stiff, moist. (UMCf) (ML) SILT, (0, 0, 95, 5), 7.5YR 4/6 strong brown, trace of cemented white nodules /1" SR, low to medium plasticity, stiff to very stiff, moist. (UMCf) (ML) Clayey SILT, (0, 0, 75, 25), 7.5YR 5/4 brown, high plasticity, firm, wet. (UMCf) 	7 <u>35.4</u> 7 <u>33.4</u> 7 <u>32.4</u> 7 <u>32.4</u> 7 <u>17.4</u>	2" Schedule 80 PVC

F	₽™	TRA T	Te 178 Irvi	tra Tec 885 Vo ne, CA	h n Kar 9261	man Avenue, Suite 500 A Dig 200 5000 BORING NUMBER CTMW-07D PAGE 3 OF 6
		de Fasinera	Fa:	iepnon x: (949	e: (94) 809- Trust	9) 809-5000 5010 (NEDI) DDO JECT NAME NEDI DI Disco 2 Mod 7
PRO		IDA Environn IBER 117-	7502918	onse	Trust	PROJECT NAME <u>NERT RI Priase 2 Mod. 7</u> PROJECT LOCATION Henderson, NV
			AL			
(U) HLdad 45	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENT. DATA	GRAPHIC LOG		MATERIAL DESCRIPTION CONSTRUCTION DIAGRAM
	-				<u>50.0</u>	(ML) SILT, (0,0,95,5), 7.5YR 4/6 strong brown, trace of cemented white nodules <1" SR, low to medium plasticity, stiff to very stiff, moist. (UMCf) (continued) (5%Bentonite/95% Portland Cement) (5%Bentonite/95% Portland Cement) (ML) Clayey SILT, (0,0,70,30), 7.5YR 4/6 strong brown, trace of cemented white nodules <1" SR, high plasticity, stiff, wet. (UMCf) (ML) SILT, (0,0,95,5), 7.5YR 4/6 strong brown, trace of (ML) SILT, (0,0,95,5), 7.5YR 4/6 strong brown, trace of
BWORKINGIN-SITU CR TREATABILITY TESTVFIEL					<u>57.0</u>	cemented white nodules <1" SR, low to medium plasticity, stiff to very stiff, moist. (UMCf)
ENVIRONMENTAL BH - GINT STD US.GDT - 1/14/19 18:07 - P:\87600M12-18	SS - - - - -	7-9-9 (18)			63.0 63.5 65.0 67.0	(ML) SILT, (0,0,95,5), 7.5YR 4/6 strong brown, trace of cemented white nodules <1" SR, low to medium plasticity, stiff to very stiff, moist. (UMCf) (SP-SC) SAND with Clay, (0,80,0,20) (0,30,70), 10YR 3/3 dark brown, medium to coarse grained sand, dense, wet. (UMCf) (ML) SILT, (0,0,95,5), 7.5YR 4/6 strong brown, trace of cemented white nodules <1" SR, low to medium plasticity, stiff to very stiff, moist. (UMCf) (ML) Clayey SILT, (0,0,70,30), 7.5YR 4/6 strong brown, high plasticity, stiff, wet. (UMCf) (ML) SILT, (0,0,95,5), 7.5YR 4/6 strong brown, cemented white nodules <3" SR (~35% of sample comprised of cemented nodules, low to medium plasticity, stiff to very stiff, moist. (UMCf)

		L) ⊥E	TRA T	Te 17 Irv	tra Teo 885 Vo ine, CA	ch on Kar A 926 <i>'</i>	man Avenue, Suite 500	MBER CTMW-07D PAGE 4 OF 6
	Ľ			Te Fa	lephon x: (949	ie: (94)) 809·	9) 809-5000 5010	
	CLIEN	T Neva	da Environr	mental Res	ponse	Trust	(NERT) PROJECT NAME NERT RI Phase 2 Mod.	7
	PROJ		IBER <u>117</u> -	7502918	1	1	PROJECT LOCATION Henderson, NV	
	DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAI DATA	GRAPHIC LOG		MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
		ss	7-10-12 (22)				(ML) SILT, (0,0,95,5), 7.5YR 4/6 strong brown, trace of cemented white nodules <1" SR, low to medium plasticity, stiff to very stiff, moist. (UMCf) <i>(continued)</i>	
GINTI(ALL) NERT LOGS.GPJ		/ \				75.0	(ML) SILT, (0,0,95,5), 7.5YR 4/6 strong brown, cemented white nodules <3" SR (~35% of sample comprised of cemented nodules), low to medium plasticity, stiff to very stiff, moist. (UMCf) (ML) SILT, (0,0,95,5), 7.5YR 4/6 strong brown, trace of cemented white nodules <1" SR, low to medium plasticity, stiff to very stiff, moist. (UMCf)	
ELD PROGRAMBORING LOGS/						78.0	(ML) Clayey SILT, (0,0,70,30), 7.5YR 4/6 strong brown, high plasticity, stiff, wet. (UMCf) (ML) SILT, (0,0,95,5), 10YR 5/4 yellowish brown, white compared podules present <0.75" low plasticity, stiff	
I-SITU CR TREATABILITY TEST/FI	 80 	ss	12-12-10 (22)			80.0	(SP-SC) SAND with Clay, (0,80,0,20) (0,30,70), 10YR 3/3 dark brown, medium to coarse grained sand, dense, wet. (UMCf) (ML) Clayey SILT, (0,0,70,30), 7.5YR 4/6 strong brown, high plasticity, stiff, wet. (UMCf)	
S.GDT - 1/14/19 18:07 - P:\87600M12-18\WORKING\IN	 <u>85</u> 					<u>85.5</u>	(ML) SILT, (0,0,95,5), 7.5YR 4/6 strong brown, trace of cemented white nodules <1" SR, low to medium plasticity, stiff to very stiff, moist. (UMCf)	
ENVIRONMENTAL BH - GINT STD US	 	ss	3-3-23 (26)			90.0 91.0 92.5	(ML) Clayey SILT, (0,0,70,30), 7.5YR 4/6 strong brown, high plasticity, stiff, wet. (UMCf) 1666.4 (ML) SILT, (0,0,100,0), 10YR 6/3 pale brown, ~50% of sample comprised of cemented nodule, highly reactive to HCL, non plastic, very hard, moist to wet. (UMCf) 1664.9	

		₽™	TRA T	Tet 178 Irvi	tra Teo 385 Vo ne, CA	BORING NU Narman Avenue, Suite 500 92614	MBER CTMW-07D PAGE 5 OF 6
				Tel Fa	ephon x: (949	:: (949) 809-5000 809-5010	
	CLIEN	T Neva	da Environr	nental Resp	onse	rust (NERT) PROJECT NAME NERT RI Phase 2 Mod.	7
	PROJ		IBER <u>117-</u>	7502918	1	PROJECT LOCATION _Henderson, NV	
	DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
4/19 18:07 - P'\00068000012-18\00078KING\IN-SITU CR TREATABILITY TESTIFIELD PROGRAMIBORING LOGS\GINIT\ALL) NERT LOGS\GPJ		SAMPLE SAMPLE Sample	0-7-15 (22) 4-4-13 (17)	ENVIRON	GRAF	(ML) Clayey SILT, (0,0,70,30), 7.5YR 4/6 strong brown, high plasticity, stiff, wet. (UMCf) (continued) (ML) Clayey SILT, (0,0,75,25), 7.5YR 5/4 brown, cemented nodules present <0.5", high plasticity, firm, wet. (UMCf)	CONSTRUCTION DIAGRAM
ENVIRONMENTAL BH - GINT STD US.GDT - 1/1	 _ <u>115</u> 					(ML) Clayey SILT, (0,0,75,25), 10YR 5/4 yellowish brown, cemented nodule present at 119' bgs, high plasticity, stiff, moist. (UMCf)	+#2/16 Sand

	Т	TRA T	Te 17a Irvi	tra Tech 885 Vor ne, CA	BORING N Karman Avenue, Suite 500 92614	NUMBER CTMW-07D PAGE 6 OF 6
Ŀ			Te	lephone x [.] (949)	: (949) 809-5000 809-5010	
CLIEN	IT Neva	da Environr	mental Res	ponse T	rust (NERT) PROJECT NAME NERT RI Phase 2 M	lod. 7
PROJ	ECT NUM	IBER 117-	-7502918		PROJECT LOCATION Henderson, NV	,
DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	ENVIRONMENTAL DATA	GRAPHIC LOG	MATERIAL DESCRIPTION	CONSTRUCTION DIAGRAM
					(ML) Clayey SILT, (0,0,75,25), 10YR 5/4 yellowish brown, cemented nodule present at 119' bgs, high plasticity, stiff, moist. (UMCf) <i>(continued)</i>	
_ 120	ss	6-9-12 (21)			(ML) Clayey SILT, (0,0,70,30), 10YR 5/4 yellowish brown, high plasticity, hard, moist. (UMCf)	
 _ 125 					(ML) Clayey SILT, (0,0,75,25), 10YR 5/4 yellowish brown, cemented nodules present (~10% of sample comprised of cemented nodules), high plasticity, stiff, moist. (UMCf)16 (ML) 100% of sample is comprised of cemented nodule, highly reactive to HCL, 10YR 8/1 white. (UMCf)	- Hydrated Bentonite Pellets
					127.0 16 (CH) Silty CLAY, (0,0,40,60), 10YR 8/1 white, highly weathered cemented nodule, high plasticity, hard, moist. (UMCf) 16 (ML) 100% of sample is comprised of cemented nodule, highly reactive to HCL, 10YR 8/1 white, (UMCf)	<u>30.4</u> <u>28.9</u>
130	ss	8-50			5 .,,,	
	/ \				131.5	25.9
					Bottom of borehole at 131.5 feet.	

	T	E) ™	TRA T	Te 17 Irv Te	etra Teo 7885 Vo vine, CA elephon	h n Karı 9261 e: (949	man Avenue, Suite 50 4 9) 809-5000 5010	BORING	NU	MBE	PAGE 1 OF 2		
		IT Neva	da Environn	nental Res	ax: (949 sponse) 809- Trust (5010 (NERT)	PROJECT NAME NERT RI Phase 2	2 Mod.	7			
	PROJ	ECT NUN	IBER 117-	7502918				PROJECT LOCATION Henderson, I	NV				
	DATE	STARTE	D 9/23/17		COM	PLET	ED 9/23/17	NORTHING: 26719283.85 US feet	EA	STING:	828206.898 US feet		
	DRILL		TRACTOR	Cascade	Drilling			GROUND ELEVATION 1757.501 ft	н	OLE SIZ	E 8 in		
	DRILL	ING MET	HOD Hollo	ow Stem A	uaer			GROUND WATER LEVELS:					
	LOGG	ED BY	Jeff Richeso	on	CHE	CKED	BY M. Crews	\square AT TIME OF DRILLING: 22.50	D ft / Ele	ev 1735	.00 ft		
,	NOTE	S Well o	completed w	vith and 18	- 5" traffic	-rated	well box.	AFTER DRILLING:					
	DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	IVIRONMENTAL DATA	GRAPHIC LOG	OHDO MATERIAL DESCRIPTION				CONSTRUCTION DIAGRAM			
GP	0	0)		Ш						Casing T	Type: Schedule 80 PVC		
TU CR TREATABILITY TESTIFIELD PROGRAMBORING LOGS/GINTI/(ALL) NERT LOGS	- - - - - - - - - - - - - - - - - - -					<u>10.0</u>	(SM) Silty SAND, (brown, fine to coars dense, dry. (Alluviu (SM) Silty SAND w 7.5YR 6/4 light bro grained sand, dens	It and Gravel (15,70,15,0) (30,40,0), where the standard	1747.5		Neat Cement Grout (5% Bentonite/95% Portland Cement) 2" Schedule 80		
18:07 - P:\87600M12-18\WORKING\IN-SITI	- - -					15.0	(SW) SAND with S 10YR 4/4 dark yelk sand, gravel <3" S/	lt and Gravel, (15,70,15,0) (30,40,30), wish brown, fine to coarse grained VSR, dense, moist. (Alluvium)	1742 5		► Hydrated Bentonite		
SONMENTAL BH - GINT STD US.GDT - 1/14/19						20.0	(SW) SAND with G dark yellowish brow grained sand, dens	ravel, (15,80,5,0) (25,35,40), 10YR 4/4 n, gravel <2" SA/SR, fine to coarse e, moist. (Alluvium)	<u>1742.0</u>				
INVIR											┿-#2/16 Sand		
ш					<u> </u>	. <u> </u>	((Continued Next Page)			1. J		



ENVIRONMENTAL BH - GINT STD US.GDT - 1/14/19 18:07 - P:\87600M12-18\WORKING\IN-SITU CR TREATABILITY TESTFIELD PROGRAMBORING LOGS\GINT\(ALL) NERT LOGS\GPJ

Attachment B Analytical Laboratory Reports



THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-192727-1

Client Project/Site: NERT In-Situ Cr Treatability, M12

For:

Tetra Tech, Inc. 17885 Von Karman Ave, Ste 500 Irvine, California 92614

Attn: Mike Crews

ADNI.

Authorized for release by: 10/9/2017 3:27:44 PM Patty Mata, Senior Project Manager (949)261-1022

patty.mata@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Lab Chronicle	13
QC Sample Results	18
QC Association Summary	28
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Certification Summary	34
Chain of Custody	35
Receipt Checklists	36

Matrix

Water

Solid

Water

Solid

Water

Solid

Solid

Solid

Solid

Water

Solid

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

Client Sample ID

Trip Blank

CTMW-07D-50.0-20170921

CTMW-07D-60.0-20170921

CTMW-07D-70.0-20170921

CTMW-07D-70.0-20170921

CTMW-07D-80.0-20170921

CTMW-07D-90.0-20170921

CTMW-07D-100.0-20170921

CTMW-07D-110.0-20170921

CTMW-07.D-60.0-20170921-EB

CTMW-07D-90.0-20170921-FD

Lab Sample ID

440-192727-1

440-192727-2

440-192727-3

440-192727-4

440-192727-5

440-192727-6

440-192727-7

440-192727-8

440-192727-9

440-192727-10

440-192727-11

TestAmerica Job ID: 440-192727-1

Received

09/21/17 18:51

09/21/17 18:51

09/21/17 18:51

09/21/17 18:51

09/21/17 18:51

09/21/17 18:51

09/21/17 18:51

09/21/17 18:51

09/21/17 18:51

09/21/17 18:51

09/21/17 18:51

Collected

09/21/17 11:25

09/21/17 11:50

09/21/17 13:15

09/21/17 13:20

09/21/17 07:00

09/21/17 13:50

09/21/17 14:35

09/21/17 15:05

09/21/17 15:25

09/21/17 12:20

09/21/17 14:35

1 2 3 4 5 6 7 8 9 10 11

Job ID: 440-192727-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-192727-1

Comments

No additional comments.

Receipt

The samples were received on 9/22/2017 7:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.5° C and 4.0° C.

GC/MS VOA

Method(s) 8260B: Internal standard (ISTD) response for 1,4-Dichlorobenzene-d4 for the following sample was outside acceptance criteria: CTMW-07D-90.0-20170921-FD (440-192727-11). This ISTD does not correspond to any of the requested target compounds; therefore, the data have been reported.

Method(s) 8260B: The samples were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, when verified by the laboratory, the pH was 6 and the following samples was analyzed after 7 days from sampling: CTMW-07D-50.0-20170921 (440-192727-1) and CTMW-07D-70.0-20170921 (440-192727-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HPLC/IC

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

RL

Result Qualifier

MDL Unit

D

Prepared

Date Collected: 09/21/17 11:25

Date Received: 09/21/17 18:51

Analyte

Dichloroacetic acid(Surr)

Client Sample ID: CTMW-07D-50.0-20170921

Method: 8260B - Volatile Organic Compounds (GC/MS)

TestAmerica Job ID: 440-192727-1

Lab Sample ID: 440-192727-1

Analyzed

Matrix: Water

Dil Fac

5

Chloroform	720		5.0	2.5	ug/L			10/02/17 16:41	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		80 - 120					10/02/17 16:41	10
Dibromofluoromethane (Surr)	114		76 - 132					10/02/17 16:41	10
Toluene-d8 (Surr)	106		80 - 128					10/02/17 16:41	10
Method: 300.1B - Disinfection	By-Products. (IC)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorate	2800000		200000	100000	ug/L			09/26/17 02:13	10000
Surrogate	%Recovery	Qualifier	l imits				Prenared	Analyzed	Dil Fac
Dichloroacetic acid(Surr)		quamer						00/26/17 02:13	10000
	37		90 - 115					09/20/11 02.13	10000
Method: 314.0 LL - Perchlorate	e (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	880000		10000	5000	ug/L			10/04/17 09:14	10000
 Method: 7199 - Chromium, He	xavalent (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	11000		2000	250	ug/L			09/22/17 08:13	1000
- Mothod: 6010P Motols (ICP)	Total Bacawarak								
Analyte	- Total Recoverat	Qualifier	RI	мы	Unit	р	Prenared	Analyzed	Dil Fac
Chromium			0.025	0.013	mg/L		09/28/17 10:15	09/28/17 18:33	5
Client Sample ID: CTMW-0)7D-60.0-20170	921					Lab Samp	le ID: 440-19	2727-2
Date Collected: 09/21/17 11:50								Matri	x: Solid
Date Received: 09/21/17 18:51								Percent Soli	ds: 79.0
Method: 8260B - Volatile Orga	nic Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	61		2.5	1.3	ug/Kg	\		09/28/17 14:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		79 - 120					09/28/17 14:20	1
Dibromofluoromethane (Surr)	102		60 - 120					09/28/17 14:20	1
Toluene-d8 (Surr)	108		79 - 123					09/28/17 14:20	1
- Mathad: 300 1B - Disinfaction	By-Products //C) - Solublo							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorate	290000		51000	13000	ug/Kg	<u></u>		09/28/17 07:57	200
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
	,	_					1.0000.00	////////	2 uc

 Method: 314.0 - Perchlorate (IC) - 3	Soluble						
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	140	25	6.0 mg/Kg	<u> </u>		10/07/17 11:38	500

90 - 115

96

TestAmerica Irvine

09/28/17 07:57

200

TestAmerica Job ID: 440-192727-1

Client Sample ID: CTMW-07	D-60.0-20170	921					Lab Samp	ie ID: 440-19	2727-2
Date Collected: 09/21/17 11:50								Matri	x: Solid
Date Received: 09/21/17 18:51								Percent Soll	as: 79.0
Method: 7199 - Chromium, Hexa	avalent (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	0.19		0.13	0.063	mg/Kg	¢	09/25/17 09:22	09/26/17 14:29	1
Method: 6010B - Metals (ICP)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	15		1.3	0.63	mg/Kg	 	09/28/17 07:51	09/28/17 15:34	5
	Result	Qualifier	RI	МОІ	Unit	п	Prenared	Analyzed	Dil Fac
Percent Moisture	21.0		0.1	0.1	%			09/22/17 17:05	1
Client Sample ID: CTMW-07	'D-70.0-20170	921					Lab Samp	le ID: 440-19	2727-3
Date Collected: 09/21/17 13:15								Matrix	c: Water
Date Received: 09/21/17 18:51									
Method: 8260B - Volatile Organ	ic Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	500		5.0	2.5	ug/L			10/02/17 17:11	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
4-Bromofluorobenzene (Surr)	98		80 - 120					10/02/17 17:11	10
Dibromofluoromethane (Surr)	115		76 - 132					10/02/17 17:11	10
Toluene-d8 (Surr)	108		80 - 128					10/02/17 17:11	10
- Mothod: 300 1B - Disinfection B	N Products (IC	`							
Analyte	Result	/ Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorate	2000000		200000	100000	ug/L			09/26/17 02:49	10000
Surrogate	%Recovery	Qualifier	l imits				Pronarod	Analyzed	Dil Fa
Dichloroacetic acid(Surr)		Quanner	90 - 115					09/26/17 02:49	10000
Method: 314.0 LL - Perchlorate	(IC)					_			
Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
	700000		10000	5000	uy/L			10/04/17 09.32	10000
Method: 7199 - Chromium, Hexa	avalent (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		2.0	0.25	ug/L			09/22/17 08:26	1
Method: 6010B - Metals (ICP) - 1	Total Recoverat	he							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	3.5		0.050	0.025	mg/L		09/28/17 10:15	09/29/17 10:13	10
Client Sample ID: CTMW-07	D-70.0-20170	921					Lab Samp	le ID: 440-19	2727-4
Date Collected: 09/21/17 13:20								Matri	x: Solid
Date Received: 09/21/17 18:51								Percent Soli	as: 53.5
Method: 8260B - Volatile Organi	ic Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	21		3.7	1.9	ug/Kg	Å		09/28/17 14:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
- 4-Bromofluorobenzene (Surr)			79 - 120					09/28/17 14:46	1

4-Bromofluorobenzene (Surr)

TestAmerica Job ID: 440-192727-1

Client Sample ID: CTMW-0	ent Sample ID: CTMW-07D-70.0-20170921								Lab Sample ID: 440-192727-4			
Date Collected: 09/21/17 13:20							-	Matri	x: Solid			
Date Received: 09/21/17 18:51								Percent Solie	ds: 53.5			
Method: 8260B - Volatile Orga	nic Compounds ((GC/MS) (Co	ontinued)									
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac			
Dibromofluoromethane (Surr)	103		60 - 120				·	09/28/17 14:46	1			
Toluene-d8 (Surr)	106		79 - 123					09/28/17 14:46	1			
 Method: 300 1B - Disinfection	By-Products (IC) - Soluble										
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Chlorate	140000		38000	9400	ug/Kg	<u></u>		09/28/17 04:56	100			
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac			
Dichloroacetic acid(Surr)	97		90 - 115					09/28/17 04:56	100			
Method: 314.0 - Perchlorate (IC	C) - Soluble											
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Perchlorate	70		3.7	0.88	mg/Kg	¢		10/06/17 21:45	50			
Method: 7199 - Chromium, He	xavalent (IC)											
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Chromium, hexavalent	ND		0.19	0.094	mg/Kg	¢	09/25/17 09:22	09/26/17 14:41	1			
Method: 6010B - Metals (ICP)												
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Chromium	27		1.8	0.92	mg/Kg	<u></u>	09/28/17 07:51	09/28/17 15:36	5			
General Chemistry												
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac			
Percent Moisture	46.5		0.1	0.1	%			09/22/17 17:05	1			
Client Sample ID: Trip Blar	nk						Lab Samp	le ID: 440-19	2727-5			

Client Sample ID: Trip Blank

Matrix: Water

Lab Sample ID: 440-192727-6

Date Collected: 09/21/17 07:00 Date Received: 09/21/17 18:51

Method: 8260B - Volatile Organic	Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.50	0.25	ug/L			10/02/17 17:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		80 - 120			-		10/02/17 17:40	1
Dibromofluoromethane (Surr)	109		76 - 132					10/02/17 17:40	1
Toluene-d8 (Surr)	109		80 - 128					10/02/17 17:40	1
	100		00-120					10,02,11,11,10	

Client Sample ID: CTMW-07D-80.0-20170921 Date Collected: 09/21/17 13:50 Date Received: 09/21/17 18:51

Method: 8260B - Volatile Organic	Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		2.8	1.4	ug/Kg			09/28/17 10:22	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)			79 _ 120			-		09/28/17 10:22	1
Dibromofluoromethane (Surr)	100		60 - 120					09/28/17 10:22	1

TestAmerica Irvine

Matrix: Solid

Percent Solids: 70.7

RL

280

RL

0.11

RL

0.43

RL

2.8

RL

0.1

Limits

90 - 115

MDL Unit

MDL Unit

0.027 mg/Kg

MDL Unit

mg/Kg

1.4 mg/Kg

MDL Unit

0.1 %

0.21

MDL Unit

71 ug/Kg D

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D

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D

Prepared

Prepared

Prepared

Prepared

09/27/17 11:16

Prepared

09/28/17 07:51

Method: 314.0 - Perchlorate (IC) - Soluble

Method: 7199 - Chromium, Hexavalent (IC)

Date Collected: 09/21/17 13:50

Date Received: 09/21/17 18:51

Analyte

Chlorate

Surrogate

Analyte

Analyte

Analyte

Analyte

Chromium

Perchlorate

Dichloroacetic acid(Surr)

Chromium, hexavalent

General Chemistry

Percent Moisture

Client Sample ID: CTMW-07D-80.0-20170921

Method: 300.1B - Disinfection By-Products, (IC) - Soluble

Result Qualifier

Result Qualifier

Result Qualifier

Result Qualifier

Result Qualifier

ND

13

29.3

1.2 F1

Qualifier

2700

95

%Recovery

Lab Sample ID: 440-192727-6

Analyzed

09/27/17 22:20

Analyzed

09/27/17 22:20

Analyzed

10/06/17 18:06

Analyzed

09/28/17 15:07

Analyzed

09/29/17 10:25

Matrix: Solid

Dil Fac

Dil Fac

Dil Fac

Dil Fac

Dil Fac

10

1

2

3

Percent Solids: 70.7

Prepared	Analyzed	Dil Fac	
	09/25/17 17:10	1	

Client Sample ID: CTMW-07D-90.0-20170921 Date Collected: 09/21/17 14:35

Date Received: 09/21/17 18:51

Method: 6010B - Metals (ICP)

Lab Sample ID: 440-192727-7 Matrix: Solid Percent Solids: 71.2

Method: 8260B - Volatile	Organic Compounds (GC/MS)
Analyte	Result Qualifier

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		2.8	1.4	ug/Kg	<u>\$</u>		09/28/17 15:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		79 - 120			-		09/28/17 15:39	1
Dibromofluoromethane (Surr)	101		60 - 120					09/28/17 15:39	1
Toluene-d8 (Surr)	107		79 - 123					09/28/17 15:39	1

Method: 300.1B - Disinfection By	/-Products, (IC) - Soluble							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorate	180	J	280	70	ug/Kg	<u></u>		09/28/17 10:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dichloroacetic acid(Surr)	96		90 - 115					09/28/17 10:21	1
- Method: 314.0 - Perchlorate (IC)	- Soluble								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	0.079		0.056	0.013	mg/Kg	<u></u>		10/07/17 11:55	1
– Method: 7199 - Chromium, Hexa	valent (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		0.42	0.21	mg/Kg	<u></u>	09/27/17 11:16	09/28/17 15:59	3
– Method: 6010B - Metals (ICP)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	34		1.4	0.69	mg/Kg	\\\\	09/28/17 07:51	09/28/17 15:48	5

Client Sample Results

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

Toluene-d8 (Surr)

Client Sample ID: CTMW-07	ent Sample ID: CTMW-07D-90.0-20170921							le ID: 440-19	2727-7
Date Collected: 09/21/17 14:35								Matri	x: Solid
Date Received: 09/21/17 18:51								Percent Soli	ds: 71.2
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	28.8		0.1	0.1	%			09/22/17 17:05	1
	D 400 0 0047	0004						L. ID: 440.40	0707.0
Client Sample ID: CTMW-07	D-100.0-2017	0921					Lab Samp	IE ID: 440-19	2/2/-8
Date Collected: 09/21/17 15:05								Matri	x: Solid
Date Received: 09/21/17 18:51								Percent Soli	ds: 65.9
Method: 8260B - Volatile Organi	c Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		3.0	1.5	ug/Kg	<u></u>		09/28/17 16:05	1
Surrogate	%Recovery	Qualifier	l imits				Prenared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)			79 - 120					09/28/17 16:05	1
Dibromofluoromethane (Surr)			60 - 120					09/28/17 16:05	1
Toluene-d8 (Surr)	109		79 - 123					09/28/17 16:05	1
									-
Method: 300.1B - Disinfection B	y-Products, (IC) - Soluble							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorate	2800		1500	380	ug/Kg	 		09/28/17 12:15	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dichloroacetic acid(Surr)	94		90 - 115					09/28/17 12:15	5
Method: 314.0 - Perchlorate (IC)	- Soluble								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	5.8		3.0	0.72	mg/Kg	¢		10/06/17 22:18	50
Mothod: 7199 Chromium Hova	valent (IC)								
Analyte	Result	Qualifier	RI	мы	Unit	п	Prenared	Analyzed	Dil Fac
Chromium, hexavalent	ND		0.46	0.23	ma/Ka	— -	09/27/17 11:16	09/28/17 16:12	3
									-
Method: 6010B - Metals (ICP)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	35		1.5	0.75	mg/Kg	¢	09/28/17 07:51	09/28/17 15:50	5
General Chemistry						_			
Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Percent Moisture	34.1		0.1	0.1	%			09/22/17 17:05	1
Client Sample ID: CTMW 07		0021					Lab Samn		2727 0
Dete Celle stade 00/04/47 45:05	D-110.0-2017	0921					Lab Samp	IE ID. 440-19	2121-9
Date Collected: 09/21/17 15:25								Natri Porcont Soli	X: 50110
								Fercent 301	us. 00.3
Method: 8260B - Volatile Organi	c Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		3.6	1.8	ug/Kg	¥		09/28/17 16:31	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analvzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		79 - 120					09/28/17 16:31	1
Dibromofluoromethane (Surr)	103		60 - 120					09/28/17 16:31	1

TestAmerica Irvine

09/28/17 16:31

79 - 123

106

1

RL

360

Limits

90 - 115

MDL Unit

90 ug/Kg

D

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Prepared

Prepared

Date Collected: 09/21/17 15:25

Date Received: 09/21/17 18:51

Lab Sample ID: 440-192727-9

Analyzed

09/28/17 06:44

Analyzed

09/28/17 06:44

Matrix: Solid

Dil Fac

Dil Fac

1

1

Percent Solids: 55.3

Analyte Result Qualifier Chlorate 6500 Surrogate %Recovery Qualifier Dichloroacetic acid(Surr) 94

Method: 300.1B - Disinfection By-Products, (IC) - Soluble

Client Sample ID: CTMW-07D-110.0-20170921

Method: 314.0 - Perchlorate (IC) - 3	Soluble								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	3.0		0.36	0.086	mg/Kg	¢		10/07/17 12:12	5
Method: 7199 - Chromium, Hexava	lent (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		0.54	0.27	mg/Kg	¢	09/27/17 11:16	09/28/17 16:25	3
Method: 6010B - Metals (ICP)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	170		1.8	0.90	mg/Kg	¤	09/28/17 07:51	09/28/17 15:53	5
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	44.7		0.1	0.1	%			09/22/17 17:05	1

Client Sample ID: CTMW-07.D-60.0-20170921-EB Date Collected: 09/21/17 12:20 Date Received: 09/21/17 18:51

Lab Sample ID: 440-192727-10 Matrix: Water

Method: 8260B - Volatile Orga	nic Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.50	0.25	ug/L			10/02/17 18:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		80 - 120			-		10/02/17 18:10	1
Dibromofluoromethane (Surr)	114		76 - 132					10/02/17 18:10	1
Toluene-d8 (Surr)	109		80 - 128					10/02/17 18:10	1
- Method: 300.1B - Disinfection	By-Products, (IC)							
A nalyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac

Analyte	Result	Quaimer	NL.	WIDL	Unit	U	Flepaleu	Analyzeu	DirFac
Chlorate	ND		20	10	ug/L			09/25/17 19:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dichloroacetic acid(Surr)	97		90 - 115					09/25/17 19:34	1
- Method: 314.0 LL - Perchlorate (IC))								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	ND		1.0	0.50	ug/L			10/04/17 02:34	1
– Method: 7199 - Chromium, Hexava	lent (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		2.0	0.25	ug/L			09/22/17 08:38	1
– Method: 6010B - Metals (ICP) - Tota	al Recoverat	ole							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.0050	0.0025	mg/L		09/27/17 10:22	09/27/17 21:53	1

Date Collected: 09/21/17 14:35

Client Sample ID: CTMW-07D-90.0-20170921-FD

TestAmerica Job ID: 440-192727-1

Lab Sample ID: 440-192727-11 Matrix: Solid 5

Date Received: 09/21/17 18:51								Percent Soli	ds: 71.2
– Method: 8260B - Volatile Orga Analyte	nic Compounds	(GC/MS) Qualifier	RI	МОІ	Unit	п	Prenared	Analyzed	Dil Fac
Chloroform			28	1 4	μα/Κα	— -		09/28/17 16:58	1
	NB		2.0		uging			00/20/11 10:00	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107	*	79 _ 120					09/28/17 16:58	1
Dibromofluoromethane (Surr)	103		60 - 120					09/28/17 16:58	1
Toluene-d8 (Surr)	109		79 - 123					09/28/17 16:58	1
Method: 300.1B - Disinfection	By-Products, (IC) - Soluble							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorate	180	J	280	70	ug/Kg	<u></u>		09/28/17 07:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dichloroacetic acid(Surr)	96		90 - 115					09/28/17 07:20	1
- Method: 314.0 - Perchlorate (I	C) - Soluble								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	0.091		0.056	0.013	mg/Kg	<u></u>		10/07/17 12:46	1
- Method: 7199 - Chromium, He	exavalent (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		0.42	0.21	mg/Kg		09/27/17 11:16	09/28/17 16:38	3
Method: 6010B - Metals (ICP)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	34		1.4	0.69	mg/Kg	Å	09/28/17 07:51	09/28/17 15:55	5
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	28.8		0.1	0.1	%			09/22/17 17:05	1

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

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TestAmerica Irvine

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
300.1B	Disinfection By-Products, (IC)	EPA	TAL IRV
314.0	Perchlorate (IC)	EPA	TAL IRV
314.0 LL	Perchlorate (IC)	EPA	TAL IRV
7199	Chromium, Hexavalent (IC)	SW846	TAL IRV
6010B	Metals (ICP)	SW846	TAL IRV
Moisture	Percent Moisture	EPA	TAL IRV

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

10/9/2017

Client Sample ID: CTMW-07D-50.0-20170921

Lab Sample ID: 440-192727-1

Matrix: Water

Matrix: Solid

Date Collected: 09/21/17 11:25 Date Received: 09/21/17 18:51

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	10 mL	10 mL	432406	10/02/17 16:41	HR	TAL IRV
Total/NA	Analysis	300.1B		10000			431047	09/26/17 02:13	YZ	TAL IRV
Total/NA	Analysis	314.0 LL		10000			432714	10/04/17 09:14	CTH	TAL IRV
Total/NA	Analysis	7199		1000			430559	09/22/17 08:13	MN	TAL IRV
Total Recoverable	Prep	3005A			25 mL	25 mL	431882	09/28/17 10:15	Q1N	TAL IRV
Total Recoverable	Analysis	6010B		5			432035	09/28/17 18:33	EN	TAL IRV

Client Sample ID: CTMW-07D-60.0-20170921

Date Collected: 09/21/17 11:50

Date Received: 09/21/17 18:51

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			430769	09/22/17 17:05	EC1	TAL IRV

Client Sample ID: CTMW-07D-60.0-20170921 Date Collected: 09/21/17 11:50 Date Received: 09/21/17 18:51

Dil Initial Batch Batch Final Batch Prepared Method Prep Type Туре Run Factor Amount Amount Number or Analyzed Analyst Lab Total/NA Analysis 8260B 5.02 g 10 mL 431823 09/28/17 14:20 WC TAL IRV 1 Soluble DI Leach 430905 09/23/17 12:06 YΖ TAL IRV Leach 4.01 g 40 mL Soluble 300.1B 200 431675 09/28/17 07:57 TAL IRV Analysis YΖ Soluble Leach DI Leach 4.01 g 40 mL 433370 10/05/17 18:05 CTH TAL IRV 500 433554 TAL IRV Soluble Analysis 314.0 10/07/17 11:38 CTH Total/NA Prep 3060A 2.50 g 100 mL 431062 09/25/17 09:22 YΖ TAL IRV Total/NA Analysis 7199 1 431262 09/26/17 14:29 MN TAL IRV Total/NA Prep 3050B 431847 09/28/17 07:51 DT TAL IRV 2.01 g 50 mL Total/NA 6010B 432003 TAL IRV Analysis 5 09/28/17 15:34 VS

Client Sample ID: CTMW-07D-70.0-20170921

Date Collected: 09/21/17 13:15 Date Received: 09/21/17 18:51

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	10 mL	10 mL	432406	10/02/17 17:11	HR	TAL IRV
Total/NA	Analysis	300.1B		10000			431047	09/26/17 02:49	YZ	TAL IRV
Total/NA	Analysis	314.0 LL		10000			432714	10/04/17 09:32	СТН	TAL IRV
Total/NA	Analysis	7199		1			430559	09/22/17 08:26	MN	TAL IRV
Total Recoverable	Prep	3005A			25 mL	25 mL	431882	09/28/17 10:15	Q1N	TAL IRV
Total Recoverable	Analysis	6010B		10			432128	09/29/17 10:13	EN	TAL IRV

TestAmerica Irvine

Lab Sample ID: 440-192727-2 Matrix: Solid Percent Solids: 79.0

Lab Sample ID: 440-192727-3

Lab Sample ID: 440-192727-2

Matrix: Water

10/9/2017

Lab Sample ID: 440-192727-4

Lab Sample ID: 440-192727-4

Lab Sample ID: 440-192727-5

Lab Sample ID: 440-192727-6

Lab Sample ID: 440-192727-6

Matrix: Solid

Matrix: Water

Matrix: Solid

Matrix: Solid

Percent Solids: 70.7

Percent Solids: 53.5

7

Client Sample ID: CTMW-07D-70.0-20170921

Date Collected: 09/21/17 13:20 Ma										
Date Received	: 09/21/17 18:5	1								
Γ	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			430769	09/22/17 17:05	EC1	TAL IRV

Client Sample ID: CTMW-07D-70.0-20170921 Date Collected: 09/21/17 13:20 Date Received: 09/21/17 18:51

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5.02 g	10 mL	431823	09/28/17 14:46	WC	TAL IRV
Soluble	Leach	DI Leach			3.98 g	40 mL	430905	09/23/17 12:06	YZ	TAL IRV
Soluble	Analysis	300.1B		100			431675	09/28/17 04:56	YZ	TAL IRV
Soluble	Leach	DI Leach			4.02 g	40 mL	433370	10/05/17 18:05	CTH	TAL IRV
Soluble	Analysis	314.0		50			433554	10/06/17 21:45	CTH	TAL IRV
Total/NA	Prep	3060A			2.49 g	100 mL	431062	09/25/17 09:22	YZ	TAL IRV
Total/NA	Analysis	7199		1			431262	09/26/17 14:41	MN	TAL IRV
Total/NA	Prep	3050B			2.02 g	50 mL	431847	09/28/17 07:51	DT	TAL IRV
Total/NA	Analysis	6010B		5			432003	09/28/17 15:36	VS	TAL IRV

Client Sample ID: Trip Blank

Date Collected: 09/21/17 07:00

Date	Received	: 09/21/17	18:51
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	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	432406	10/02/17 17:40	HR	TAL IRV

Client Sample ID: CTMW-07D-80.0-20170921

Date Collected: 09/21/17 13:50 Date Received: 09/21/17 18:51

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Ргер Туре	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			431206	09/25/17 17:10	HTL	TAL IRV

Client Sample ID: CTMW-07D-80.0-20170921 Date Collected: 09/21/17 13:50 Date Received: 09/21/17 18:51

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5.04 g	10 mL	431823	09/28/17 10:22	WC	TAL IRV
Soluble	Leach	DI Leach			3.99 g	40 mL	430905	09/23/17 12:06	YZ	TAL IRV
Soluble	Analysis	300.1B		1			431675	09/27/17 22:20	YZ	TAL IRV
Soluble	Leach	DI Leach			3.99 g	40 mL	433370	10/05/17 18:05	CTH	TAL IRV
Soluble	Analysis	314.0		2			433554	10/06/17 18:06	CTH	TAL IRV
Total/NA	Prep	3060A			2.47 g	100 mL	431646	09/27/17 11:16	YZ	TAL IRV

Initial

Amount

2.01 g

Final

Amount

50 mL

Batch

Number

431813

431847

432137

Batch

Туре

Prep

Analysis

Analysis

Client Sample ID: CTMW-07D-90.0-20170921

Date Collected: 09/21/17 13:50

Date Received: 09/21/17 18:51

Date Collected: 09/21/17 14:35

Date Received: 09/21/17 18:51

Prep Type

Total/NA

Total/NA

Total/NA

Client Sample ID: CTMW-07D-80.0-20170921

Batch

Method

7199

3050B

6010B

Analyst

MN

DT

VS

Lab Sample ID: 440-192727-7

Lab Sample ID: 440-192727-8

Lab Sample ID: 440-192727-8

Percent Solids: 70.7

Lab

TAL IRV

TAL IRV

TAL IRV

Matrix: Solid

Matrix: Solid

Matrix: Solid Percent Solids: 65.9

Percent Solids: 71.2

Lab Sample ID: 440-192727-6 Matrix: Solid 7

Lab Sample ID: 440-192727-7 Matrix: Solid

Prepared

or Analyzed

09/28/17 15:07

09/28/17 07:51

09/29/17 10:25

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Ргер Туре	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			430769	09/22/17 17:05	EC1	TAL IRV

Dil

3

10

Factor

Run

Client Sample ID: CTMW-07D-90.0-20170921 Date Collected: 09/21/17 14:35 Date Received: 09/21/17 18:51

-	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5.01 g	10 mL	431823	09/28/17 15:39	WC	TAL IRV
Soluble	Leach	DI Leach			3.99 g	40 mL	430905	09/23/17 12:06	ΥZ	TAL IRV
Soluble	Analysis	300.1B		1			431675	09/28/17 10:21	YZ	TAL IRV
Soluble	Leach	DI Leach			3.99 g	40 mL	433370	10/05/17 18:05	CTH	TAL IRV
Soluble	Analysis	314.0		1			433554	10/07/17 11:55	CTH	TAL IRV
Total/NA	Prep	3060A			2.52 g	100 mL	431646	09/27/17 11:16	ΥZ	TAL IRV
Total/NA	Analysis	7199		3			431813	09/28/17 15:59	MN	TAL IRV
Total/NA	Prep	3050B			2.02 g	50 mL	431847	09/28/17 07:51	DT	TAL IRV
Total/NA	Analysis	6010B		5			432003	09/28/17 15:48	VS	TAL IRV

Client Sample ID: CTMW-07D-100.0-20170921
Date Collected: 09/21/17 15:05
Date Received: 09/21/17 18:51

Ргер Туре	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			430769	09/22/17 17:05	EC1	TAL IRV

Client Sample ID: CTMW-07D-100.0-20170921
Date Collected: 09/21/17 15:05
Date Received: 09/21/17 18:51

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5.01 g	10 mL	431823	09/28/17 16:05	WC	TAL IRV
Soluble	Leach	DI Leach			3.98 g	40 mL	430905	09/23/17 12:06	YZ	TAL IRV
Soluble	Analysis	300.1B		5			431675	09/28/17 12:15	YZ	TAL IRV
Soluble	Leach	DI Leach			4.01 g	40 mL	433370	10/05/17 18:05	CTH	TAL IRV

Initial

Amount

2.47 g

2.01 g

Final

Amount

100 mL

50 mL

Batch

Number

433554

431646

431813

431847

432003

Dil

50

3

5

Factor

Run

Batch

Туре

Prep

Prep

Analysis

Analysis

Analysis

Client Sample ID: CTMW-07D-110.0-20170921

Client Sample ID: CTMW-07D-100.0-20170921

Batch

Method

314.0

3060A

7199

3050B

6010B

Lab Sample ID: 440-192727-8

Analyst

CTH

YΖ

MN

VS

Lab Sample ID: 440-192727-9

Lab Sample ID: 440-192727-10

Prepared

or Analyzed

10/06/17 22:18

09/27/17 11:16

09/28/17 16:12

09/28/17 15:50

09/28/17 07:51 DT

Matrix: Solid

Percent Solids: 65.9

Lab

TAL IRV

TAL IRV

TAL IRV

TAL IRV

TAL IRV

Matrix: Solid

Matrix: Water

Percent Solids: 55.3

Lab Sample ID: 440-192727-9 Matrix: Solid

Date Collected: 09/21/17 15:25 Date Received: 09/21/17 18:51

Date Collected: 09/21/17 15:05

Date Received: 09/21/17 18:51

Prep Type

Soluble

Total/NA

Total/NA

Total/NA

Total/NA

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			430769	09/22/17 17:05	EC1	TAL IRV

Client Sample ID: CTMW-07D-110.0-20170921 Date Collected: 09/21/17 15:25 Date Received: 09/21/17 18:51

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5.02 g	10 mL	431823	09/28/17 16:31	WC	TAL IRV
Soluble	Leach	DI Leach			4.01 g	40 mL	430905	09/23/17 12:06	YZ	TAL IRV
Soluble	Analysis	300.1B		1			431675	09/28/17 06:44	YZ	TAL IRV
Soluble	Leach	DI Leach			4.02 g	40 mL	433370	10/05/17 18:05	CTH	TAL IRV
Soluble	Analysis	314.0		5			433554	10/07/17 12:12	CTH	TAL IRV
Total/NA	Prep	3060A			2.49 g	100 mL	431646	09/27/17 11:16	YZ	TAL IRV
Total/NA	Analysis	7199		3			431813	09/28/17 16:25	MN	TAL IRV
Total/NA	Prep	3050B			2.01 g	50 mL	431847	09/28/17 07:51	DT	TAL IRV
Total/NA	Analysis	6010B		5			432003	09/28/17 15:53	VS	TAL IRV

Client Sample ID: CTMW-07.D-60.0-20170921-EB Date Collected: 09/21/17 12:20 Date Received: 09/21/17 18:51

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	432406	10/02/17 18:10	HR	TAL IRV
Total/NA	Analysis	300.1B		1			431047	09/25/17 19:34	YZ	TAL IRV
Total/NA	Analysis	314.0 LL		1			432714	10/04/17 02:34	CTH	TAL IRV
Total/NA	Analysis	7199		1			430559	09/22/17 08:38	MN	TAL IRV
Total Recoverable	Prep	3005A			25 mL	25 mL	431623	09/27/17 10:22	Q1N	TAL IRV
Total Recoverable	Analysis	6010B		1			431839	09/27/17 21:53	EN	TAL IRV

Lab Sample ID: 440-192727-11

2 3 4 5 6 7 8 9 10

Lab Sample ID: 440-192727-11 Matrix: Solid

Matrix: Solid

Percent Solids: 71.2

Date Collected: 09/21/17 14:35 Date Received: 09/21/17 18:51 Dil Batch Batch Initial Final Batch Prepared Prep Type Туре Method Run Factor Amount Amount Number or Analyzed Analyst Lab Total/NA Analysis Moisture 1 430769 09/22/17 17:05 EC1 TAL IRV

Client Sample ID: CTMW-07D-90.0-20170921-FD Date Collected: 09/21/17 14:35 Date Received: 09/21/17 18:51

Client Sample ID: CTMW-07D-90.0-20170921-FD

-	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 g	10 mL	431823	09/28/17 16:58	WC	TAL IRV
Soluble	Leach	DI Leach			4.00 g	40 mL	430905	09/23/17 12:06	YZ	TAL IRV
Soluble	Analysis	300.1B		1			431675	09/28/17 07:20	YZ	TAL IRV
Soluble	Leach	DI Leach			3.99 g	40 mL	433370	10/05/17 18:05	СТН	TAL IRV
Soluble	Analysis	314.0		1			433554	10/07/17 12:46	CTH	TAL IRV
Total/NA	Prep	3060A			2.51 g	100 mL	431646	09/27/17 11:16	YZ	TAL IRV
Total/NA	Analysis	7199		3			431813	09/28/17 16:38	MN	TAL IRV
Total/NA	Prep	3050B			2.03 g	50 mL	431847	09/28/17 07:51	DT	TAL IRV
Total/NA	Analysis	6010B		5			432003	09/28/17 15:55	VS	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-4318	323/3										Client	Sample ID:	Method	d Blank
Matrix: Solid												Prep	Туре: То	otal/NA
Analysis Batch: 431823														
	_	мв	MB	_					_	_			_	
Analyte	Re	sult	Qualifier	R		MDL	Unit		D	PI	repared	Analy	/zed	Dil Fac
Chloroform		ND		2.)	1.0	ug/Kg					09/28/17	08:10	1
		ΜВ	МВ											
Surrogate	%Reco	very	Qualifier	Limits						PI	repared	Analy	/zed	Dil Fac
4-Bromofluorobenzene (Surr)		98		79 - 120	-							09/28/17	7 08:10	1
Dibromofluoromethane (Surr)		105		60 - 120								09/28/17	7 08:10	1
Toluene-d8 (Surr)		85		79 - 123								09/28/17	7 08:10	1
Lab Sample ID: LCS 440-431	823/4								Cli	ent	Sampl	e ID: Lab C	ontrol s	Sample
Matrix: Solid												Prep	Type: To	otal/NA
Analysis Batch: 431823													3 10 -	
				Spike	LCS	LCS						%Rec.		
Analyte				Added	Result	Qua	lifier	Unit		D	%Rec	Limits		
Chloroform				50.0	53.8			ug/Kg			108	70 - 130		
•	LCS	LCS												
Surrogate	- %Recovery	Quali	ifier											
	U5			79 - 120										
4-Bromofluorobenzene (Surr)	100			00 100										
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr)	100			60 - 120										
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr)	100 103			60 - 120 79 - 123										
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr)	100 103			60 - 120 79 - 123				Cliv	ont Sa	mn			80 0 20	170021
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-(100 103 6 MS			60 - 120 79 - 123				Clie	ent Sa	mp	le ID: (TMW-07D	-80.0-20	170921
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid	100 103 6 MS			60 - 120 79 - 123				Clie	ent Sa	mp	le ID: C	CTMW-07D Prep	-80.0-20 Type: Te	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid Analysis Batch: 431823	100 103 6 MS Sample	Samp	ble	60 - 120 79 - 123 Spike	MS	MS		Clie	ent Sa	mp	le ID: (CTMW-07D Prep	-80.0-20 Туре: То	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid Analysis Batch: 431823	100 103 6 MS Sample Result	Samp Quali	ble	60 - 120 79 - 123 Spike Added	MS Result	MS Qual	lifier	Clie	ent Sa	mp	vie ID: (%Rec	CTMW-07D Prep %Rec. Limits	-80.0-20 Type: To	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform	100 103 6 MS 	Samp Quali	ble fier	60 - 120 79 - 123 Spike Added 71.3	MS Result 79.4	MS Qual	lifier	Clie Unit ug/Kg	ent Sa	mp D x	Ne ID: (%Rec 111	CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform	6 MS - Result ND	Samp Quali	ole fier	60 - 120 79 - 123 Spike Added 71.3	MS Result 79.4	MS Qual	lifier	Clie Unit ug/Kg	ent Sa	D x	ble ID: (%Rec 111	CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Туре: То	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-(Matrix: Solid Analysis Batch: 431823 Analyte Chloroform	100 103 6 MS - <u>Result</u> ND <i>MS</i>	Samp Quali MS	ole fier	60 - 120 79 - 123 Spike Added 71.3	MS Result 79.4	MS Qual	lifier	Clie Unit ug/Kg	ent Sa	mp D ☆	Sie ID: (%Rec 111	CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate	6 MS Sample Result ND MS %Recovery	Samp Quali MS Quali	ble ifier	60 - 120 79 - 123 Spike Added 71.3 Limits	MS Result 79.4	MS Qual	lifier	Clie Unit ug/Kg	ent Sa	Imp D	<mark>%Rec</mark> 111	CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr)	100 103 6 MS 6 MS 6 MS 8 ample Result ND MS %Recovery 102	Samp Quali MS Quali	ble ifier	60 - 120 79 - 123 Spike Added 71.3 Limits 79 - 120	MS Result 79.4	MS Qua	lifier	Clie Unit ug/Kg	ent Sa	D x	%Rec 111	%Rec. Limits 65 - 135	-80.0-20 Type: To	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr)	50 100 103 6 MS 6 MS 6 MS 8 MS MS % Recovery 102 101	Samp Quali MS Quali	ble ifier	60 - 120 79 - 123 Spike Added 71.3 Limits 79 - 120 60 - 120	MS Result 79.4	MS Qual	lifier	Clie Unit ug/Kg	ent Sa	nmp D ∞	%Rec 111	CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr)	100 103 6 MS 6 MS 6 MS 6 MS 7 Result ND MS 7 %Recovery 102 101 100	Samp Quali MS Quali	ole ifier	60 - 120 79 - 123 Spike Added 71.3 Limits 79 - 120 60 - 120 79 - 123	MS Result 79.4	MS Qual	lifier	Clie Unit ug/Kg	ent Sa	D x	%Rec 111	CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4	50 100 103 6 MS 6 MS 6 MS <i>Sample</i> Result ND <i>MS</i> <i>%Recovery</i> 102 101 100 6 MSD	Samp Quali MS Quali	ble ifier	60 - 120 79 - 123 Spike Added 71.3 Limits 79 - 120 60 - 120 79 - 123	MS Result 79.4	MS Quai	lifier	Clie Unit ug/Kg Clie	ent Sa	mp D	%Rec 111	CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To	170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid	100 103 6 MS 6 MS 6 MS 7 8 8 100 8 8 100 100 101 100 6 MSD	Samp Quali MS Quali	ble ifier	60 - 120 79 - 123 Spike Added 71.3 <i>Limits</i> 79 - 120 60 - 120 79 - 123	MS Result 79.4	MS Quai	lifier	Clie Unit ug/Kg Clie	ent Sa	mp D	%Rec 111	CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To 	170921 otal/NA 170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823	100 103 6 MS 6 MS 6 MS 7 ND 8 ND 8 ND 7 ND 8 ND 7 ND 102 101 100 6 MSD	Samp Quali MS Quali	ble ifier	60 - 120 79 - 123 Spike Added 71.3 <i>Limits</i> 79 - 120 60 - 120 79 - 123	MS Result 79.4	MS Qual	lifier	Clie Unit ug/Kg Clie	ent Sa	mp ≅	%Rec 111	CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To 	170921 otal/NA 170921 otal/NA
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid Analysis Batch: 431823	100 103 6 MS 6 MS 6 MS 7 %Recovery 102 101 100 6 MSD 8 ample	Samp Quali MS Quali	ole ifier	60 - 120 79 - 123 Spike Added 71.3 Limits 79 - 120 60 - 120 79 - 123 Spike	MS Result 79.4	MS Qual	lifier	Clie Unit ug/Kg Clie	ent Sa	mp D	%Rec 111	CTMW-07D Prep %Rec. Limits 65 - 135 CTMW-07D Prep %Rec.	-80.0-20 Type: To -80.0-20 Type: To	170921 otal/NA 170921 otal/NA RPD
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-0 Matrix: Solid Analysis Batch: 431823 Analyte	100 103 6 MS 6 MS 6 MS 7 Result 7 ND 8 MS 7 NR 7 102 101 100 6 MSD 6 MSD 8 Sample Result	Samp Quali MS Quali Quali	ble ifier ifier ble	60 - 120 79 - 123 Spike Added 71.3 Limits 79 - 120 60 - 120 79 - 123 Spike Added	MS Result 79.4 MSD Result	MS Qua MSD Qua	lifier	Clie Unit ug/Kg Clie Unit	ent Sa	mp ™ D	%Rec 111	CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To 	170921 otal/NA 170921 otal/NA RPD Limit
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform	30 100 103 6 MS Sample Result ND MS %Recovery 100 100 6 MSD Sample Result ND	Samp Quali MS Quali Samp Quali	ble ifier ifier ble ifier	60 - 120 79 - 123 Spike Added 71.3 <i>Limits</i> 79 - 120 60 - 120 79 - 123 Spike Added 70.6	MS Result 79.4 MSD Result 73.2	MS Qual	lifier	Clie Unit ug/Kg Clie Unit ug/Kg	ent Sa	mp D ∞	%Rec 111 ole ID: 0 %Rec 104	CTMW-07D Prep %Rec. Limits 65 - 135 CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To 	170921 otal/NA 170921 otal/NA RPD Limit 20
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform	100 103 6 MS 6 MS 6 MS 7 ND 8 NS 7 NS 7 NS 7 NS 7 NS 7 NS 7 NS 7 NS 7	Samp Quali MS Quali Quali	ble ifier ifier ble fier	60 - 120 79 - 123 Spike Added 71.3 <i>Limits</i> 79 - 120 60 - 120 79 - 123 Spike Added 70.6	MS Result 79.4 MSD Result 73.2	MS Quai MSD Quai	lifier	Clie Unit ug/Kg Clie Unit ug/Kg	ent Sa	nmp D≅	%Rec 111 ole ID: 0 %Rec 104	CTMW-07D Prep %Rec. Limits 65 - 135 CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To 	170921 otal/NA 170921 otal/NA RPD Limit 20
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform	100 103 6 MS 6 MS 6 MS 7 8 8 100 7 102 101 100 6 MSD 6 MSD 6 MSD 8 8 100 8 100 100 100 100 100 100 100 100 100 103	Samp Quali MS Quali Quali MSD Quali	ble ifier ifier ble ifier	60 - 120 79 - 123 Spike Added 71.3 <i>Limits</i> 79 - 120 60 - 120 79 - 123 Spike Added 70.6	MS Result 79.4 MSD Result 73.2	MS Quai Quai	lifier	Clie Unit ug/Kg Clie Unit ug/Kg	ent Sa	mp D ∞	%Rec 111 ole ID: 0 %Rec 104	CTMW-07D Prep %Rec. Limits 65 - 135 CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To 	170921 otal/NA 170921 otal/NA RPD Limit 20
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr)	100 103 6 MS 6 MS 6 MS 6 MS 7 ND 8 ND 7 ND 7 ND 7 ND 7 ND 6 MSD 8 Sample Result ND 8 Sample 7 ND 7 ND 7 ND 7 ND 7 ND 7 ND 7 ND 7 ND	Samp Quali MS Quali Samp Quali MSD Quali	ole ifier ifier ifier	60 - 120 79 - 123 Spike Added 71.3 <i>Limits</i> 79 - 120 60 - 120 79 - 123 Spike Added 70.6 <i>Limits</i> 79 - 120	MS Result 79.4 MSD Result 73.2	MS Qual MSD Qua	lifier	Clie Unit ug/Kg Clie Unit ug/Kg	ent Sa	mp D	%Rec 111 0le ID: 0 %Rec 104	CTMW-07D Prep %Rec. Limits 65 - 135 CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To 	170921 otal/NA 170921 otal/NA RPD Limit
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727-4 Matrix: Solid Analysis Batch: 431823 Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluorobenzene (Surr) Dibromofluorobenzene (Surr)	100 103 6 MS 6 MS 6 MS 7 Result ND 7 ND 7 ND 6 MSD 6 MSD 6 MSD 7 Sample Result ND 8 Sample 7 ND 8 Sample 7 ND 7 ND 8 Sample 7 ND 7 ND 7 ND 7 ND 7 ND 7 ND 7 ND 7 ND	Samp Quali MS Quali Samp Quali MSD Quali	ble ifier ifier ble ifier	60 - 120 79 - 123 Spike Added 71.3 <i>Limits</i> 79 - 120 60 - 120 79 - 123 Spike Added 70.6 <i>Limits</i> 79 - 120 60 - 120	MS Result 79.4 MSD Result 73.2	MS Qual Qual	lifier	Clie Unit ug/Kg Clie Unit ug/Kg	ent Sa	mp D	%Rec 111 ole ID: 0 %Rec 104	CTMW-07D Prep %Rec. Limits 65 - 135 CTMW-07D Prep %Rec. Limits 65 - 135	-80.0-20 Type: To 	170921 otal/NA 170921 otal/NA RPD Limit 20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-432	400/5									Client S			Biank
Matrix: Water											Prep T	уре: То	tal/NA
Analysis Batch: 432406	_												
	N	1B MB						_	_	<u>.</u>			
Analyte	Res	ult Qualifier			MDL	Unit		_ D	P	repared	Analyz	ed	Dil Fa
Chloroform	٢	ND .	0.50		0.25	ug/L					10/02/17 (9:18	
	Λ	IB MB											
Surrogate	%Recove	ry Qualifier	Limits						Р	repared	Analyz	ed	Dil Fa
4-Bromofluorobenzene (Surr)	1	01	80 - 120					-			10/02/17 (09:18	
Dibromofluoromethane (Surr)	1	18	76 - 132								10/02/17 (9:18	
Toluene-d8 (Surr)	1	08	80 - 128								10/02/17 (09:18	
-													
Lab Sample ID: LCS 440-432	2406/6							Cl	ient	Sample	D: Lab Co	ontrol S	ample
Matrix: Water											Prep T	ype: To	tal/NA
Analysis Batch: 432406													
			Spike	LCS	LCS				_	~ -	%Rec.		
Analyte			Added	Result	Qua	lifier	Unit		D	%Rec	Limits		
Chloroform			25.0	28.3			ug/L			113	70 - 130		
	LCS L	cs											
Surrogate	%Recovery G	ualifier	Limits										
4-Bromofluorobenzene (Surr)	97		80 - 120										
Dibromofluoromethane (Surr)	118		76 - 132										
Toluene-d8 (Surr)	103		80 - 128										
-													
Lab Sample ID: 440-193013-	B-1 MS									Client	Sample ID:	Matrix	Spike
Matrix: Water											Prep T	ype: To	tal/NA
Analysis Batch: 432406													
• • •	Sample S	ample	Spike	MS	MS				_	~ =	%Rec.		
Analyte		ualifier	Added	Result	Qua	lifier	Unit		D	%Rec	Limits		
Chlorotorm	0.84		25.0	28.7			ug/L			112	70 - 130		
	MS N	IS											
Surrogate	%Recovery G	ualifier	Limits										
4-Bromofluorobenzene (Surr)	94		80 - 120										
Dibromofluoromethane (Surr)	113		76 - 132										
Toluene-d8 (Surr)	104		80 - 128										
-													
Lab Sample ID: 440-193013-	B-1 MSD							Clien	nt Sa	ample IC	D: Matrix Sp	ike Dup	plicate
Matrix: Water											Prep T	уре: То	tal/NA
Analysis Batch: 432406			0.11										
	Sample S	ample	Spike	MSD	MSD)			_	~ =	%Rec.		RPL
Analyte		ualifier	Added	Result	Qua	lifier	Unit		D	%Rec			
Chiorotorm	0.84		25.0	29.3			ug/L			114	70 - 130	2	20
	MSD N	ISD											
Surrogate	%Recovery G	ualifier	Limits										
	98		80 - 120										
4-Bromotiuorobenzene (Surr)	00												
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr)	114		76 - 132										

RL

20

Limits

Spike

Added

Limits

90 - 115

100

90 - 115

MDL Unit

LCS LCS

106

Result Qualifier

Unit

ug/L

10 ug/L

D

Prepared

Prepared

%Rec

106

D

Lab Sample ID: MB 440-431047/5

Lab Sample ID: LCS 440-431047/4

Lab Sample ID: MRL 440-431047/3

Matrix: Water

Analyte

Chlorate

Surrogate

Analyte

Chlorate

Surrogate

Analysis Batch: 431047

Dichloroacetic acid(Surr)

Analysis Batch: 431047

Dichloroacetic acid(Surr)

Matrix: Water

Method: 300.1B - Disinfection By-Products, (IC)

MB MB Result Qualifier

MB MB

Qualifier

ND

98

%Recovery

LCS LCS

98

Qualifier

%Recovery

Analyzed

09/25/17 15:20

Analyzed

09/25/17 15:20

Client Sample ID: Method Blank Prep Type: Total/NA Dil Fac 1

8 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Dil Fac

1

Client Sample	ID:	Lab	Cont	rol S	ample

%Rec.

Limits

75 - 125

Matrix: Water									Prep Ty	ype: Total/NA
Analysis Batch: 431047										
			Spike	MRL	MRL				%Rec.	
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chlorate			20.0	21.8		ug/L		109	50 - 150	
	MRL	MRL								
Surrogate	%Recoverv	Qualifier	Limits							

Surrogate	%Recovery	Qualifier	Limits
Dichloroacetic acid(Surr)	97		90 - 115

Lab Sample ID: 440-192595-K-2 MS Matrix: Water								Client	Sample ID Prep 1): Matrix [vpe: T	x Spike otal/NA
Analysis Batch: 431047											
	Sample	Sample	Spike	MS	MS				%Rec.		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Chlorate	1200		200	1360	4	ug/L		76	75 - 125		
	MS	MS									
Surrogate	%Recoverv	Qualifier	Limits								

MSD MSD

1350 4

Result Qualifier

Unit

ug/L

D

%Rec

72

Spike

Added

200

-		
Dichloroacetic acid(Surr)	96	90 - 115
 ah Sample ID: 440-192595-K-2	MSD	

Matrix: Water Analysis Batch: 431047		
Analysis Batch. 401047	Sample	Sample
Analyte	Result	Qualifier
Chlorate	1200	

	MSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
Dichloroacetic acid(Surr)	95		90 - 115

Client Sample ID: Matrix Spike Duplicate

Prep Type:	Total/NA
%Rec.	RPD

Limits

75 - 125

TootA	morica	Invino
Testa	menca	irvine

RPD

1

Limit

25

Method: 300.1B - Disinfection By-Products, (IC) (Continued)

Lab Sample ID: MRL 440-4316	75/3									CI	ient	Sample	ID: Lab Contro	I Sample
Matrix: Solid													Prep Type:	Total/NA
Analysis Batch: 431675														
				Spike		MRL	MRL						%Rec.	
Analyte				Added		Result	Quali	ifier	Unit		D	%Rec	Limits	
Chlorate				20.0		21.1			ug/L			105	50 - 150	
	MRL	MRL												
Surrogate	%Recovery	Qua	lifier	Limits										
Dichloroacetic acid(Surr)	95			90 - 115										
Lab Sample ID: MB 440-43090	5/2-A											Client S	Sample ID: Meth	od Blank
Matrix: Solid													Prep Type	Soluble
Analysis Batch: 431675														
		MB	MB											
Analyte	R	esult	Qualifier		RL		MDL	Unit		D	Pr	epared	Analyzed	Dil Fac
Chlorate		ND			200		50	ug/Kg					09/27/17 15:06	1
		MR	MB											
Surrogate	%Reco	verv	Qualifier	Limi	its						Pr	repared	Analyzed	Dil Fac
Dichloroacetic acid(Surr)		97			115					-		0,000	09/27/17 15:06	1
		•											00,21,11,10,000	
Lab Sample ID: LCS 440-43090	05/1-A									CI	ient	Sample	D: Lab Contro	I Sample
Matrix: Solid													Prep Type	Soluble
Analysis Batch: 431675														
				Spike		LCS	LCS						%Rec.	
Analyte				Added		Result	Quali	ifier	Unit		D	%Rec	Limits	
Chlorate				1000		1070			ug/Kg		_	107	75 - 125	
•	LCS	LCS												
	%Recovery	Qua	lifier	Limits										
Dichloroacetic acid(Surr)	97			90 - 115										
 Lab Sample ID: 440-192727-6 I	MS								Clie	nt Sa	amp	le ID: C	TMW-07D-80.0-2	0170921
Matrix: Solid											1		Prep Type	Soluble
Analysis Batch: 431675														
	Sample	Sam	ple	Spike		MS	MS						%Rec.	
Analyte	Result	Qua	ifier	Added		Result	Quali	ifier	Unit		D	%Rec	Limits	
Chlorate	2700			1420		4060			ug/Kg		☆	99	75 - 125	
0	MS	MS		1										
	%Recovery	Qua	iner											
Dichloroacetic acid(Surr)	95			90 - 115										
– I ab Samplo ID: 440 192727 6 I	MSD								Clie	nt S				0170021
Matrix: Solid	WISD								Cile	in Se	amp	ie id. c	Prop Type	Solublo
Apolysis Potob: 421675													Fieb Type	Soluble
Analysis Balch. 431075	Sample	Sam	nlo	Snike		MSD	MSD						%Rec	RPD
Analyte	Rocult	Qual	ifier			Result	Quali	ifier	Unit		р	%Rec	l imits PD	
Chlorate	2700	aud		1430		4370	qual				₩ ₩	120	75 - 125	7 25
5	2,50			100		1010			29,119			120		. 20
	MSD	MSD)											
Surrogate	%Recovery	Qua	lifier	Limits										
Dichloroacetic acid(Surr)	95			90 - 115										

MRL MRL

4.08

Result Qualifier

MDL Unit

0.0095 mg/Kg

LCS LCS

0.499

Result Qualifier

Unit

ug/L

Unit

mg/Kg

D

D

D

%Rec

Prepared

%Rec

102

Spike

Added

MB MB

ND

Result Qualifier

4.00

Spike

Added

0.500

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MRL 440-433554/7

Lab Sample ID: MB 440-433370/1-A

Lab Sample ID: LCS 440-433370/2-A

Lab Sample ID: 440-192727-6 MS

Matrix: Solid

Analyte

Analyte

Analyte

Perchlorate

Matrix: Solid

Perchlorate

Matrix: Solid

Perchlorate

Matrix: Solid

Analysis Batch: 433554

Analysis Batch: 433554

Analysis Batch: 433554

Client Sample ID: Lab Control Sample

%Rec.

Limits

75 - 125

Client Sample ID: Method Blank

Analyzed

10/06/17 16:57

Prep Type: Total/NA

Prep Type: Soluble

Prep Type: Soluble

8

Dil Fac

1

/Kg	100	85 - 115			
Client Sa	ample ID: C	TMW-07D-8	30.0-201	70921	
		Pren	Type: S	oluble	

Client Sample ID: Lab Control Sample

%Rec.

Limits

Analysis Batch: 433554										
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Perchlorate	1.2	F1	0.711	1.84		mg/Kg	<u> </u>	86	80 - 120	

RL

0.040

Lab Sample ID: 440-192727-6 MSD Matrix: Solid Analysis Batch: 433554						Client	t Samp	le ID: C	TMW-07D-8 Prep	30.0-201 Type: So	70921 Diuble
Analysis Datch. 435334	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result 1.2	Qualifier F1	Added	Result	Qualifier F1	Unit mg/Kg	— D	%Rec 67	Limits 80 - 120	RPD 8	Limit 20

Method: 314.0 LL - Perchlorate (IC)

Lab Sample ID: MB 440-432714/39 Matrix: Water										Client S	ample ID: Metho Prep Type: ⁻	od Blank Fotal/NA	
Analysis Batch: 432714													
	MB	MB											
Analyte	Result	Qualifier		RL		MDL	Unit		D	P	repared	Analyzed	Dil Fac
Perchlorate	ND			1.0		0.50	ug/L					10/04/17 00:29	1
_ Lab Sample ID: LCS 440-432714/40									Cli	ient	Sample	ID: Lab Control	Sample
Matrix: Water												Prep Type: ⁻	Total/NA
Analysis Batch: 432714													
			Spike		LCS	LCS						%Rec.	
Analyte			Added		Result	Qual	ifier	Unit		D	%Rec	Limits	
Perchlorate			25.0		24.5			ua/L		_	98	85 - 115	

Method: 314.0 LL - Perchlorate (IC) (Continued)

Lab Sample ID: MRL 440-432714/22							Client	t Sample	ID: Lab Co	ontrol Sa	ample
Matrix: Water									Prep T	ype: Tot	tal/NA
Analysis Batch: 432714											
			Spike	MRL	MRL				%Rec.		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Perchlorate			4.00	3.76		ug/L		94	75 ₋ 125		
Lab Sample ID: 440-192678-D-3 MS								Client	Sample ID	: Matrix	Spike
Matrix: Water									Prep T	ype: Tot	tal/NA
Analysis Batch: 432714											
5	Sample	Sample	Spike	MS	MS				%Rec.		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Perchlorate	5.9		25.0	30.1		ug/L		97	80 - 120		
- Lab Sample ID: 440-192678-D-3 MSD							Client S	ample IC): Matrix Sp	oike Dup	olicate
Matrix: Water									Prep T	ype: Tot	tal/NA
Analysis Batch: 432714											
ş	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limi
Perchlorate	5.9		25.0	29.0		ug/L		92	80 - 120	4	20
- Lab Sample ID: 440-192818-B-10 MS								Client	Sample ID	: Matrix	Spike
Matrix: Water									Prep T	vpe: Tot	tal/NA
Analysis Batch: 432714											
5	Sample	Sample	Spike	MS	MS				%Rec.		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Perchlorate	15000		25000	39900		ug/L		100	80 - 120		
- Lab Sample ID: 440-192818-B-10 MS	D						Client S	ample IE): Matrix Sr	oike Dup	olicate
Matrix: Water									· Prep T	ype: Tot	tal/NA
Analysis Batch: 432714											
S	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limi
Perchlorate	15000		25000	40000		ug/L		100	80 - 120	0	20
Method: 7199 - Chromium, Hexa	avalei	nt (IC)									

Lab Sample ID: MB 440-430559/6										Client S	Sample ID: Metho	od Blank	
Matrix: Water												Prep Type: 1	Fotal/NA
Analysis Batch: 430559													
	MB	MB											
Analyte	Result	Qualifier		RL		MDL	Unit		D	P	repared	Analyzed	Dil Fac
Chromium, hexavalent	ND			2.0		0.25	ug/L					09/22/17 07:24	1
Lab Sample ID: LCS 440-430559/5									Cli	ent	Sample	ID: Lab Control	Sample
Matrix: Water												Prep Type: 1	Fotal/NA
Analysis Batch: 430559													
			Spike		LCS	LCS						%Rec.	
Analyte			Added		Result	Qual	ifier	Unit		D	%Rec	Limits	
Chromium, hexavalent			50.0		50.7			ug/L		_	101	90 - 110	

Spike

Added

1.00

Spike

Added

50.0

Spike

Added

50.0

MRL MRL

MS MS

MSD MSD

Qualifier

Result

49.2

50.1

Result Qualifier

0.921 J

Result Qualifier

Unit

ug/L

Unit

ug/L

Unit

ug/L

D

D

D

%Rec

%Rec

%Rec

98

100

92

Lab Sample ID: MRL 440-430559/4

Lab Sample ID: 440-192727-3 MS

Lab Sample ID: 440-192727-3 MSD

Lab Sample ID: MB 440-431062/1-A

Matrix: Water

Chromium, hexavalent

Chromium, hexavalent

Chromium, hexavalent

Matrix: Solid

Matrix: Water

Matrix: Water

Analyte

Analyte

Analyte

Analysis Batch: 430559

Analysis Batch: 430559

Analysis Batch: 430559

Analysis Batch: 431262

Method: 7199 - Chromium, Hexavalent (IC) (Continued)

Sample Sample

Sample Sample

ND

Result Qualifier

ND

Result Qualifier

%Rec.

Limits

50 - 150

%Rec.

Limits

85 - 115

%Rec.

Limits

85 - 115

Prep Type: Total/NA

RPD

2

Client Sample ID: CTMW-07D-70.0-20170921

Client Sample ID: CTMW-07D-70.0-20170921

Client Sample ID: Lab Control Sample Prep Type: Total/NA 5

8
9

Client Sam	ole ID: Method Blank
	Prep Type: Total/NA
	Prep Batch: 431062

	мв	мв							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		0.30	0.15	mg/Kg		09/25/17 09:22	09/26/17 07:15	3

Lab Sample ID: LCS 440-431062/2-A Matrix: Solid					Client	Sample	e ID: Lab Co Prep T	ontrol Sample ype: Total/NA
Analysis Batch: 431262	Spike	LCS	LCS				Prep I %Rec.	Batch: 431062
Analyte	Added 40.2	Result 33.4	Qualifier	Unit mg/Kg	<u>D</u>	%Rec 83	Limits 80 - 120	

Lab Sample ID: 440-192190-E-	Client	Sample ID): Matrix Spike							
Matrix: Solid		Prep 1	Type: Total/NA							
Analysis Batch: 431262									Prep	Batch: 431062
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chromium, hexavalent	0.19	J F1	46.0	35.2		mg/Kg		76	55 _ 110	

Lab Sample ID: 440-192190-E-	ab Sample ID: 440-192190-E-24-P MSD									oike Dup	olicate
Matrix: Solid					Prep T	ype: To	tal/NA				
Analysis Batch: 431262									Prep l	Batch: 4	31062
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chromium, hexavalent	0.19	J F1	46.6	36.2		mg/Kg	<u>Å</u>	77	55 - 110	3	20

Lab Sample ID: 440-192190-E-24-	Client	Sample ID: Matrix Spik	e							
Matrix: Solid									Prep Type: Total/N	Α
Analysis Batch: 431262									Prep Batch: 43106	52
	Sample	Sample	Spike	MSI	MSI				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chromium, hexavalent	0.19	J F1	1070	551	F1	mg/Kg	¢	51	55 - 110	

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

Matrix: Solid												Prep 1	ype: To	tal/NA
Analysis Batch: 431262														
			Spike		MRL	MRL						%Rec.		
Analyte			Added		Result	Qual	lifier	Unit	I	D	%Rec	Limits		
Chromium, hexavalent			1.00		0.987	J		ug/L			99			
Lab Sample ID: MB 440-431646/	/1-A									C	Client Sa	ample ID:	Method	Blank
Matrix: Solid												Prep 1	ype: To	tal/NA
Analysis Batch: 431813												Prep	Batch: 4	131646
		MB MB												
Analyte	R	esult Qualifier		RL		MDL	Unit		D	Pre	epared	Analy	zed	Dil Fac
Chromium, hexavalent		ND		0.30		0.15	mg/Kg		0	9/27	/17 11:16	09/28/17	12:31	3
Lab Sample ID: LCS 440-431646	6/2-A								Clie	ent	Sample	ID: Lab C	ontrol S	ample
Matrix: Solid												Prep 1	уре: То	tal/NA
Analysis Batch: 431813												Prep	Batch: 4	131646
			Spike		LCS	LCS				_		%Rec.		
Analyte			Added		Result	Qua	lifier	Unit		D	%Rec	Limits		
Chromium, hexavalent			40.5		38.4			mg/Kg			95	80 - 120		
Lab Sample ID: 440-192727-6 M	S							Clie	ent Sar	mpl	e ID: CT	MW-07D-	80.0-201	70921
Matrix: Solid												Prep 1	ype: To	tal/NA
Analysis Batch: 431813												Prep	Batch: 4	131646
	Sample	Sample	Spike		MS	MS						%Rec.		
Analyte	Result	Qualifier	Added		Result	Qual	lifier	Unit	I	D	%Rec	Limits		
Chromium, hexavalent	ND		57.5		55.8			mg/Kg		¤	97	55 - 110		
Lab Sample ID: 440-192727-6 M	SD							Clie	ent Sar	mpl	e ID: CT	MW-07D-	80.0-201	170921
Matrix: Solid												Prep 1	ype: To	tal/NA
Analysis Batch: 431813												Prep	Batch: 4	131646
	Sample	Sample	Spike		MSD	MSD)					%Rec.		RPD
Analyte	Result	Qualifier	Added		Result	Qual	lifier	Unit	I	D	%Rec	Limits	RPD	Limit
Chromium, hexavalent	ND		56.6		51.2			mg/Kg	ł	¢.	91	55 ₋ 110	9	20
Lab Sample ID: 440-192727-6 M	SI							Clie	ent Sar	mpl	e ID: CT	MW-07D-	80.0-201	170921
Matrix: Solid												Prep 1	ype: To	tal/NA
Analysis Batch: 431813												Prep	Batch: 4	131646
	Sample	Sample	Spike		MSI	MSI						%Rec.		
Analyte	Result	Qualifier	Added		Result	Qual	lifier	Unit	I	D	%Rec	Limits		
Chromium, hexavalent	ND		1350		1080			mg/Kg		¢ –	80	55 - 110		

_ Lab Sample ID: MB 440-431847/1-A				Client Sa	mple ID: Metho	d Blank			
Matrix: Solid								Prep Type: 1	otal/NA
Analysis Batch: 432137								Prep Batch:	431847
	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.99	0.50	mg/Kg		09/28/17 07:51	09/29/17 10:20	5
LCS LCS

MS MS

88.5

Result Qualifier

MSD MSD

Qualifier

Result

89.3

51.1

Result Qualifier

Unit

Unit

Unit

mg/Kg

mg/Kg

mg/Kg

D

D

☆

D

Ö

%Rec

%Rec

%Rec

107

106

103

Spike

Added

Sample Sample

Sample Sample

Result Qualifier

13

13

Result Qualifier

49.5

Spike

Added

71.3

Spike

Added

71.0

Lab Sample ID: LCS 440-431847/2-A ^5

Lab Sample ID: 440-192727-6 MS

Lab Sample ID: 440-192727-6 MSD

Lab Sample ID: MB 440-431623/1-A

Matrix: Solid

Matrix: Solid

Analyte

Analyte

Analyte

Chromium

Matrix: Water

Chromium

Matrix: Solid

Chromium

Analysis Batch: 432137

Analysis Batch: 432137

Analysis Batch: 432137

Analysis Batch: 431839

Method: 6010B - Metals (ICP) (Continued)

Client Sample ID: Lab Control Sample

%Rec.

Limits

Client Sample ID: CTMW-07D-80.0-20170921

Client Sample ID: CTMW-07D-80.0-20170921

80 - 120

%Rec.

Limits

75 - 125

%Rec.

Limits

75 - 125

Prep Type: Total/NA

Prep Batch: 431847

Prep Type: Total/NA

Prep Batch: 431847

Prep Type: Total/NA

Prep Batch: 431847

RPD

1

8 9 1(1[/]

RPD Limit

20

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 431623

	INID								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.0050	0.0025	mg/L	 _	09/27/17 10:22	09/27/17 21:15	

Lab Sample ID: LCS 440-431623/2-A Matrix: Water					Client	Sample Prep	e ID: Lab Co Type: Tota	ontrol Sample I Recoverable
Analysis Batch: 431839					Prep Batch: 4316			
	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chromium	1.00	0.945		mg/L		94	80 - 120	

Lab Sample ID: 440-192518-O-	1-B MS							Client	Sample ID	: Matrix Spike
Matrix: Water						Prep Type: Total Recoverab			I Recoverable	
Analysis Batch: 431839									Prep	Batch: 431623
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chromium	13		1.00	13.8	4	mg/L		60	75 - 125	

Matrix: Water Analysis Batch: 431839	Matrix: Water Analysis Batch: 431839							Prep	Type: Tota Prep I	I Recov Batch: 4	erable
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chromium	13		1.00	13.7	4	mg/L		43	75 - 125	1	20
- Lab Sample ID: MB 440-431882	2/1-A							Client S	Sample ID:	Method	Blank
Matrix: Water								Prep	Type: Tota	I Recov	erable
Amelia Detale 400005									Duran	Detels: 4	

Analysis Batch: 432035 Prep Batch: 431882 MB MB Analyte **Result Qualifier** RL MDL Unit D Prepared Analyzed Dil Fac Chromium 0.0050 0.0025 mg/L 09/28/17 10:15 ND 09/28/17 18:29 1

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

 Lab Sample ID: LCS 440-431882/24	- A						Client	Sample	D: Lab Co	ontrol Sa	ample
Matrix: Water								Prep	Type: Total	Recove	erable
Analysis Batch: 432035									Prep E	Batch: 4	31882
			Spike	LCS	LCS				%Rec.		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
Chromium			1.00	0.981		mg/L		98	80 - 120		
Lab Sample ID: 440-192727-1 MS						Clier	nt Samp	ole ID: C	TMW-07D-5	0.0-201	70921
Matrix: Water								Prep	Type: Total	Recove	erable
Analysis Batch: 432035									Prep E	Batch: 4	31882
	Sample	Sample	Spike	MS	MS				%Rec.		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Chromium	11		1.00	14.6	4	mg/L		339	75 - 125		
Lab Sample ID: 440-192727-1 MSD)					Clier	nt Samp	ole ID: C	TMW-07D-5	0.0-201	70921
Matrix: Water								Prep	Type: Total	Recove	erable
Analysis Batch: 432035									Prep E	Batch: 4	31882
-	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chromium	11		1.00	14.8	4	mg/L		356	75 - 125	1	20
Method: Moisture - Percent M	oisture										
_ Lab Sample ID: 440-192727-2 DU						Clier	nt Samr	ole ID: C	TMW-07D-6	0.0-201	70921
Matrix: Solid									Prep T	vpe: To	al/NA
Analysis Batch: 430769											
	Sample	Sample		DU	DU						RPD
Analyte	Result	Qualifier		Result	Qualifier	Unit	D			RPD	Limit
Percent Moisture	21.0			18.5		%				12	20
 Lab Sample ID: 440-192727-6 DU						Clier	nt Samp	ole ID: C	TMW-07D-8	0.0-201	70921
Matrix: Solid									Prep T	ype: Tot	tal/NA
Analysis Batch: 431206											

Analysis Datch. 451200								
	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Percent Moisture	29.3		 29.9		%	_	 2	20

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

GC/MS VOA

Analysis Batch: 431823

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-2	CTMW-07D-60.0-20170921	Total/NA	Solid	8260B	
440-192727-4	CTMW-07D-70.0-20170921	Total/NA	Solid	8260B	
440-192727-6	CTMW-07D-80.0-20170921	Total/NA	Solid	8260B	
440-192727-7	CTMW-07D-90.0-20170921	Total/NA	Solid	8260B	
440-192727-8	CTMW-07D-100.0-20170921	Total/NA	Solid	8260B	
440-192727-9	CTMW-07D-110.0-20170921	Total/NA	Solid	8260B	
440-192727-11	CTMW-07D-90.0-20170921-FD	Total/NA	Solid	8260B	
MB 440-431823/3	Method Blank	Total/NA	Solid	8260B	
LCS 440-431823/4	Lab Control Sample	Total/NA	Solid	8260B	
440-192727-6 MS	CTMW-07D-80.0-20170921	Total/NA	Solid	8260B	
440-192727-6 MSD	CTMW-07D-80.0-20170921	Total/NA	Solid	8260B	

Analysis Batch: 432406

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-1	CTMW-07D-50.0-20170921	Total/NA	Water	8260B	
440-192727-3	CTMW-07D-70.0-20170921	Total/NA	Water	8260B	
440-192727-5	Trip Blank	Total/NA	Water	8260B	
440-192727-10	CTMW-07.D-60.0-20170921-EB	Total/NA	Water	8260B	
MB 440-432406/5	Method Blank	Total/NA	Water	8260B	
LCS 440-432406/6	Lab Control Sample	Total/NA	Water	8260B	
440-193013-B-1 MS	Matrix Spike	Total/NA	Water	8260B	
440-193013-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

HPLC/IC

Analysis Batch: 430559

Lab Canada JD	Olivert Ormania JD	Barra Trans	Madada	Madh a d	Dura Datak
Lab Sample ID		Prep Type	Matrix	Wethod	Prep Batch
440-192727-1	CTMW-07D-50.0-20170921	Total/NA	Water	7199	
440-192727-3	CTMW-07D-70.0-20170921	Total/NA	Water	7199	
440-192727-10	CTMW-07.D-60.0-20170921-EB	Total/NA	Water	7199	
MB 440-430559/6	Method Blank	Total/NA	Water	7199	
LCS 440-430559/5	Lab Control Sample	Total/NA	Water	7199	
MRL 440-430559/4	Lab Control Sample	Total/NA	Water	7199	
440-192727-3 MS	CTMW-07D-70.0-20170921	Total/NA	Water	7199	
440-192727-3 MSD	CTMW-07D-70.0-20170921	Total/NA	Water	7199	

Leach Batch: 430905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-2	CTMW-07D-60.0-20170921	Soluble	Solid	DI Leach	
440-192727-4	CTMW-07D-70.0-20170921	Soluble	Solid	DI Leach	
440-192727-6	CTMW-07D-80.0-20170921	Soluble	Solid	DI Leach	
440-192727-7	CTMW-07D-90.0-20170921	Soluble	Solid	DI Leach	
440-192727-8	CTMW-07D-100.0-20170921	Soluble	Solid	DI Leach	
440-192727-9	CTMW-07D-110.0-20170921	Soluble	Solid	DI Leach	
440-192727-11	CTMW-07D-90.0-20170921-FD	Soluble	Solid	DI Leach	
MB 440-430905/2-A	Method Blank	Soluble	Solid	DI Leach	
LCS 440-430905/1-A	Lab Control Sample	Soluble	Solid	DI Leach	
440-192727-6 MS	CTMW-07D-80.0-20170921	Soluble	Solid	DI Leach	
440-192727-6 MSD	CTMW-07D-80.0-20170921	Soluble	Solid	DI Leach	

HPLC/IC (Continued)

Analysis Batch: 431047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-1	CTMW-07D-50.0-20170921	Total/NA	Water	300.1B	
440-192727-3	CTMW-07D-70.0-20170921	Total/NA	Water	300.1B	
440-192727-10	CTMW-07.D-60.0-20170921-EB	Total/NA	Water	300.1B	
MB 440-431047/5	Method Blank	Total/NA	Water	300.1B	
LCS 440-431047/4	Lab Control Sample	Total/NA	Water	300.1B	
MRL 440-431047/3	Lab Control Sample	Total/NA	Water	300.1B	
440-192595-K-2 MS	Matrix Spike	Total/NA	Water	300.1B	
440-192595-K-2 MSD	Matrix Spike Duplicate	Total/NA	Water	300.1B	
Prep Batch: 431062					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-2	CTMW-07D-60.0-20170921	Total/NA	Solid	3060A	

440-192727-4	CTMW-07D-70.0-20170921	Total/NA	Solid	3060A
MB 440-431062/1-A	Method Blank	Total/NA	Solid	3060A
LCS 440-431062/2-A	Lab Control Sample	Total/NA	Solid	3060A
440-192190-E-24-O MS	Matrix Spike	Total/NA	Solid	3060A
440-192190-E-24-P MSD	Matrix Spike Duplicate	Total/NA	Solid	3060A
440-192190-E-24-Q MSI	Matrix Spike	Total/NA	Solid	3060A

Analysis Batch: 431262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-2	CTMW-07D-60.0-20170921	Total/NA	Solid	7199	431062
440-192727-4	CTMW-07D-70.0-20170921	Total/NA	Solid	7199	431062
MB 440-431062/1-A	Method Blank	Total/NA	Solid	7199	431062
LCS 440-431062/2-A	Lab Control Sample	Total/NA	Solid	7199	431062
MRL 440-431262/41	Lab Control Sample	Total/NA	Solid	7199	
440-192190-E-24-O MS	Matrix Spike	Total/NA	Solid	7199	431062
440-192190-E-24-P MSD	Matrix Spike Duplicate	Total/NA	Solid	7199	431062
440-192190-E-24-Q MSI	Matrix Spike	Total/NA	Solid	7199	431062

Prep Batch: 431646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-6	CTMW-07D-80.0-20170921	Total/NA	Solid	3060A	
440-192727-7	CTMW-07D-90.0-20170921	Total/NA	Solid	3060A	
440-192727-8	CTMW-07D-100.0-20170921	Total/NA	Solid	3060A	
440-192727-9	CTMW-07D-110.0-20170921	Total/NA	Solid	3060A	
440-192727-11	CTMW-07D-90.0-20170921-FD	Total/NA	Solid	3060A	
MB 440-431646/1-A	Method Blank	Total/NA	Solid	3060A	
LCS 440-431646/2-A	Lab Control Sample	Total/NA	Solid	3060A	
440-192727-6 MS	CTMW-07D-80.0-20170921	Total/NA	Solid	3060A	
440-192727-6 MSD	CTMW-07D-80.0-20170921	Total/NA	Solid	3060A	
440-192727-6 MSI	CTMW-07D-80.0-20170921	Total/NA	Solid	3060A	

Analysis Batch: 431675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-2	CTMW-07D-60.0-20170921	Soluble	Solid	300.1B	430905
440-192727-4	CTMW-07D-70.0-20170921	Soluble	Solid	300.1B	430905
440-192727-6	CTMW-07D-80.0-20170921	Soluble	Solid	300.1B	430905
440-192727-7	CTMW-07D-90.0-20170921	Soluble	Solid	300.1B	430905
440-192727-8	CTMW-07D-100.0-20170921	Soluble	Solid	300.1B	430905
440-192727-9	CTMW-07D-110.0-20170921	Soluble	Solid	300.1B	430905

HPLC/IC (Continued)

Analysis Batch: 431675 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-11	CTMW-07D-90.0-20170921-FD	Soluble	Solid	300.1B	430905
MB 440-430905/2-A	Method Blank	Soluble	Solid	300.1B	430905
LCS 440-430905/1-A	Lab Control Sample	Soluble	Solid	300.1B	430905
MRL 440-431675/3	Lab Control Sample	Total/NA	Solid	300.1B	
440-192727-6 MS	CTMW-07D-80.0-20170921	Soluble	Solid	300.1B	430905
440-192727-6 MSD	CTMW-07D-80.0-20170921	Soluble	Solid	300.1B	430905
Analysis Batch: 43181	3				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-6	CTMW-07D-80.0-20170921	Total/NA	Solid	7199	431646
440-192727-7	CTMW-07D-90.0-20170921	Total/NA	Solid	7199	431646
440-192727-8	CTMW-07D-100.0-20170921	Total/NA	Solid	7199	431646
440-192727-9	CTMW-07D-110.0-20170921	Total/NA	Solid	7199	431646
440-192727-11	CTMW-07D-90.0-20170921-FD	Total/NA	Solid	7199	431646
MB 440-431646/1-A	Method Blank	Total/NA	Solid	7199	431646
LCS 440-431646/2-A	Lab Control Sample	Total/NA	Solid	7199	431646
440-192727-6 MS	CTMW-07D-80.0-20170921	Total/NA	Solid	7199	431646
440-192727-6 MSD	CTMW-07D-80.0-20170921	Total/NA	Solid	7199	431646
440-192727-6 MSI	CTMW-07D-80.0-20170921	Total/NA	Solid	7199	431646
Analysis Batch: 43271	4				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-1	CTMW-07D-50.0-20170921	Total/NA	Water	314.0 LL	
440-192727-3	CTMW-07D-70.0-20170921	Total/NA	Water	314.0 LL	
440-192727-10	CTMW-07.D-60.0-20170921-EB	Total/NA	Water	314.0 LL	
MB 440-432714/39	Method Blank	Total/NA	Water	314.0 LL	
1 CS 440-432714/40	Lah Control Sample	Total/NA	Water	314 011	

L					
	MB 440-432714/39	Method Blank	Total/NA	Water	314.0 LL
	LCS 440-432714/40	Lab Control Sample	Total/NA	Water	314.0 LL
	MRL 440-432714/22	Lab Control Sample	Total/NA	Water	314.0 LL
	440-192678-D-3 MS	Matrix Spike	Total/NA	Water	314.0 LL
	440-192678-D-3 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0 LL
	440-192818-B-10 MS	Matrix Spike	Total/NA	Water	314.0 LL
	440-192818-B-10 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0 LL

Leach Batch: 433370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-2	CTMW-07D-60.0-20170921	Soluble	Solid	DI Leach	
440-192727-4	CTMW-07D-70.0-20170921	Soluble	Solid	DI Leach	
440-192727-6	CTMW-07D-80.0-20170921	Soluble	Solid	DI Leach	
440-192727-7	CTMW-07D-90.0-20170921	Soluble	Solid	DI Leach	
440-192727-8	CTMW-07D-100.0-20170921	Soluble	Solid	DI Leach	
440-192727-9	CTMW-07D-110.0-20170921	Soluble	Solid	DI Leach	
440-192727-11	CTMW-07D-90.0-20170921-FD	Soluble	Solid	DI Leach	
MB 440-433370/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 440-433370/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
440-192727-6 MS	CTMW-07D-80.0-20170921	Soluble	Solid	DI Leach	
440-192727-6 MSD	CTMW-07D-80.0-20170921	Soluble	Solid	DI Leach	
—					

Analysis Batch: 433554

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-2	CTMW-07D-60.0-20170921	Soluble	Solid	314.0	433370
440-192727-4	CTMW-07D-70.0-20170921	Soluble	Solid	314.0	433370

Prep Type

Soluble

Soluble

Soluble

Soluble

Soluble

Soluble

Soluble

Total/NA

Soluble

Soluble

Matrix

Solid

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

Client Sample ID

Method Blank

Lab Control Sample

Lab Control Sample

CTMW-07D-80.0-20170921

CTMW-07D-90.0-20170921

CTMW-07D-100.0-20170921

CTMW-07D-110.0-20170921

CTMW-07D-80.0-20170921

CTMW-07D-80.0-20170921

CTMW-07D-90.0-20170921-FD

HPLC/IC (Continued)

Lab Sample ID

440-192727-6

440-192727-7

440-192727-8

440-192727-9

440-192727-11

MB 440-433370/1-A

MRL 440-433554/7

440-192727-6 MS

440-192727-6 MSD

LCS 440-433370/2-A

Analysis Batch: 433554 (Continued)

Method

314.0

314.0

314.0

314.0

314.0

314.0

314.0

314.0

314.0

314.0

Prep Batch

433370

433370

433370

433370

433370

433370

433370

433370

433370

7 8 9 10

Metals

Prep Batch: 431623

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batch
440-192727-10	CTMW-07.D-60.0-20170921-EB	Total Recoverable	Water	3005A
MB 440-431623/1-A	Method Blank	Total Recoverable	Water	3005A
LCS 440-431623/2-A	Lab Control Sample	Total Recoverable	Water	3005A
440-192518-O-1-B MS	Matrix Spike	Total Recoverable	Water	3005A
440-192518-O-1-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	3005A

Analysis Batch: 431839

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-10	CTMW-07.D-60.0-20170921-EB	Total Recoverable	Water	6010B	431623
MB 440-431623/1-A	Method Blank	Total Recoverable	Water	6010B	431623
LCS 440-431623/2-A	Lab Control Sample	Total Recoverable	Water	6010B	431623
440-192518-O-1-B MS	Matrix Spike	Total Recoverable	Water	6010B	431623
440-192518-O-1-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	6010B	431623

Prep Batch: 431847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-2	CTMW-07D-60.0-20170921	Total/NA	Solid	3050B	
440-192727-4	CTMW-07D-70.0-20170921	Total/NA	Solid	3050B	
440-192727-6	CTMW-07D-80.0-20170921	Total/NA	Solid	3050B	
440-192727-7	CTMW-07D-90.0-20170921	Total/NA	Solid	3050B	
440-192727-8	CTMW-07D-100.0-20170921	Total/NA	Solid	3050B	
440-192727-9	CTMW-07D-110.0-20170921	Total/NA	Solid	3050B	
440-192727-11	CTMW-07D-90.0-20170921-FD	Total/NA	Solid	3050B	
MB 440-431847/1-A ^5	Method Blank	Total/NA	Solid	3050B	
LCS 440-431847/2-A ^5	Lab Control Sample	Total/NA	Solid	3050B	
440-192727-6 MS	CTMW-07D-80.0-20170921	Total/NA	Solid	3050B	
440-192727-6 MSD	CTMW-07D-80.0-20170921	Total/NA	Solid	3050B	

Prep Batch: 431882

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-1	CTMW-07D-50.0-20170921	Total Recoverable	Water	3005A	
440-192727-3	CTMW-07D-70.0-20170921	Total Recoverable	Water	3005A	
MB 440-431882/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 440-431882/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
440-192727-1 MS	CTMW-07D-50.0-20170921	Total Recoverable	Water	3005A	

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

Metals (Continued)

Prep	Batch:	431882	(Continued)
	Datom		(Containada)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-1 MSD	CTMW-07D-50.0-20170921	Total Recoverable	Water	3005A	
Analysis Batch: 43200	3				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-2	CTMW-07D-60.0-20170921	Total/NA	Solid	6010B	431847
440-192727-4	CTMW-07D-70.0-20170921	Total/NA	Solid	6010B	431847
440-192727-7	CTMW-07D-90.0-20170921	Total/NA	Solid	6010B	431847
440-192727-8	CTMW-07D-100.0-20170921	Total/NA	Solid	6010B	431847
440-192727-9	CTMW-07D-110.0-20170921	Total/NA	Solid	6010B	431847
440-192727-11	CTMW-07D-90.0-20170921-FD	Total/NA	Solid	6010B	431847
Analysis Batch: 43203	5 Client Sample ID	Pron Typo	Matrix	Method	Pron Batch
440-192727-1	CTMW-07D-50 0-20170921	Total Recoverable	- Water	6010B	
MB 440-431882/1-A	Method Blank	Total Recoverable	Water	6010B	431882
	Lab Control Comple	Tatal David and the	Wator	60100	101000
LCS 440-431882/2-A	Lab Control Sample	I otal Recoverable	vvalei	00100	431882
LCS 440-431882/2-A 440-192727-1 MS	CTMW-07D-50.0-20170921	Total Recoverable	Water	6010B	431882
LCS 440-431882/2-A 440-192727-1 MS 440-192727-1 MSD	CTMW-07D-50.0-20170921 CTMW-07D-50.0-20170921	Total Recoverable Total Recoverable Total Recoverable	Water Water	6010B 6010B 6010B	431882 431882 431882
LCS 440-431882/2-A 440-192727-1 MS 440-192727-1 MSD Analysis Batch: 43212	CTMW-07D-50.0-20170921 CTMW-07D-50.0-20170921 8	Total Recoverable Total Recoverable Total Recoverable	Water Water Water	6010B 6010B	431882 431882 431882
LCS 440-431882/2-A 440-192727-1 MS 440-192727-1 MSD 	CTMW-07D-50.0-20170921 CTMW-07D-50.0-20170921 8 Client Sample ID	Total Recoverable Total Recoverable Total Recoverable Prep Type	Water Water Matrix	6010B 6010B 6010B	431882 431882 431882 97rep Batch

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-6	CTMW-07D-80.0-20170921	Total/NA	Solid	6010B	431847
MB 440-431847/1-A ^5	Method Blank	Total/NA	Solid	6010B	431847
LCS 440-431847/2-A ^5	Lab Control Sample	Total/NA	Solid	6010B	431847
440-192727-6 MS	CTMW-07D-80.0-20170921	Total/NA	Solid	6010B	431847
440-192727-6 MSD	CTMW-07D-80.0-20170921	Total/NA	Solid	6010B	431847

General Chemistry

Analysis Batch: 430769

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-2	CTMW-07D-60.0-20170921	Total/NA	Solid	Moisture	
440-192727-4	CTMW-07D-70.0-20170921	Total/NA	Solid	Moisture	
440-192727-7	CTMW-07D-90.0-20170921	Total/NA	Solid	Moisture	
440-192727-8	CTMW-07D-100.0-20170921	Total/NA	Solid	Moisture	
440-192727-9	CTMW-07D-110.0-20170921	Total/NA	Solid	Moisture	
440-192727-11	CTMW-07D-90.0-20170921-FD	Total/NA	Solid	Moisture	
440-192727-2 DU	CTMW-07D-60.0-20170921	Total/NA	Solid	Moisture	

Analysis Batch: 431206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192727-6	CTMW-07D-80.0-20170921	Total/NA	Solid	Moisture	
440-192727-6 MS	CTMW-07D-80.0-20170921	Total/NA	Solid	Moisture	
440-192727-6 MSD	CTMW-07D-80.0-20170921	Total/NA	Solid	Moisture	
440-192727-6 DU	CTMW-07D-80.0-20170921	Total/NA	Solid	Moisture	

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

Qualifier Description

Qualifier Description

applicable.

ISTD response or retention time outside acceptable limits

MS and/or MSD Recovery is outside acceptance limits.

Metals

HPLC/IC Qualifier

F1

4

J

Qualifiers GC/MS VOA Qualifier

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12 TestAmerica Job ID: 440-192727-1

Laboratory: TestAmerica Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-18
Arizona	State Program	9	AZ0671	10-14-17 *
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-18
Nevada	State Program	9	CA015312018-1	07-31-18
New Mexico	State Program	6	N/A	01-29-18 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

ca Irvine	Suite 100	4-5817
TestAmeri	17461 Deriar	Irvine. CA 9261

Chain of Custu _/ Record

Test/ nerica

Phone (949) 261-1022 Fax (949) 260-3297														Г
Client Information	Sampler: Jeff Richeson			Patty	M: Mata				ner Tracking) No(s):	<u> </u>	COC NO:		
Citerit IIIIOIIIauOII Client Contact:	Phone:			E-Mail							10	age:		r
Mike Crews	(805) 660-1774			patty	mata@tes	tamericain	c.com				Ť	. 8.		
Company: Tetra Tech							Analysi	s Reque	sted			OD #:		
Address: 17885 Von Karman Ave., Suite 500	Due Date Request	:pa			21		U ane X					Preservation Cod	ies: M - Hexane	
City: Irvine	TAT Requested (d	ays):			(<i>D)</i>		17'4 175 24					B - NaOH C - Zn Acetate	N - None O - AsNaO2	
State. Zp: CA 92614					161		J COL					D - Nitric Acid E - NaHSO4 F - MeOH	P - Na204S Q - Na2SO3 R - Na2S2O3	
Phone: (949)-803-5033	P0#: M12-CWP-01-V	VA2			47 (0)		1) 10 ⁻⁶⁶	JON SI				G - Amchlor H - Ascorbic Acid	S - H2SO4 T - TSP Dodecahydrate	
Emait mike crews.Qtetratecn.com	:# OM				No)		12 '01	0/7 39W 5	otal		SIG	I - Ice J - DI Water	U - Acetone V - MCAA	
Project Name: NERT In-Situ Cr Treatability Study	Project #: 44017166				9 58D	ensd	101 3004		r, əbitl	ət	nietn	K - EUIA L - EDA	w - pH 4-5 Z - ather (specify)	
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Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix	Field Filtered Perform MS/M 300.18_14D, :	351.2, 365.3, 1 88K_175 - Di	2340C' 0010B	82608 LL - V	VFA_IC - VFA	314.0_LL - Pe	edmuN lstoT	Special Ins	tructions/Note:	
	M	X	Preserva	tion Code:	- X	N N	a z	A A N	CB	z	X			<u> </u>
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Trip Blank		0200		Hao							m		stody	
CTMW-070-80.0-20170921		1350		Sei	XX		X X	<u>へ</u>		X	~		snO J	
CTMW-070-90,0-20170921		1435		50,1	\times		X X			\times				
CTMW-070-100.0- 20170921		1505		52.1			X			\times				
CTMW- 070-110.0-20170921		Sezi		50.1			X	<u> ろ</u>		X	-		2226	
CTMW-070- 60.0-20170921-EB		orei		Hao	\leq		X	×		X	0		L-OÞt	
CTMW-070-90,0 20170921-FD	>	1439	\geq	5011	X		XX		_	X	-			Ĺ
Possible Hazard Identification	son B		Radiologica		Sample	Disposal eturn To C	(A fee má lient	ly be asse	ssed if sa sal By La	imples are	retained ⊐ Archiv	l longer than 1 I e For Moi	month) nths	
Deliverable Requested: I, II, III, IV, Other (specify)					Special	Instruction	s/QC Req	urements:	Level 3 G	QC Require	p	(S)	IR W	<u>77</u>
Empty Kit Relinquished by:		Date:			Time:		-		Method of	Shipment:	Ed.			<u>/</u>
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Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Login Number: 192727 List Number: 1

Creator: Escalante, Maria I

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Number: 440-192727-1

List Source: TestAmerica Irvine



THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-192817-1

Client Project/Site: NERT In-Situ Cr Treatability, M12

For:

Tetra Tech, Inc. 17885 Von Karman Ave, Ste 500 Irvine, California 92614

Attn: Mike Crews

ADNI.

Authorized for release by: 10/9/2017 3:39:53 PM Patty Mata, Senior Project Manager (949)261-1022 patty.mata@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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QC Sample Results	9
QC Association Summary	18
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Certification Summary	22
Chain of Custody	23
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Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12 TestAmerica Job ID: 440-192817-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-192817-1	CTMW-07D-120.0-20170922	Solid	09/22/17 07:15	09/22/17 21:20
440-192817-2	CTMW-07D-130.0-20170922-EB	Water	09/22/17 08:30	09/22/17 21:20
440-192817-3	Trip Blank	Water	09/22/17 07:00	09/22/17 21:20

Job ID: 440-192817-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-192817-1

Comments

No additional comments.

Receipt

The samples were received on 9/22/2017 9:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.9° C and 4.1° C.

Receipt Exceptions

The following sample was received at the laboratory without a sample collection time documented on the chain of custody: CTMW-07D-130.0-20170922-EB (440-192817-2). The time was taken from the container labels (08:30).

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

HPLC/IC

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Date Collected: 09/22/17 07:15

Date Received: 09/22/17 21:20

Client Sample ID: CTMW-07D-120.0-20170922

Lab Sample ID: 440-192817-1

Lab Sample ID: 440-192817-2

Matrix: Water

Matrix: Solid

Percent Solids: 56.9

2 3 4 5 6 7 8 8

9 10 11

Method: 8260B - Volatile Organic	Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		3.5	1.7	ug/Kg	<u></u>		09/28/17 13:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	110		79 - 120					09/28/17 13:27	1
Dibromofluoromethane (Surr)	102		60 - 120					09/28/17 13:27	1
Toluene-d8 (Surr)	108		79 - 123					09/28/17 13:27	1
Method: 300.1B - Disinfection By	-Products, (IC) - Soluble							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorate	670		350	87	ug/Kg	\$		09/28/17 20:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dichloroacetic acid(Surr)	99		90 - 115					09/28/17 20:06	1
- Method: 314.0 - Perchlorate (IC) -	Soluble								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	0.36		0.070	0.017	mg/Kg	\$		10/07/17 10:48	1
- Method: 7199 - Chromium, Hexav	valent (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		0.53	0.27	mg/Kg	\\\	09/25/17 09:22	09/26/17 11:54	3
Method: 6010B - Metals (ICP)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	58		1.7	0.87	mg/Kg	<u>\$</u>	09/28/17 07:51	09/28/17 15:57	5
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	43.1		0.1	0.1	%			09/25/17 17:10	1

Client Sample ID: CTMW-07D-130.0-20170922-EB

Date Collected: 09/22/17 08:30

Date Received: 09/22/17 21:20

Method: 8260B - Volatile Organi	c Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		0.50	0.25	ug/L			10/02/17 18:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		80 - 120			-		10/02/17 18:39	1
Dibromofluoromethane (Surr)	112		76 _ 132					10/02/17 18:39	1
Toluene-d8 (Surr) _	109		80 - 128					10/02/17 18:39	1
- Method: 300.1B - Disinfection B	y-Products, (IC)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorate	ND		20	10	ug/L			09/25/17 18:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dichloroacetic acid(Surr)	98		90 _ 115			-		09/25/17 18:58	1

Client Sample ID: CTMW-071 Date Collected: 09/22/17 08:30 Date Received: 09/22/17 21:20	lient Sample ID: CTMW-07D-130.0-20170922-EB ate Collected: 09/22/17 08:30 ate Received: 09/22/17 21:20									
Method: 314.0 LL - Perchlorate (IC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Perchlorate	ND		1.0	0.50	ug/L			10/04/17 02:16	1	
Method: 7199 - Chromium, Hexa	valent (IC)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Chromium, hexavalent	0.39	J	2.0	0.25	ug/L			09/23/17 01:00	1	
Method: 6010B - Metals (ICP) - T	otal Recoverat	ole								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Chromium	ND		0.0050	0.0025	mg/L		09/27/17 10:22	09/27/17 21:55	1	
Client Sample ID: Trip Blank							Lab Samp	le ID: 440-19	2817-3	
Date Collected: 09/22/17 07:00								Matrix	c: Water	

Date Collected: 09/22/17 07:00 Date Received: 09/22/17 21:20

Method: 8260B - Volatile Organic Compounds (GC/MS)											
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
Chloroform	ND		0.50	0.25	ug/L			10/02/17 19:09	1		
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac		
1 D			00 100			-		40/00/47 40:00	1		
4-Bromotiuorobenzene (Surr)	96		80 - 120					10/02/17 19:09	1		
4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr)	96 118		80 - 120 76 - 132					10/02/17 19:09	1		

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

Method Description

Perchlorate (IC)

Perchlorate (IC)

Percent Moisture

Metals (ICP)

EPA = US Environmental Protection Agency

Volatile Organic Compounds (GC/MS)

Disinfection By-Products, (IC)

Chromium, Hexavalent (IC)

Method

8260B

300.1B

314.0 LL

314.0

7199

6010B

Moisture

Protocol References:

Laboratory References:

Protocol SW846

EPA

EPA

EPA

EPA

SW846

SW846

Laboratory

TAL IRV

5
6
8
9

Client Sample ID: CTMW-07D-120.0-20170922

Lab Sample ID: 440-192817-1

Lab Sample ID: 440-192817-2

Lab Sample ID: 440-192817-3

Matrix: Water

Matrix: Water

Date Collected: 09/22/17 07:15 Matrix: Solid Date Received: 09/22/17 21:20 Batch Dil Initial Final Batch Prepared Batch Prep Type Туре Method Run Factor Amount Amount Number or Analyzed Analyst Lab Total/NA Moisture 431206 09/25/17 17:10 HTL TAL IRV Analysis Client Sample ID: CTMW-07D-120.0-20170922 Lab Sample ID: 440-192817-1 Date Collected: 09/22/17 07:15 Matrix: Solid Date Received: 09/22/17 21:20 Percent Solids: 56.9 Batch Batch Dil Initial Final Batch Prepared Method Amount or Analyzed Prep Type Туре Run Factor Amount Number Analyst Lab 8260B Total/NA Analysis 5.04 g 10 mL 431823 09/28/17 13:27 WC TAL IRV 1 Soluble DI Leach 431843 09/28/17 07:35 YΖ TAL IRV Leach 4.02 g 40 ml Soluble Analysis 300.1B 1 431675 09/28/17 20:06 YΖ TAL IRV Soluble Leach DI Leach 4.02 g 40 mL 433370 10/05/17 18:05 CTH TAL IRV Soluble Analysis 314.0 1 433554 10/07/17 10:48 CTH TAL IRV Total/NA 3060A 431062 TAL IRV Prep 2.48 g 100 mL 09/25/17 09:22 YΖ Total/NA Analysis 7199 3 431262 09/26/17 11:54 MN TAL IRV 3050B 431847 DT TAL IRV Total/NA Prep 2.03 g 50 mL 09/28/17 07:51 Total/NA Analysis 6010B 5 432003 09/28/17 15:57 VS TAL IRV

Client Sample ID: CTMW-07D-130.0-20170922-EB Date Collected: 09/22/17 08:30 Date Received: 09/22/17 21:20

Γ	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Ргер Туре	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	432406	10/02/17 18:39	HR	TAL IRV
Total/NA	Analysis	300.1B		1			431047	09/25/17 18:58	YZ	TAL IRV
Total/NA	Analysis	314.0 LL		1			432714	10/04/17 02:16	CTH	TAL IRV
Total/NA	Analysis	7199		1			430559	09/23/17 01:00	MN	TAL IRV
Total Recoverable	Prep	3005A			25 mL	25 mL	431623	09/27/17 10:22	Q1N	TAL IRV
Total Recoverable	Analysis	6010B		1			431839	09/27/17 21:55	EN	TAL IRV

Client Sample ID: Trip Blank

Date Collected: 09/22/17 07:00 Date Received: 09/22/17 21:20

_										
	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	10 mL	10 mL	432406	10/02/17 19:09	HR	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid Analysis Batch: 431823 MB MB MB MB Malysis Batch: 431823 Prepr Type: Total Analysis Batch: 431823 Analysis Batch: 431823 MB MB MB MB 00/2017/08:10 <th>Lab Sample ID: MB 440-431</th> <th>823/3</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Client S</th> <th>Sample ID:</th> <th>Method</th> <th>Blank</th>	Lab Sample ID: MB 440-431	823/3									Client S	Sample ID:	Method	Blank
Analysis Batch: 431823 MB MB MB MD Unit D Prepared Analyzed DII Chloroform ND ND 1.0 ug/kg D Prepared Analyzed DII Surrogate %Recovery Qualifier Limits Prepared Analyzed DII Adomothy concentrance (Surr) 96 76 (20 000000000000000000000000000000000000	Matrix: Solid											Prep T	ype: To	tal/NA
MB MB MD Visit P Prepared Analyzed District Chiozofarm MD 2.0 1.0 ug/kg 08/28/17 06:10 08/28/17 06:10 Surragete %Recovery Qualifier Limits - Analyzed District 09/28/17 06:10 0 09/28/17 06:10 0 09/28/17 06:10 0 0 0 0 0 0	Analysis Batch: 431823													
Analyte Result Qualifier RL MD L Unit D Prepared Analyzed DD Chloroform ND 2.0 1.0 ug/Kg D Analyzed DD Surrogate %Recovery Qualifier Limits Prepared Analyzed DD 4-Gromohuconentame (Surr) 98 79 - 122 042817108:10 042821708:10 0			MB MB											
ND 2.0 1.0 ugKg 00/28/17.08:10 Surogate %Recovery Qualifier Limits Prepared Analyzed Diff 4-Bornofiluoroberzene (Sur) 98 79.120 04/28/17.08:10	Analyte	Res	sult Qualifie	r RL		MDL	Unit		D	Ρ	repared	Analyz	ed	Dil Fac
MB MB MB Prepared Analyzed Distribution 4-Riconciburoonenzene (Surr) 035 79 - 120 03/28/17 08:10 03/28/17	Chloroform		ND	2.0		1.0	ug/Kg					09/28/17	08:10	1
Surrogate %Recovery Qualifier Limits Propared Analyzed QUI 4-Bromofluorobenzene (Surr) 96 79-120 0928/17.08.10 0108/10.10 0928/17.08.10 0101 00.10 001.10 001.00 001.10 0918/10.10 0011110			MB MB											
4-Bromofiluoroberzene (Surr) 98 79 - 120 09/24/17 08:10 Dibromofiluoroberzene (Surr) 105 60 - 120 09/24/17 08:10 Lab Sample ID: LCS 440-431823/4 Client Sample ID: Lab Control Sam Prep Type: Total Analysis Batch: 431823 Spike LCS LCS LCS LCS LCS Matrix: Solid Analysis Batch: 431823 Spike LCS LCS LCS LCS LCS Simogate %Rec. Matrix: Solid Surrogate %Recovery Qualifier Limits Prep Type: Total Prep Type: Total Diamonfluoroberzene (Surr) 95 79 - 120 Prep Type: Total Prep Type: Total Jobarnomfluoroberzene (Surr) 103 79 - 120 Prep Type: Total Prep Type: Total Lab Sample ID: 440-192727-A-6 MS Sample Spike MS MS MS MS KRec. Analysis Batch: 431823 Sample Sample Spike MS MS Skrec. Skrec. MRec.	Surrogate	%Recov	ery Qualifie	r Limits					_	Р	repared	Analyz	ed	Dil Fac
Dibromoliuoranethane (Surr) 105 60 - 120 09/28/17 08:10 Toluene-d8 (Surr) 85 79 - 123 09/28/17 08:10 Lab Sample ID: LCS 440-431823/4 Matrix: Solid Client Sample ID: Lab Control Sam Prep Type: Total/ Analysis Batch: 431823 Spike LCS	4-Bromofluorobenzene (Surr)		98	79 - 120								09/28/17	08:10	1
Toluene-d8 (Surr) 85 79 - 123 09/28/17 08:10 Lab Sample ID: LCS 440-431823/4 Matrix: Solid Analysis Batch: 431823 Client Sample ID: Lab Control Sam Prep Type: Total/ Analysis Batch: 431823 Analysis Batch: 431823 Spike Sirregate Spike Sirregate LCS LCS LCS LCS LCS Urg/Kg V/Rec. Limits Added Abcmofluorohezene (Surr) 100 60 - 120 Ug/Kg 70 - 130 Totano- Totane-d8 (Surr) Client Sample ID: Matrix Sp Prep Type: Total/ Analysis Batch: 431823 Analyte Sample Sample Spike MS MS MS Scient Sample ID: Matrix Sp Prep Type: Total/ Analysis Batch: 431823 Analyte Result Qualifier Milfer Added Added MS MS Scient Sample ID: Matrix Sp Prep Type: Total/ Analysis Batch: 431823 Surregate Sample Size Sample Spike MS MS MS MS Scient Sample ID: Matrix Spike Ug/Kg Scient Sample ID: Matrix Spike Prep Type: Total/ Analysis Batch: 431823 Surregate Sample Sample Spike MSD MS MSD Scient Sample ID: Matrix Spike Dupilc Prep Type: Total/ Analysis Batch: 431823 Analyte Result Qualifier Limits Prep Type: Total/ Analysis Batch: 431823 Sample Sample Spike MSD MS	Dibromofluoromethane (Surr)		105	60 - 120								09/28/17	08:10	1
Lab Sample ID: LCS 440-431823/4 Client Sample ID: Lab Control Sam Matrix: Solid Analysis Batch: 431823 Spike LCS LCS LCS KRec. Analysis Batch: 431823 Spike LCS LCS LCS LCS Matrix:	Toluene-d8 (Surr)		85	79 - 123								09/28/17	08:10	1
Matrix: Solid Analysis Batch: 431823 Prep Type: Total/ Analysis Batch: 431823 Analyte Added Result Qualifier Unit D %Rec. Limits Limits Chloroform 50.0 53.8 ug/Kg 108 70.130 70.130 LCS LCS </td <td>- Lab Sample ID: LCS 440-43[,]</td> <td>1823/4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>CI</td> <td>ient</td> <td>Sample</td> <td>ID: Lab C</td> <td>ontrol S</td> <td>ample</td>	- Lab Sample ID: LCS 440-43 [,]	1823/4							CI	ient	Sample	ID: Lab C	ontrol S	ample
Analysis Batch: 431823 Spike LCS LCS LCS LCS LCS Limits Analyte 50.0 53.8 ug/Kg 0 %Rec. Limits Ghloroform LCS LCS LCS Limits 108 70.130 70.130 LCS LCS LCS Limits 79.120 108 70.130 70.110 70.1	Matrix: Solid											Prep T	ype: To	tal/NA
Analyte Spike LCS LCS Write Maded Result Qualifier Unit D %Rec. Limits Closedorm Choroform LCS LCS Solo 53.8 uog/Kg 108 70.130 </td <td>Analysis Batch: 431823</td> <td></td>	Analysis Batch: 431823													
Analyte Added Result Qualifier Unit D %Rec Limits Chioroform 50.0 53.8 ug/Kg 108 70.130 - Surrogate 5%Recovery Qualifier Limits -				Spike	LCS	LCS	;					%Rec.		
Chloroform LCS LCS Miller Limits 4-Brannefluorobenzene (Surr) 95 79.120 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108 70.130 108	Analyte			Added	Result	Qua	lifier	Unit		D	%Rec	Limits		
LCS LCS Surrogate %Recovery Qualifier Limits 4-Bromofluoroberzene (Surr) 95 79 - 120 Dibramofluoromethane (Surr) 100 60 - 120 Tolleare-de (Surr) 103 79 - 123 Lab Sample ID: 440-192727-A-6 MS Client Sample ID: Matrix Sp Matrix: Solid Sample Analysis Batch: 431823 Sample Sample Sample Matrix: Solid Cualifier Added Result Qualifier Analyte Result Qualifier Added Result Qualifier Analyte Result Qualifier Limits - - Arabyte %Recovery Qualifier Limits - - Albornofluoroberzene (Surr) 101 60 - 120 - - - Dibromofluoroberzene (Surr) 100 79 - 123 - - - Lab Sample ID: 440-192727-A-6 MSD Client Sample ID: Matrix Spike Duplic Prep Type: Total/ - - Markix: Solid - - -	Chloroform			50.0	53.8			ug/Kg		_	108	70 - 130		
LCS LCS Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 95 79.120 Dibromofluoromethane (Surr) 100 60.120 Toluen-d8 (Surr) 103 79.123 Lab Sample ID: 440-192727-A-6 MS Client Sample ID: Matrix Sp Matrix: Solid Sample Sample Analysis Batch: 431823 Sample Spike Ms MS MS Surrogate %Recovery Qualifier Vinconfluorobenzene (Surr) 101 60.120 Toluen-d8 (Surr) 100 79.123 Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 100 79.120 Dibromofluoromethane (Surr) 100 79.120 Dibromofluorobenzene (Surr) 100 79.123 Lab Sample ID: 440-192727-A-6 MSD Client Sample ID: Matrix Spike Duplic Prep Type: Total/ Matrix: Solid Analysis Batch: 431823 Sample Analysis Batch: 431823 Sample Spike MSD MSD														
Surregate %kecovery Qualifier Limits 4-Bromofluorobenzene (Surr) 95 79 - 120 Dibromofluoromethane (Surr) 100 60 - 120 Toluene-d8 (Surr) 103 79 - 123 Lab Sample ID: 440-192727-A-6 MS Client Sample ID: Matrix Sp Matrix: Solid Sample Sample Analyte Result Qualifier Added Result Qualifier Added Result Qualifier Virgozie ND 71.3 79.4 Umit D %Rec. Chloroform ND 79 - 120 Dibromofluorobenzene (Surr) 101 65 - 135 - Surregate %Recovery Qualifier Limits - - - 4-Bromofluorobenzene (Surr) 101 60 - 120 - - - - - Dibromofluorobenzene (Surr) 100 79 - 123 -	•	LCS												
4-Bromoluzobenzene (surr) 39 19.120 Dibromoluzomethane (surr) 100 60.120 Toluene-d8 (surr) 103 79.123 Lab Sample ID: 440-192727-A-6 MS Client Sample ID: Matrix Sp Matrix: Solid Sample Sample Analysis Batch: 431823 Result Qualifier Added Matrix: Solid Result Qualifier Unit D %Rec. Chloroform ND 71.3 79.4 ug/Kg 2 %Rec. Surrogate %Recovery Qualifier Limits - - - 4-Bromolucromethane (Surr) 101 60.120 - - - - Dibromolucromethane (Surr) 100 79.120 -	Surrogate	- %Recovery	Qualifier											
Lab Sample ID: 440-192727-A-6 MS Matrix: Solid Analysis Batch: 431823 Sample Result Qualifier Added Chloroform ND 71.3 79.4 ug/Kg C Limits Surrogate %Recovery Qualifier Limits 4-Bromofluoromethane (Surr) 100 79 - 123 Lab Sample ID: 440-192727-A-6 MSD MS MS Surrogate %Recovery Qualifier Added Result Qualifier Limits Analysis Batch: 431823 Client Sample ID: Matrix Spike Duplic Prep Type: Total/ MS MS Client Sample ID: Matrix Spike Duplic Prep Type: Total/ Analysis Batch: 431823 Client Sample ID: Matrix Spike Duplic Prep Type: Total/ Analysis Batch: 431823 Analysis Batch: 431823 Analysis Batch: 431823 Analysis Batch: 431823 Surrogate %Recovery Qualifier Added Result Qualifier Added Result Qualifier Unit D %Rec. F Analysis Batch: 431823 Analysis Batch: 431823 Surrogate %Recovery Qualifier Limits MSD MSD Surrogate %Recovery Qualifier Limits Analysis Batch: 431823 Analysis Batch: 431823 Surrogate %Recovery Qualifier Limits MSD MSD Surrogate %Recovery Qualifier Limits Surrogate %Recovery Qualifier Limits MSD MSD Surrogate %Recovery Qualifier Limits Surrogate %Recovery Qualifier Limits MSD MSD Surrogate %Recovery Qualifier Limits Surrogate %Recovery Qualifier Limits Surrogate %Recovery Qualifier Limits Surrogate %Recovery Qualifier Limits MSD MSD Surrogate %Recovery Qualifier Limits Surrogate %Recovery Qualifier Limits Surrogate %Recovery Qualifier Limits MSD MSD Surrogate %Recovery Qualifier Limits Surrogate %Recovery Qualifier %Recovery Qualifier Limits Surrogate %Recovery Qualifier	4-Bromofiluorobenzene (Surr)	95		79 - 120										
Toulen-de (Suff) 103 19-123 Lab Sample ID: 440-192727-A-6 MS Client Sample ID: Matrix Sp Matrix: Solid Sample Sample Analyte Result Qualifier Analyte Result Qualifier Chioroform ND 71.3 MS MS MS Surrogate %Recovery Qualifier 4-Bromofluorobenzene (Surr) 101 60-120 Toluen-d8 (Surr) 100 79-123 Lab Sample ID: 440-192727-A-6 MSD Client Sample ID: Matrix Spike Duplic Matrix: Solid ND 79.4 Analyte Result Qualifier Lab Sample ID: 440-192727-A-6 MSD Client Sample ID: Matrix Spike Duplic Matrix: Solid Prep Type: Total/ Analyte Result Qualifier Analyte Result Qualifier MSD MSD MSD Surrogate %Recovery Qualifier Analyte Result Qualifier MSD MSD MSD Surrogate %Recovery Qualifier	Dibromotiuorometnane (Surr)	100		60 - 120 70 - 100										
Lab Sample ID: 440-192727-A-6 MS Client Sample ID: Matrix Sp Matrix: Solid Sample Sample Spike MS MS Prep Type: Total/ Analyte Result Qualifier Added Result Qualifier Unit D %Rec. Limits Chloroform ND 71.3 79.4 Qualifier Unit D %Rec. Limits - MS MS MS Surrogate %Recovery Qualifier Limits - <td>Toluene-a8 (Surr)</td> <td>103</td> <td></td> <td>79 - 123</td> <td></td>	Toluene-a8 (Surr)	103		79 - 123										
Sumple ID: HOL132121445 INS Second	- I ah Sample ID: 440-192727.	A 6 MS									Client	Sample ID	• Matrix	Sniko
Analysis Batch: 431823 Analysis Batch: 431823 Analyte Sample Sample Sample Spike MS MS S %Rec Limits Chloroform ND 71.3 79.4 Qualifier Unit D %Rec Limits 5 % Rec Limits	Matrix: Solid										Chem	Drop T		
Analyte Sample Sample Spike MS MS MS MS MS ME VRec. Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits - Chloroform ND MS MS MS Surrogate %Recovery Qualifier Limits - <td>Analysis Ratch: 421822</td> <td></td> <td>гіер і</td> <td>ype. To</td> <td></td>	Analysis Ratch: 421822											гіер і	ype. To	
AnalyteResultQualifierAddedResultQualifierUnitD%RecLimitsChloroformND71.379.4QualifierUnitD%Rec11165.135-MSMSSurrogate%RecoveryQualifierLimits4-Bromofluorobenzene (Surr)10279.120Dibromofluoromethane (Surr)10160.120Toluene-d8 (Surr)10079.123Lab Sample ID: 440-192727-A-6 MSDClient Sample ID: Matrix Spike Duplic Prep Type: Total/ Analysis Batch: 431823SampleSampleSpike AddedMSDMSD%Rec.FeAnalyteResultQualifierAddedResultQualifierUnitD%Rec.FChloroformND70.673.2UnitD%Rec.FMSDMSDMSD79.120UnitD%Rec.FDibromofluorobenzene (Surr)10279.120UnitD%Rec.FChloroformND79.120UnitD%Rec.FMSDMSD79.120UnitD65.1358Surrogate%RecoveryQualifierLimits 79.12010379.123Dibromofluorobenzene (Surr)10160.120Toluene-d8 (Surr)10379.123	Analysis Datch. 431023	Sample	Sample	Spike	MS	MS						%Rec.		
Chloroform ND 71.3 79.4 ug/Kg NL 111 65.135 0 Surrogate %Recovery Qualifier Limits 111 65.135 0 Surrogate %Recovery Qualifier Limits 0 79.4 ug/Kg NL 101 65.135 0 Joiromofluorobenzene (Surr) 101 60.120 79.123 0 79.4 Ug/Kg NL Easter (Surr) NL NL <td>Analyte</td> <td>Result</td> <td>Qualifier</td> <td>Added</td> <td>Result</td> <td>Qua</td> <td>lifier</td> <td>Unit</td> <td></td> <td>D</td> <td>%Rec</td> <td>Limits</td> <td></td> <td></td>	Analyte	Result	Qualifier	Added	Result	Qua	lifier	Unit		D	%Rec	Limits		
MS MS Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 102 79 - 120 Dibromofluoromethane (Surr) 101 60 - 120 Toluene-d8 (Surr) 100 79 - 123 Lab Sample ID: 440-192727-A-6 MSD Client Sample ID: Matrix Spike Duplic Prep Type: Total/ Analysis Batch: 431823 Analyte Result Qualifier Added Choroform ND 2 70.6 MSD MSD MSD Surrogate %Recovery Qualifier MSD MSD 70.6 73.2 MSD MSD 3 79 - 120 Dibromofluorobenzene (Surr) 101 60 - 120 Toluene-d8 (Surr) 101 60 - 120 Toluene-d8 (Surr) 103 79 - 123	Chloroform	ND		71.3	79.4			ua/Ka		¤	111	65 - 135		
MS MS Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 102 79 - 120 Dibromofluoromethane (Surr) 101 60 - 120 Toluene-d8 (Surr) 100 79 - 123 Lab Sample ID: 440-192727-A-6 MSD Client Sample ID: Matrix Spike Duplic Matrix: Solid Client Sample ID: Matrix Spike Duplic Prep Type: Total/ Analysis Batch: 431823 Sample Sample Spike MSD MSD Analyte Result Qualifier Added Result Qualifier Unit D %Rec. F Choroform ND MSD 70.6 73.2 Qualifier Unit D %Rec. F Abromofluorobenzene (Surr) 102 79 - 120 0 65 - 135 8 7 Dibromofluoromethane (Surr) 101 60 - 120 79 - 123 0								-33						
Surrogate %Recovery Qualifier Limits 4-Bromofluorobenzene (Surr) 102 79 - 120 Dibromofluoromethane (Surr) 101 60 - 120 Toluene-d8 (Surr) 100 79 - 123 Lab Sample ID: 440-192727-A-6 MSD Client Sample ID: Matrix Spike Duplic Matrix: Solid Prep Type: Total/ Analysis Batch: 431823 Sample Spike Malyte Result Qualifier MSD Chloroform ND 70.6 73.2 ug/Kg %Rec MSD MSD 79 - 120 104 65 - 135 8 Surrogate %Recovery Qualifier Limits 79 - 120 Dibromofluorobenzene (Surr) 102 79 - 120 104 65 - 135 8 Surrogate %Recovery Qualifier Limits 104 65 - 135 8 Dibromofluorobenzene (Surr) 102 79 - 120 104 65 - 135 8 Surrogate %Recovery 101 60 - 120 104 65 - 135 8 Toluene-d8 (Surr) 103 79 - 123 104 <td></td> <td>MS</td> <td>MS</td> <td></td>		MS	MS											
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Dibromofluoromethane (Surr) 101 60 - 120 Toluene-d8 (Surr) 100 79 - 123 Lab Sample ID: 440-192727-A-6 MSD Client Sample ID: Matrix Spike Duplic Matrix: Solid Prep Type: Total/ Analysis Batch: 431823 Sample Spike Matrix: Solid Result Qualifier Unit D %Rec. F Analysis Batch: 431823 Result Qualifier Added Result Qualifier Unit D %Rec. F Chloroform ND ND 70.6 73.2 Qualifier Unit D %Rec F Surrogate %Recovery Qualifier Limits 79 - 120 79 - 120 104 65 - 135 8 104 65 - 135 8 104 65 - 135 8 104 65 - 135 8 104 65 - 135 8 104 102 104 102 104 105 - 135 104 105 105 104 105 105 105 105 105 105 105 105 105 105 105 105 105 <td>4-Bromofluorobenzene (Surr)</td> <td>102</td> <td></td> <td>79 - 120</td> <td></td>	4-Bromofluorobenzene (Surr)	102		79 - 120										
Toluene-d8 (Surr) 100 79 - 123 Lab Sample ID: 440-192727-A-6 MSD Client Sample ID: Matrix Spike Duplic Prep Type: Total/ Matrix: Solid Prep Type: Total/ Analysis Batch: 431823 Sample Sample Matrix: Solid Result Qualifier MSD Analyte Result Qualifier Added Chloroform ND 70.6 73.2 Unit D %Rec. MSD Surrogate %Recovery Qualifier Limits 79 - 120 104 65 - 135 8 Dibromofluorobenzene (Surr) 101 60 - 120 79 - 123 79 - 123	Dibromofluoromethane (Surr)	101		60 - 120										
Lab Sample ID: 440-192727-A-6 MSD Client Sample ID: Matrix Spike Duplic Matrix Solid Matrix: Solid Prep Type: Total/ Analysis Batch: 431823 Sample Sample Spike MSD MSD %Rec. M Analyte Result Qualifier Added Result Qualifier Unit D %Rec MED Limits RPD L Chloroform ND MSD 70.6 73.2 Qualifier Unit D %Rec Imits RPD L Surrogate %Recovery Qualifier Limits 79 - 120 104 65 - 135 8 104 65 - 135 8 104 104 104 104 104 104 104 104 104 104 104 104 104 104 104 104 105 104 105 104 105 105 104 105 104 105 104 104 105 104 104 105 104 105 104 105 105 105 105 105 105 106 104	Toluene-d8 (Surr) _	100		79 - 123										
Matrix: Solid Prep Type: Total/ Analysis Batch: 431823 Sample Sample Spike MSD MSD %Rec. M Analyte Result Qualifier Added Result Qualifier Unit D %Rec. M Chloroform ND ND 70.6 73.2 Unit D %Rec. MPD L Surrogate MSD MSD MSD 79 - 120 D for a construction of a construc	Lab Sample ID: 440-192727-	A-6 MSD							Clien	nt Sa	ample II	D: Matrix S	oike Du	olicate
Analysis Batch: 431823 Sample Sample Spike MSD MSD %Rec. I Analyte Result Qualifier Added Result Qualifier Unit D %Rec. I Chloroform ND MSD 70.6 73.2 Qualifier Unit D %Rec Limits RPD L Surrogate %Recovery Qualifier Limits 79 - 120 79 - 120 79 - 120 79 - 123 79 - 123	Matrix: Solid											Prep T	ype: To	tal/NA
SampleSampleSampleSpikeMSD%Rec.IAnalyteResultQualifierAddedResultQualifierUnitD%Rec.IChloroformNDND70.673.2QualifierUnitD%RecLimitsRPDLMSDMSDMSDND <t< td=""><td>Analysis Batch: 431823</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Analysis Batch: 431823													
AnalyteResultQualifierAddedResultQualifierUnitD%RecLimitsRPDLChloroformND70.673.200065 - 13580MSDMSDMSDMSDMSDCC		Sample	Sample	Spike	MSD	MSE)					%Rec.		RPD
Chloroform ND 70.6 73.2 ug/Kg 70.4 65 - 135 8 MSD MSD MSD MSD MSD 4-Bromofluorobenzene (Surr) 102 Limits 79 - 120 79 - 120 79 - 120 79 - 120 79 - 120 79 - 120 79 - 123 79 - 123 79 - 123 79 - 123 79 - 123 79 - 123 79 - 123 79 - 123 79 - 123 79 - 123 70 - 123	Analyte	Result	Qualifier	Added	Result	Qua	lifier	Unit		D	%Rec	Limits	RPD	Limit
MSDMSDSurrogate%RecoveryQualifierLimits4-Bromofluorobenzene (Surr)10279 - 120Dibromofluoromethane (Surr)10160 - 120Toluene-d8 (Surr)10379 - 123	Chloroform	ND		70.6	73.2			ug/Kg		₿	104	65 - 135	8	20
Surrogate%RecoveryQualifierLimits4-Bromofluorobenzene (Surr)10279 - 120Dibromofluoromethane (Surr)10160 - 120Toluene-d8 (Surr)10379 - 123		MSD	MSD											
4-Bromofluorobenzene (Surr) 102 79 - 120 Dibromofluoromethane (Surr) 101 60 - 120 Toluene-d8 (Surr) 103 79 - 123	Surrogate	%Recovery	Qualifier	Limits										
Dibromofluoromethane (Surr) 101 60 - 120 Toluene-d8 (Surr) 103 79 - 123	4-Bromofluorobenzene (Surr)	102		79 - 120										
Toluene-d8 (Surr) 103 79 - 123	Dibromofluoromethane (Surr)	101		60 - 120										
	Toluene-d8 (Surr)	103		79 - 123										

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-432	406/5									Client S	sample ID: I	wethod	Blank
Matrix: Water											Prep T	уре: То	tal/NA
Analysis Batch: 432406													
		МВ МВ											
Analyte	Res	sult Qualifier	RL		MDL	Unit		_ D	P	repared	Analyz	ed	Dil Fac
Chloroform		ND	0.50		0.25	ug/L					10/02/17 (09:18	
		MB MB											
Surrogate	%Recov	ery Qualifier	Limits						P	repared	Analyz	ed	Dil Fac
4-Bromofluorobenzene (Surr)		101	80 - 120					-		•	10/02/17	09:18	
Dibromofluoromethane (Surr)		118	76 - 132								10/02/17	09:18	
Toluene-d8 (Surr)		108	80 - 128								10/02/17	09:18	
-													
Lab Sample ID: LCS 440-43	2406/6							CI	ient	Sample	D: Lab Co	ontrol S	ample
Matrix: Water											Prep T	ype: To	tal/NA
Analysis Batch: 432406													
			Spike	LCS	LCS						%Rec.		
Analyte			Added	Result	Qua	lifier	Unit		D	%Rec	Limits		
Chloroform			25.0	28.3			ug/L		_	113	70 - 130		
		109											
Surrogate	%Recovery	Oualifior	l imite										
4-Bromofluorobenzene (Surr)	97		80 120										
Dibromofluoromethane (Surr)	118		76 132										
Toluene_d8 (Surr)	103		80 128										
	100		00 - 720										
Lab Sample ID: 440-193013	-B-1 MS									Client	Sample ID:	: Matrix	Spike
Matrix: Water											Prep T	vpe: To	tal/NA
Analysis Batch: 432406													
,,	Sample	Sample	Spike	MS	MS						%Rec.		
Analyte	Result	Qualifier	Added	Result	Qua	lifier	Unit		D	%Rec	Limits		
Chloroform	0.84		25.0	28.7			ug/L		_	112	70 - 130		
•	MS I	MS • ····											
Surrogate	%Recovery	Qualifier	Limits										
4-Bromotiuoropenzene (Surr)	94		80 - 120										
	113		76 - 132										
Toluene-d8 (Surr)	104		80 - 128										
- I ab Sample ID: 440-193013	R 1 MSD							Clior	+ 9	amplo IF). Matrix Sr		licate
Matrix: Water								oner	11 0		Pron T	vne Duj	tal/NA
Analysis Batch: 432406											TTOP 1	y pc. 10	
Analysis Datch. 402400	Sample	Sample	Spike	MSD	MSD)					%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qua	lifier	Unit		D	%Rec	Limits	RPD	Limi
Chloroform	0.84		25.0	29.3			ug/L		_	114	70 - 130	2	20
			-				5						-
	MSD	MSD											
Surrogate	%Recovery	Qualifier	Limits										
4-Bromofluorobenzene (Surr)	98		80 - 120										
Dibromofluoromethane (Surr)	114		76 - 132										
Toluene-d8 (Surr)	99		80 - 128										

RL

20

Limits

Spike

Added

Limits 90 - 115

Spike

Added

Spike

Added

200

100

90 - 115

MDL Unit

LCS LCS

MS MS

MSD MSD

1350 4

Result Qualifier

1360 4

Result Qualifier

106

Result Qualifier

Unit

ug/L

Unit

ug/L

Unit

ug/L

D

D

%Rec

72

%Rec

76

10 ug/L

D

Prepared

Prepared

Lab Sample ID: MB 440-431047/5

Lab Sample ID: LCS 440-431047/4

Lab Sample ID: MRL 440-431047/3

Matrix: Water

Analyte

Chlorate

Surrogate

Analyte

Chlorate

Surrogate

Analysis Batch: 431047

Dichloroacetic acid(Surr)

Analysis Batch: 431047

Dichloroacetic acid(Surr)

Matrix: Water

Matrix: Water

Method: 300.1B - Disinfection By-Products, (IC)

MB MB Result Qualifier

MB MB

Qualifier

ND

98

%Recovery

LCS LCS

98

Qualifier

Sample

Qualifier

%Recovery

Client Sample ID: Method Blank

Analyzed

09/25/17 15:20

Analyzed 09/25/17 15:20

Prep Type: Total/NA

8

Dil Fac 1 Dil Fac 1 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

D	%Rec	Limits	
_	106	75 ₋ 125	

Client Sample ID: Matrix Spike

%Rec.

Limits

75 - 125

Client Sample ID: Matrix Spike Duplicate

%Rec.

Limits

75 - 125

Prep Type: Total/NA

Prep Type: Total/NA

RPD

1

RPD

Limit

25

%Rec.

Client Sample ID: Lab Control Sample Prep Type: Total/NA

Analysis Batch: 431047										
			Spike	MRL	MRL				%Rec.	
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chlorate			20.0	21.8		ug/L		109	50 - 150	
	MRL MR	RL								

Linnts
90 - 115

Lab Sample ID: 440-192595-K-2 MS	
Matrix: Water	
Analysis Batch: 431047	
	Sample
Analyte	Result

Chlorate	1200		200
	MS	MS	
Surrogate	%Recovery	Qualifier	Limits
Dichloroacetic acid(Surr)	96		90 _ 115

Lab Sample ID: 440-192595-K-2 MSD Matrix: Water Analysis Batch: 431047 Sample Sample Result Qualifier Analyte Chlorate 1200

	INSD	MSD	
Surrogate	%Recovery	Qualifier	Limits
Dichloroacetic acid(Surr)	95		90 - 115

Dichloroacetic acid(Surr)

Method: 300.1B - Disinfection By-Products, (IC) (Continued)

– Lab Sample ID: MRL 440-43167 Matrix: Solid	75/49								C	lient	Sample	e ID: Lab Con Prep Typ	trol Sa e: Tot	ample tal/NA
Analysis Batch: 431675														
-				Spike		MRL	MRL					%Rec.		
Analyte				Added		Result	Qualifier	Unit		D	%Rec	Limits		
Chlorate				20.0		19.1	J	ug/L			96	50 - 150		
	MRI	MRI												
Surrogate	%Recovery	Qual	ifier	l imits										
Dichloroacetic acid(Surr)	98	Quui		90 - 115										
Lab Sample ID: MB 440-431843 Matrix: Solid	3/ 2-A										Client S	Sample ID: Me Prep Ty	thod pe: So	Blank oluble
Analysis Batch: 431675														
-		MB	МВ											
Analyte	R	esult	Qualifier		RL		MDL Unit		D	P	repared	Analyzed		Dil Fac
Chlorate		ND			200		50 ug/Kg	3				09/28/17 19:	30	1
		MR	MB											
Surrogate	%Reco	verv	Qualifier	Limi	ts					P	repared	Analyzed		Dil Fac
Dichloroacetic acid(Surr)		97		90 -	115							09/28/17 19:	30	1
Lab Sample ID: LCS 440-43184	3/1-A								C	lient	Sample	D: Lab Con	trol S	ample
Matrix: Solid												Prep Ty	pe: S	oluble
Analysis Batch: 431675														
				Spike		LCS	LCS					%Rec.		
Analyte				Added		Result	Qualifier	Unit		D	%Rec	Limits		
Chlorate				998		1030		ug/Kg		_	103	75 - 125		
	105	105												
Surrogate	%Recovery	Qual	ifier	l imits										
Dichloroacetic acid(Surr)	99	quui		90 - 115										
Lab Sample ID: 440-192835-A-	1-C MS										Client	Sample ID: N	latrix	Spike
Matrix: Solid												Prep Ty	pe: S	oluble
Analysis Batch: 431675														
-	Sample	Sam	ole	Spike		MS	MS					%Rec.		
Analyte	Result	Qual	ifier	Added		Result	Qualifier	Unit		D	%Rec	Limits		
Chlorate	940			1490		2120		ug/Kg		\\\	80	75 - 125		
	МС	M٩												
Surrogate	%Recovery	Qual	ifior	l imits										
Dichloroacetic acid(Surr)	98	Quui		90 - 115										
	50													
Lab Sample ID: 440-192835-A-	1-D MSD								Clier	nt Sa	ample IC): Matrix Spik	e Dur	olicate
Matrix: Solid											•	Prep Ty	pe: S	oluble
Analysis Batch: 431675													-	
-	Sample	Sam	ole	Spike		MSD	MSD					%Rec.		RPD
Analyte	Result	Qual	ifier	Added		Result	Qualifier	Unit		D	%Rec	Limits	RPD	Limit
Chlorate	940			1480		2250		ug/Kg		¢	89	75 - 125	6	25
	Men	Men												
Surrogate	%Recoverv	Qual	ifier	Limits										

90 - 115

96

MRL MRL

4.08

Result Qualifier

MDL Unit

0.0095 mg/Kg

LCS LCS

0.499

Result Qualifier

Unit

ug/L

Unit

mg/Kg

D

D

D

%Rec

Prepared

%Rec

100

102

Spike

Added

Spike

Added

0.500

MB MB

ND

Result Qualifier

4.00

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MRL 440-433554/7

Lab Sample ID: MB 440-433370/1-A

Lab Sample ID: LCS 440-433370/2-A

Lab Sample ID: 440-192727-A-6-O MS

Matrix: Solid

Analyte

Analyte

Analyte

Perchlorate

Matrix: Solid

Perchlorate

Matrix: Solid

Perchlorate

Matrix: Solid

Analysis Batch: 433554

Analysis Batch: 433554

Analysis Batch: 433554

Client Sample ID: Lab Control Sample

%Rec.

Limits

75 - 125

Prep Type: Total/NA

5 8

Client Sample ID: Method Blank Prep Type: Soluble Dil Fac 1 **Client Sample ID: Lab Control Sample** Prep Type: Soluble

Client Sample ID: Matrix Spike Prep Type: Soluble

%Rec.

Limits

85 - 115

Analyzed

10/06/17 16:57

Analysis Batch: 433554										
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Perchlorate	1.2	F1	0.711	1.84		mg/Kg	- \	86	80 - 120	

RL

0.040

Lab Sample ID: 440-192727-A-6-P MSD Matrix: Solid Analysis Batch: 433554							Client Sa	ample IC): Matrix Sp Prep	oike Dup Type: So	licate
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Perchlorate	1.2	F1	0.710	1.70	F1	mg/Kg	¢	67	80 - 120	8	20

Method: 314.0 LL - Perchlorate (IC)

Lab Sample ID: MB 440-432714/39 Matrix: Water											Client S	ample ID: Metho Prep Type: ⁻	od Blank Fotal/NA
Analysis Batch: 432714													
	MB	MB											
Analyte	Result	Qualifier		RL		MDL	Unit		D	P	repared	Analyzed	Dil Fac
Perchlorate	ND			1.0		0.50	ug/L					10/04/17 00:29	1
_ Lab Sample ID: LCS 440-432714/40									Cli	ient	Sample	ID: Lab Control	Sample
Matrix: Water												Prep Type: ⁻	Total/NA
Analysis Batch: 432714													
			Spike		LCS	LCS						%Rec.	
Analyte			Added		Result	Qual	ifier	Unit		D	%Rec	Limits	
Perchlorate			25.0		24.5			ua/L		_	98	85 - 115	

Method: 314.0 LL - Perchlorate (IC) (Continued)

Lab Sample ID: MRL 440-432714/2	2						Clier	nt Sample	e ID: Lab C	ontrol S	ample
Matrix: Water									Prep	Туре: То	tal/NA
Analysis Batch: 432714			0	MD					0/ D		
Analyte			Spike	WIRL Result	NIKL	Unit	п	%Pec	%Rec.		
			4 00	3 76	Quaimer				75 125	·	
			4.00	5.70		ug/L		34	75 - 125		
 Lab Sample ID: 440-192678-D-3 MS	3							Client	t Sample II	D: Matrix	Spike
Matrix: Water									Prep [·]	Type: To	tal/NA
Analysis Batch: 432714											
	Sample	Sample	Spike	MS	MS				%Rec.		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Perchlorate	5.9		25.0	30.1		ug/L		97	80 - 120		
							0				
Lab Sample ID: 440-1926/8-D-3 MS	50						Client	sample II	D: Matrix S	ріке Du	plicate
Watrix: water									Prep	Type: To	tal/NA
Analysis Batch: 432714	0	0	0						0/ D		
Amelia	Sample	Sample	Бріке Алілісті	MSD	MSD	11	_	0/ D	%Rec.		RPD
	Result	Qualifier	Added	Result	Qualifier		D	%Rec			
Perchlorate	5.9		25.0	29.0		ug/L		92	80 - 120	4	20
Method: 7199 - Chromium, He	xavale	nt (IC)									
Lab Sample ID: MB 440-430559/6								Client S	Sample ID:	Method	Blank
Matrix: Water									· Prep	Type: To	tal/NA
Analysis Batch: 430559											
Analyte	R	esult Qualifier		RL	MDL Unit		D	Prepared	Analy	zed	Dil Fac
Analyte Chromium, hexavalent	R	ND ND		RL	MDL Unit		<u>D</u>	Prepared	Analy 09/22/17	/zed	Dil Fac
Analyte Chromium, hexavalent	R	ND ND		RL	MDL Unit		_ D	Prepared	Analy 09/22/17	vzed 7 07:24	Dil Fac 1
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water	R	ND MB		RL	MDL Unit		_ D Clier	Prepared	Analy 09/22/17 e ID: Lab C Pren	vzed 7 07:24	Dil Fac 1 Sample
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559	R	ND MB esult Qualifier		RL	MDL Unit		_ D Clier	Prepared	Analy 09/22/17 e ID: Lab C Prep	vzed 7 07:24 Control S Type: To	Dil Fac 1 Sample otal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559	R	ND MB esult Qualifier	Spike	RL 2.0	MDL Unit 0.25 ug/L		_ D	Prepared nt Sample	Analy 09/22/17 e ID: Lab C Prep ` %Rec.	control S Type: To	Dil Fac 1 Sample otal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte	R	ND MB esult Qualifier	Spike	RL 2.0 LCS Result	MDL Unit 0.25 ug/L	Unit	_ D Clier	Prepared	Analy 09/22/17 e ID: Lab C Prep * %Rec. Limits	control S Type: To	Dil Fac 1 Sample otal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent	R	ND MB	Spike Added 50.0	RL 2.0 LCS Result 50.7	MDL Unit 0.25 ug/L LCS Qualifier	- Unit uq/L	Clier	Prepared nt Sample	Analy 09/22/17 e ID: Lab C Prep [•] %Rec. Limits 90 - 110	control S	Dil Fac 1 Sample otal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent	R	ND Qualifier	Spike Added 50.0	RL	MDL Unit 0.25 ug/L LCS Qualifier	- Unit ug/L	_ D Clier	Prepared nt Sample 	Analy 09/22/17 e ID: Lab C Prep %Rec. Limits 90 - 110	control S Type: To	Dil Fac 1 Sample stal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: MRL 440-430559/4 Matrix: Water	R	ND Qualifier	Spike Added 50.0	RL 2.0 LCS Result 50.7	MDL Unit 0.25 ug/L LCS Qualifier	- Unit ug/L	Clier	Prepared nt Sample %Rec 101 nt Sample	Analy 09/22/17 e ID: Lab C Prep ° %Rec. Limits 90 - 110 e ID: Lab C Prep °	control S Control S Control S Control S Type: To	Dil Fac 1 Sample otal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: MRL 440-430559/4 Matrix: Water Analysis Batch: 430559	R	ND Qualifier	Spike Added 50.0	RL	MDL Unit 0.25 ug/L LCS Qualifier	Unit ug/L	Clier	Prepared nt Sample <u>%Rec</u> 101 nt Sample	Analy 09/22/17 e ID: Lab C Prep ° %Rec. Limits 90 - 110 e ID: Lab C Prep °	Control S Control S Control S Control S Control S Type: To	Dil Fac 1 Gample otal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: MRL 440-430559/4 Matrix: Water Analysis Batch: 430559	R	ND Qualifier	Spike Added 50.0	RL 2.0 LCS Result 50.7	MDL 0.25 Unit ug/L LCS Qualifier	Unit ug/L	D Clier D Clier	Prepared nt Sample <u>%Rec</u> 101 nt Sample	Analy 09/22/17 e ID: Lab C Prep ^o %Rec. Limits 90 - 110 e ID: Lab C Prep ^o %Rec.	Control S Control S Type: To Control S Type: To	Dil Fac 1 Sample otal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: MRL 440-430559/4 Matrix: Water Analysis Batch: 430559 Analyte	R	ND Qualifier	Spike Added 50.0 Spike Added	RL 2.0 LCS Result 50.7 MRL Result	MDL Unit 0.25 ug/L LCS Qualifier MRL Qualifier	Unit	_ D Clier D Clier D	Prepared nt Sample %Rec %Rec %Rec	Analy 09/22/17 e ID: Lab C Prep ^o %Rec. Limits 90 - 110 e ID: Lab C Prep ^o %Rec. Limits	Control S Control S Type: To Control S Type: To	Dil Fac 1 Sample stal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: MRL 440-430559/4 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent	R	ND Qualifier	Spike Added 50.0 Spike Added 1.00	RL	MDL Unit 0.25 ug/L LCS Qualifier J	Unit ug/L	D Clier D Clier	Prepared nt Sample %Rec 101 nt Sample %Rec 92	Analy 09/22/17 e ID: Lab C Prep * %Rec. Limits 90 - 110 e ID: Lab C Prep * %Rec. Limits 50 - 150	control S Control S Type: To Control S Type: To	Dil Fac 1 sample stal/NA sample stal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: MRL 440-430559/4 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: 440-192727-D-3 MS	R	ND Qualifier	Spike Added 50.0 Spike Added 1.00	RL 2.0 LCS Result 50.7 MRL Result 0.921	MDL Unit 0.25 Unit ug/L Qualifier MRL Qualifier J	Unit ug/L	D Clier D Clier D	Prepared nt Sample %Rec 101 nt Sample %Rec 92 Client	Analy 09/22/17 e ID: Lab C Prep ⁻ %Rec. Limits 90 - 110 e ID: Lab C Prep ⁻ %Rec. Limits 50 - 150	Control S Control S Type: To Control S Type: To Control S Type: To	Dil Fac 1 Sample stal/NA Sample stal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: MRL 440-430559/4 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: 440-192727-D-3 MS Matrix: Water	R	MD MD esult Qualifier ND	Spike Added 50.0 Spike Added 1.00	RL 2.0 LCS Result 50.7 MRL Result 0.921	MDL 0.25 Unit ug/L LCS Qualifier J	Unit ug/L	_ D Clier D Clier	Prepared nt Sample %Rec 101 nt Sample %Rec 92 Client	Analy 09/22/17 e ID: Lab C Prep ¹ %Rec. Limits 90 - 110 e ID: Lab C Prep ¹ %Rec. Limits 50 - 150 t Sample III Prep ¹	Control S Type: To Control S Control S Type: To Control S Type: To D: Matrix	Dil Fac 1 Sample otal/NA Sample otal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: MRL 440-430559/4 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: 440-192727-D-3 MS Matrix: Water Analysis Batch: 430559	R	MD MD esult Qualifier ND	Spike Added 50.0 Spike Added 1.00	RL 2.0 LCS Result 50.7 MRL Result 0.921	MDL Unit 0.25 ug/L LCS Qualifier J	Unit ug/L	_ D Clier D Clier	Prepared nt Sample %Rec 101 nt Sample %Rec 92 Client	Analy 09/22/17 e ID: Lab C Prep 7 %Rec. Limits 90 - 110 e ID: Lab C Prep 7 %Rec. Limits 50 - 150 t Sample II Prep 7	vzed vor:24 Control S Type: To Control S Type: To D: Matrix Type: To	Dil Fac 1 Sample otal/NA Sample otal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: MRL 440-430559/4 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: 440-192727-D-3 MS Matrix: Water Analysis Batch: 430559	R	Sample	Spike Added 50.0 Spike Added 1.00	RL 2.0 LCS Result 50.7 MRL Result 0.921	MDL Unit 0.25 Unit ug/L UCS Qualifier J MRL Qualifier	Unit ug/L ug/L	D Clier D Clier	Prepared nt Sample %Rec 101 nt Sample %Rec 92 Client	Analy 09/22/17 e ID: Lab C Prep ^o %Rec. Limits 90 - 110 e ID: Lab C Prep ^o %Rec. Limits 50 - 150 t Sample II Prep ^o %Rec.	22ed 707:24 Control S Type: To Control S Type: To D: Matrix Type: To	Dil Fac 1 Sample stal/NA Gample stal/NA
Analyte Chromium, hexavalent Lab Sample ID: LCS 440-430559/5 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: MRL 440-430559/4 Matrix: Water Analysis Batch: 430559 Analyte Chromium, hexavalent Lab Sample ID: 440-192727-D-3 MS Matrix: Water Analysis Batch: 430559 Analyte	Sample	Sample Qualifier	Spike Added 50.0 Spike Added 1.00 Spike Added	RL 2.0 LCS Result 50.7 MRL Result 0.921 MS Result	MDL Unit 0.25 Unit ug/L UCS Qualifier J MS Qualifier	Unit	D Clier D Clier	Prepared nt Sample %Rec 101 nt Sample %Rec 92 Client %Rec	Analy 09/22/17 e ID: Lab C Prep * %Rec. Limits 90 - 110 e ID: Lab C Prep * %Rec. Limits 50 - 150 t Sample II Prep *	vzed 7 07:24 Control S Type: To Control S Type: To D: Matrix Type: To	Dil Fac 1 sample stal/NA sample stal/NA

Method: 7199 - Chromium, Hexavalent (IC) (Continued)

Lab Sample ID: 440-192727-D-3 M Matrix: Water	SD						Cli	ent S	ample II): Matrix Sj Prep T	oike Duj Vpe: To	olicate tal/NA
Analysis Batch: 430559												
	Sample	Sample	Spike		MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added		Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chromium, hexavalent	ND		50.0		49.2		ug/L		98	85 - 115	2	20
- Lab Sample ID: 440-192772-D-1 DL	J								Cli	ent Sample	ID: Du	olicate
Matrix: Water										Prep T	ype: To	tal/NA
Analysis Batch: 430559												
	Sample	Sample			DU	DU						RPD
Analyte	Result	Qualifier			Result	Qualifier	Unit	D			RPD	Limit
Chromium, hexavalent —	ND				ND		ug/L				NC	20
	4								Client S	Sample ID:	Method	Blank
Matrix: Solid										Prep T	уре: То	tal/NA
Analysis Batch: 431262										Prep l	Batch: 4	31062
		MB MB										
Analyte	R	esult Qualifier		RL		MDL Unit	D	F	Prepared	Analyz	ed	Dil Fac
Chromium, hexavalent		ND		0.30		0.15 mg/Kg		09/2	25/17 09:22	2 09/26/17	07:15	3
- Lab Sample ID: LCS 440-431062/2-	A							Clien	t Sample	BID: Lab Co	ontrol S	ample
Matrix: Solid										Prep T	ype: To	tal/NA
Analysis Batch: 431262										Prep	Batch: 4	31062
			Spike		LCS	LCS				%Rec.		
Analyte			Added		Result	Qualifier	Unit	D	%Rec	Limits		
Chromium, hexavalent			40.2		33.4		mg/Kg		83	80 - 120		
 Lab Sample ID: 440-192190-E-24-C	MS								Client	Sample ID	: Matrix	Spike
Matrix: Solid										Prep T	ype: To	tal/NA
Analysis Batch: 431262										Prep	Batch: 4	31062
	Sample	Sample	Spike		MS	MS				%Rec.		
Analyte	Result	Qualifier	Added		Result	Qualifier	Unit	D	%Rec	Limits		
Chromium, hexavalent	0.19	J F1	46.0		35.2		mg/Kg	¢	76	55 ₋ 110		
Lab Sample ID: 440-192190-E-24-P	MSD						Cli	ent S	ample IC	D: Matrix S	oike Duj	olicate
Matrix: Solid										Prep T	ype: To	tal/NA
Analysis Batch: 431262										Prep	Batch: 4	31062
	Sample	Sample	Spike		MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added		Result	Qualifier	Unit	_ D	%Rec	Limits	RPD	Limit
Chromium, hexavalent	0.19	J F1	46.6		36.2		mg/Kg	Ŷ	77	55 ₋ 110	3	20
Lab Sample ID: 440-192190-E-24-0	NSI								Client	Sample ID	: Matrix	Spike
Matrix: Solid										Prep T	ype: To	tal/NA
Analysis Batch: 431262	. .		• •							Prep	Batch: 4	31062
• • •	Sample	Sample	Spike		MSI	MSI		_	~ =	%Rec.		
Analyte	Result		Added		Result			- D	%Rec	Limits		
Ghronlium, nexavalent	0.19	JFI	1070		221	ГІ	iiig/r\g	24	51	00 - 110		

Chromium

Method: 6010B - Metals (ICP)											
 Lab Sample ID: MB 440-431847/1-/	A ^5								Client Sa	ample ID: Met	hod Blank
Matrix: Solid										Prep Type	: Total/NA
Analysis Batch: 432137										Prep Batc	h: 431847:
		MB MB									
Analyte	R	esult Qualifier	RL		MDL Unit		D	P	repared	Analyzed	Dil Fac
Chromium		ND	0.99		0.50 mg/Kg	9		09/2	8/17 07:51	09/29/17 10:20) 5
	-A ^5						с	lient	Sample	ID: Lab Contr	ol Sample
Matrix: Solid									. oumpro	Prep Type	: Total/NA
Analysis Batch: 432137										Prep Batc	h: 431847
			Spike	LCS	LCS					%Rec.	
Analyte			Added	Result	Qualifier	Unit		D	%Rec	Limits	
Chromium			49.5	51.1		mg/Kg		_	103	80 - 120	
– Lab Sample ID: 440-192727- A-6-M	MS ^10								Client	Sample ID: Ma	trix Snike
Matrix: Solid									Cheft	Pren Type	: Total/NA
Analysis Batch: 432137										Prep Bate	:h: 431847
	Sample	Sample	Spike	MS	MS					%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit		D	%Rec	Limits	
Chromium	13		71.3	88.5		mg/Kg		¢	106	75 - 125	
- Lab Sampla ID: 440 192727 A 6 N							Clie	nt C		· Matrix Spika	Duplicate
Lab Sample ID. 440-192727-A-6-N Motrix: Solid	WSD ~ IC	,					Cile	nt 3	ampie iD		
Analysis Batch: 432137										Prop Bate	- 10tal/INA
Analysis Datch. 452157	Sample	Sample	Spike	MSD	MSD					%Rec.	RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit		D	%Rec	Limits F	RPD Limi
Chromium	13		71.0	89.3		mg/Kg		\\\	107	75 - 125	1 20
_											
Lab Sample ID: MB 440-431623/1-	Α								Client Sa	ample ID: Met	nod Blank
Matrix: Water									Prep T	iype: Total Re	coverable
Analysis Batch: 431839										Prep Batc	h: 431623
Averbein							_	_		A	DUE
	R			0			_	P	repared	Analyzed	
		ND	0.0000	0.	.0023 mg/L			03/2		03/21/11/21.10	, ,
Lab Sample ID: LCS 440-431623/2	- A						С	lient	Sample	ID: Lab Contr	ol Sample
Matrix: Water									Prep T	ype: Total Re	coverable
Analysis Batch: 431839										Prep Batc	h: 431623
			Spike	LCS	LCS					%Rec.	
Analyte			Added	Result	Qualifier	Unit		D	%Rec	Limits	
Chromium —			1.00	0.945		mg/L			94	80 - 120	
- Lab Sample ID: 440-192518-O-1-B	MS								Client	Sample ID: Ma	trix Spike
Matrix: Water									Prep T	ype: Total Re	coverable
Analysis Batch: 431839										Prep Batc	h: 431623
-	Sample	Sample	Spike	MS	MS					%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit		D	%Rec	Limits	
Chromium	13		1.00	13.8	4	mg/L		_	60	75 - 125	
- Lab Sample ID: 440-192518-O-1-C	MSD						Clie	nt Sa	ample ID:	: Matrix Spike	Duplicate
Matrix: Water									Prep T	vpe: Total Re	coverable
Analysis Batch: 431839										Prep Batc	h: 431623
•	Sample	Sample	Spike	MSD	MSD					%Rec.	RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit		D	%Rec	Limits R	PD Limit

1

13.7 4

mg/L

43

75 _ 125

1.00

13

20

Method: Moisture - Percent Moisture

Lab Sample ID: 440-192727-B-6 Matrix: Solid Analysis Batch: 431206	DU						Client Sample ID: Dup Prep Type: To	olicate tal/NA
	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Percent Moisture	29.3		29.9		%		2	20

QC Association Summary

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

GC/MS VOA

Analy	vsis	Batch:	431823
Allar	,0.0	Dutoin	

	Client Sample ID	Prep Type	Matrix	Method	Prep Batcl
440-192817-1	CTMW-07D-120.0-20170922	Total/NA	Solid	8260B	
MB 440-431823/3	Method Blank	Total/NA	Solid	8260B	
LCS 440-431823/4	Lab Control Sample	Total/NA	Solid	8260B	
440-192727-A-6 MS	Matrix Spike	Total/NA	Solid	8260B	
440-192727-A-6 MSD	Matrix Spike Duplicate	Total/NA	Solid	8260B	
Analysis Batch: 432406	;				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batc
440-192817-2	CTMW-07D-130.0-20170922-EB	Total/NA	Water	8260B	
440-192817-3	Trip Blank	Total/NA	Water	8260B	
MB 440-432406/5	Method Blank	Total/NA	Water	8260B	
LCS 440-432406/6	Lab Control Sample	Total/NA	Water	8260B	
440-193013-B-1 MS	Matrix Spike	Total/NA	Water	8260B	
440-193013-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
HPLC/IC					
Analysis Batch: 430559)				
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batc
440-192817-2	CTMW-07D-130.0-20170922-EB	Total/NA	Water	7199	
MB 440-430559/6	Method Blank	Total/NA	Water	7199	
LCS 440-430559/5	Lab Control Sample	Total/NA	Water	7199	
MRL 440-430559/4	Lab Control Sample	Total/NA	Water	7199	
440-192727-D-3 MS	Matrix Spike	Total/NA	Water	7199	
440-192727-D-3 MSD	Matrix Spike Duplicate	Total/NA	Water	7199	
440-192772-D-1 DU	Duplicate	Total/NA	Water	7199	
Analysis Batch: 431047	,				
			•• • •		
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batc
Lab Sample ID 440-192817-2	Client Sample ID CTMW-07D-130.0-20170922-EB	Prep Type Total/NA	Water	300.1B	Prep Batc
Lab Sample ID 440-192817-2 MB 440-431047/5	Client Sample ID CTMW-07D-130.0-20170922-EB Method Blank	Total/NA Total/NA	Water Water	300.1B 300.1B	Prep Batc
Lab Sample ID 440-192817-2 MB 440-431047/5 LCS 440-431047/4	Client Sample ID CTMW-07D-130.0-20170922-EB Method Blank Lab Control Sample	<u>Prep Type</u> Total/NA Total/NA Total/NA	Water Water Water Water	300.1B 300.1B 300.1B 300.1B	Prep Batc
Lab Sample ID 440-192817-2 MB 440-431047/5 LCS 440-431047/4 MRL 440-431047/3	Client Sample ID CTMW-07D-130.0-20170922-EB Method Blank Lab Control Sample Lab Control Sample	Prep Type Total/NA Total/NA Total/NA Total/NA	Water Water Water Water Water	300.1B 300.1B 300.1B 300.1B 300.1B	Prep Batc
Lab Sample ID 440-192817-2 MB 440-431047/5 LCS 440-431047/4 MRL 440-431047/3 440-192595-K-2 MS	Client Sample ID CTMW-07D-130.0-20170922-EB Method Blank Lab Control Sample Lab Control Sample Matrix Spike	Prep Type Total/NA Total/NA Total/NA Total/NA Total/NA	Water Water Water Water Water Water Water	Method 300.1B 300.1B 300.1B 300.1B 300.1B	Prep Batc
Lab Sample ID 440-192817-2 MB 440-431047/5 LCS 440-431047/4 MRL 440-431047/3 440-192595-K-2 MS 440-192595-K-2 MSD	Client Sample ID CTMW-07D-130.0-20170922-EB Method Blank Lab Control Sample Lab Control Sample Matrix Spike Matrix Spike Duplicate	Prep Type Total/NA Total/NA Total/NA Total/NA Total/NA Total/NA	Water Water Water Water Water Water Water	Method 300.1B 300.1B 300.1B 300.1B 300.1B 300.1B 300.1B 300.1B	Prep Batc
Lab Sample ID 440-192817-2 MB 440-431047/5 LCS 440-431047/4 MRL 440-431047/3 440-192595-K-2 MS 440-192595-K-2 MSD Prep Batch: 431062	Client Sample ID CTMW-07D-130.0-20170922-EB Method Blank Lab Control Sample Lab Control Sample Matrix Spike Matrix Spike Duplicate	Prep Type Total/NA Total/NA Total/NA Total/NA Total/NA Total/NA	Water Water Water Water Water Water Water	Method 300.1B 300.1B 300.1B 300.1B 300.1B 300.1B	Prep Batcl

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-1	CTMW-07D-120.0-20170922	Total/NA	Solid	3060A	
MB 440-431062/1-A	Method Blank	Total/NA	Solid	3060A	
LCS 440-431062/2-A	Lab Control Sample	Total/NA	Solid	3060A	
440-192190-E-24-O MS	6 Matrix Spike	Total/NA	Solid	3060A	
440-192190-E-24-P MS	D Matrix Spike Duplicate	Total/NA	Solid	3060A	
440-192190-E-24-Q MS	SI Matrix Spike	Total/NA	Solid	3060A	
-					

Analysis Batch: 431262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-1	CTMW-07D-120.0-20170922	Total/NA	Solid	7199	431062
MB 440-431062/1-A	Method Blank	Total/NA	Solid	7199	431062
LCS 440-431062/2-A	Lab Control Sample	Total/NA	Solid	7199	431062

Prep Type

Total/NA

Total/NA

Total/NA

Matrix

Solid

Solid

Solid

Client Sample ID

Matrix Spike Duplicate

Matrix Spike

Matrix Spike

Method

7199

7199

7199

9

Prep Batch 431062 431062

431062

440-192190-E-24-Q MSI Analysis Batch: 431675

440-192190-E-24-O MS

440-192190-E-24-P MSD

Lab Sample ID

HPLC/IC (Continued)

Analysis Batch: 431262 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-1	CTMW-07D-120.0-20170922	Soluble	Solid	300.1B	431843
MB 440-431843/2-A	Method Blank	Soluble	Solid	300.1B	431843
LCS 440-431843/1-A	Lab Control Sample	Soluble	Solid	300.1B	431843
MRL 440-431675/49	Lab Control Sample	Total/NA	Solid	300.1B	
440-192835-A-1-C MS	Matrix Spike	Soluble	Solid	300.1B	431843
440-192835-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	300.1B	431843

Leach Batch: 431843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batch
440-192817-1	CTMW-07D-120.0-20170922	Soluble	Solid	DI Leach
MB 440-431843/2-A	Method Blank	Soluble	Solid	DI Leach
LCS 440-431843/1-A	Lab Control Sample	Soluble	Solid	DI Leach
440-192835-A-1-C MS	Matrix Spike	Soluble	Solid	DI Leach
440-192835-A-1-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach

Analysis Batch: 432714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-2	CTMW-07D-130.0-20170922-EB	Total/NA	Water	314.0 LL	
MB 440-432714/39	Method Blank	Total/NA	Water	314.0 LL	
LCS 440-432714/40	Lab Control Sample	Total/NA	Water	314.0 LL	
MRL 440-432714/22	Lab Control Sample	Total/NA	Water	314.0 LL	
440-192678-D-3 MS	Matrix Spike	Total/NA	Water	314.0 LL	
440-192678-D-3 MSD	Matrix Spike Duplicate	Total/NA	Water	314.0 LL	

Leach Batch: 433370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-1	CTMW-07D-120.0-20170922	Soluble	Solid	DI Leach	
MB 440-433370/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 440-433370/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
440-192727-A-6-O MS	Matrix Spike	Soluble	Solid	DI Leach	
440-192727-A-6-P MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Analysis Batch: 433554

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-1	CTMW-07D-120.0-20170922	Soluble	Solid	314.0	433370
MB 440-433370/1-A	Method Blank	Soluble	Solid	314.0	433370
LCS 440-433370/2-A	Lab Control Sample	Soluble	Solid	314.0	433370
MRL 440-433554/7	Lab Control Sample	Total/NA	Solid	314.0	
440-192727-A-6-O MS	Matrix Spike	Soluble	Solid	314.0	433370
440-192727-A-6-P MSD	Matrix Spike Duplicate	Soluble	Solid	314.0	433370

QC Association Summary

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

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Pre	n B	atc	h:	431	623
		alu			020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-2	CTMW-07D-130.0-20170922-EB	Total Recoverable	Water	3005A	
MB 440-431623/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 440-431623/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
440-192518-O-1-B MS	Matrix Spike	Total Recoverable	Water	3005A	
440-192518-O-1-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	3005A	
Analysis Batch: 431839					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-2	CTMW-07D-130.0-20170922-EB	Total Recoverable	Water	6010B	431623
MB 440-431623/1-A	Method Blank	Total Recoverable	Water	6010B	431623
LCS 440-431623/2-A	Lab Control Sample	Total Recoverable	Water	6010B	431623
440-192518-O-1-B MS	Matrix Spike	Total Recoverable	Water	6010B	431623
440-192518-O-1-C MSD	Matrix Spike Duplicate	Total Recoverable	Water	6010B	431623
Prep Batch: 431847					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-1	CTMW-07D-120.0-20170922	Total/NA	Solid	3050B	
MB 440-431847/1-A ^5	Method Blank	Total/NA	Solid	3050B	
LCS 440-431847/2-A ^5	Lab Control Sample	Total/NA	Solid	3050B	
440-192727-A-6-M MS ^10	Matrix Spike	Total/NA	Solid	3050B	
440-192727-A-6-N MSD ^10	Matrix Spike Duplicate	Total/NA	Solid	3050B	
Analysis Batch: 432003					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-1	CTMW-07D-120.0-20170922	Total/NA	Solid	6010B	431847
Analysis Batch: 432137					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-431847/1-A ^5	Method Blank	Total/NA	Solid	6010B	431847
LCS 440-431847/2-A ^5	Lab Control Sample	Total/NA	Solid	6010B	431847
		Total/NA	Solid	6010B	431847
440-192727-A-6-M MS ^10	Matrix Spike	TOLAI/INA	Solid	00100	401047

General Chemistry

Analysis Batch: 431206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192817-1	CTMW-07D-120.0-20170922	Total/NA	Solid	Moisture	
440-192727-B-6 MS	Matrix Spike	Total/NA	Solid	Moisture	
440-192727-B-6 MSD	Matrix Spike Duplicate	Total/NA	Solid	Moisture	
440-192727-B-6 DU	Duplicate	Total/NA	Solid	Moisture	

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

Qualifiers

HPLC/IC		
Qualifier	Qualifier Description	
F1	MS and/or MSD Recovery is outside acceptance limits.	5
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable	
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.	
Metals		
Qualifier	Qualifier Description	
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.	8

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.	1
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis	
%R	Percent Recovery	
CFL	Contains Free Liquid	
CNF	Contains No Free Liquid	
DER	Duplicate Error Ratio (normalized absolute difference)	
Dil Fac	Dilution Factor	
DL	Detection Limit (DoD/DOE)	
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample	
DLC	Decision Level Concentration (Radiochemistry)	
EDL	Estimated Detection Limit (Dioxin)	
LOD	Limit of Detection (DoD/DOE)	
LOQ	Limit of Quantitation (DoD/DOE)	
MDA	Minimum Detectable Activity (Radiochemistry)	
MDC	Minimum Detectable Concentration (Radiochemistry)	
MDL	Method Detection Limit	
ML	Minimum Level (Dioxin)	
NC	Not Calculated	
ND	Not Detected at the reporting limit (or MDL or EDL if shown)	
PQL	Practical Quantitation Limit	
QC	Quality Control	
RER	Relative Error Ratio (Radiochemistry)	
RL	Reporting Limit or Requested Limit (Radiochemistry)	
RPD	Relative Percent Difference, a measure of the relative difference between two points	
TEF	Toxicity Equivalent Factor (Dioxin)	
TEQ	Toxicity Equivalent Quotient (Dioxin)	

Accreditation/Certification Summary

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12 TestAmerica Job ID: 440-192817-1

Laboratory: TestAmerica Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-18
Arizona	State Program	9	AZ0671	10-14-17 *
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-18
Nevada	State Program	9	CA015312018-1	07-31-18
New Mexico	State Program	6	N/A	01-29-18 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Irvine	Suite 100
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	Cliant Information	Sampler: Jeff Richeson		Lab PM Patty 1	Mata					Carrier	racking	4o(s):		COC Na:		
	Client mirormanon Mike Contact: Mike Crews	Phone. (805) 660-1774		E-Mail: patty r	nata@te	estamen	icainc co	E		-				Page:		
	Company: Tetra Tech							nalysi	s Rec	ueste	- -			Jab #.		
	Address.	Due Date Requested:			Ľ	Ę	ŀ		-	E	-	┝─		Preservation	Codes:	Γ
	17885 Von Karman Ave., Suite 500 City:	TAT Requested (days):			7		121	110		7				A - HCL B - NaOH	M - Hexane N - None	
	ltvine State Zin						4	<u>.</u>	-	v,				C - Zn Acetate D - Nitric Acid	0 - AsNaO2 P - Na2O4S	
	CA 92614					61	28D. 28D.	1)		'0J				E - NaHSO4 F - MeOH	Q - Na2SO3 R - Na2S2O3	
	Phone: (949)-5033	P0#: M12-CWP-01-WA2			9- 	1.	0 66 W-19	n16	SI	0,10				G - Amchior H - Ascorbic Ac	S - H2SO4 d T - TSP Dodecatryc	rate
	Emait mite crea s@ietiat-zh con	:# OM		1103	(ON		280	10	siðim s	214		*	SJ(I - Ice J - Di Water	U - Acetone V - MCAA	
	Project Name. NERT In-Situ Cr Treatability Study	Project #: 44017166			10 S8	aner	1, 300 <u>,</u> 1, 300 <u>,</u>	143		<u>,)く</u>	spuno			K - EDTA L - EDA	W - pH 4-5 Z - other (specify)	
	Site: Henderson, NV	SSOW#:			A) OSI	tteM et	2392 Calco		C-Itter 1	selitek	duioo	cholat	ot co	Other:		
	Sample Identification	Sample Date Time	Sample Type (C=comp, G=grab)	Matrix	M/SM michel	810 - 571_X2A	300 orgen3, 5 23208, 2540 <u>0</u> 300 orgen3, 5	2340C(6010B	2010 - Lab to P	82608 LL - VG		14.0_LL - Per	Total Number	Special	Instructions/Note:	
~		X	Preservati	on Code:	K	<	z v		∢ z	> <	Z	z	X			
	CEPOLIOE - CIDEI - OLO-MWJ)	2/2×/4/2×/6	0	2011			X	X	-	X						
20	FT- CEPT 196-0.051-010-14MT)	c/c/b	e	H20				×		X			6			1
	Trio Alank	00L0 K1/2010	2	H NO		<u> </u>	[╂			$\left \right $	1 M			
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	Possible Hazard Identification	n B Unknown	Radiological			Return	usai (A To Clien	tee ma It	د 2 2 2 3	ssesse isposal	d if sar By Lat	nples ar	P retain □ Arch	ed longer than ive For	r 1 month) Months	(
	Deliverable Requested: I, II, IV, Other (specify)				Specia	al Instrue	ctions/Q	iC Requ	iremer	Its: Lev	el 3 Q(C Requir	ed			· · · ·
	Empty Kit Relinquished by: ,	Date:		1	me:			a		We	thod of S	hipment:			·	
	Relinquished by:	Date/Time:	2	ompany	Re	V TT	N					Date/Time:	1/-2	SAL 4	Company	
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	Relinquished by:	Date/Time:	<u>.</u>	ompany	8 B	ceived by:	5					Selectime:	2	721	2 Company	<u> </u>
04-	Custody Seals Intact: Custody Seal No: 026 61	and had			ვ	oler Tamp	erature(s)	C and C	Other Rei	THE A	12	16.	Ť,	10	1-9 RU	Τ
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Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Login Number: 192817 List Number: 1

Creator: Garcia, Veronica G

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	False	Refer to Job Narrative for details.
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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List Source: TestAmerica Irvine



THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine 17461 Derian Ave Suite 100 Irvine, CA 92614-5817 Tel: (949)261-1022

TestAmerica Job ID: 440-192835-1

Client Project/Site: NERT In-Situ Cr Treatability, M12

For:

Tetra Tech, Inc. 17885 Von Karman Ave, Ste 500 Irvine, California 92614

Attn: Mike Crews

ADNI.

Authorized for release by: 10/9/2017 3:43:57 PM Patty Mata, Senior Project Manager

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Results relate only to the items tested and the sample(s) as received by the laboratory.


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Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12 TestAmerica Job ID: 440-192835-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-192835-1	CTMW-07D-130.0-20170922	Solid	09/22/17 08:00	09/22/17 21:20

Job ID: 440-192835-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative 440-192835-1

Comments

No additional comments.

Receipt

The short hold time sample bottles were received on 9/22/2017 9:20 PM; the remaining sample bottles were received on 9/23/2017 10:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.9° C and 4.1° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

HPLC/IC

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Date Collected: 09/22/17 08:00

Client Sample ID: CTMW-07D-130.0-20170922

Lab Sample ID: 440-192835-1 Matrix: Solid

Date Received: 09/22/17 21:20								Percent Soli	ds: 67.4
Method: 8260B - Volatile Organ	ic Compounds	(GC/MS)							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		2.9	1.5	ug/Kg	<u>Å</u>		09/28/17 13:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		79 _ 120					09/28/17 13:53	1
Dibromofluoromethane (Surr)	98		60 - 120					09/28/17 13:53	1
Toluene-d8 (Surr)	107		79 - 123					09/28/17 13:53	1
Method: 300.1B - Disinfection E	By-Products, (IC) - Soluble							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorate	940		300	75	ug/Kg	÷.		09/28/17 20:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dichloroacetic acid(Surr)	97		90 - 115					09/28/17 20:42	1
Method: 314.0 - Perchlorate (IC) - Soluble								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perchlorate	0.40		0.059	0.014	mg/Kg			10/07/17 10:31	1
Method: 7199 - Chromium, Hex	avalent (IC)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	ND		0.44	0.22	mg/Kg	\	09/25/17 09:22	09/26/17 12:06	3
Method: 6010B - Metals (ICP)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	28		3.0	1.5	mg/Kg	<u></u>	09/28/17 07:51	09/28/17 16:16	10
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	32.6		0.1	0.1	%			09/25/17 17:10	1

TestAmerica Irvine

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

Method Description

Perchlorate (IC)

Percent Moisture

Metals (ICP)

EPA = US Environmental Protection Agency

Volatile Organic Compounds (GC/MS)

Disinfection By-Products, (IC)

Chromium, Hexavalent (IC)

Method

8260B

300.1B

314.0

7199

6010B

Moisture

Protocol References:

Laboratory References:

Protocol SW846

EPA

EPA

EPA

SW846

SW846

Laboratory

TAL IRV

TAL IRV

TAL IRV

TAL IRV

TAL IRV

TAL IRV

5
6
8
9

TestAmerica Irvine

Lab Sample ID: 440-192835-1

Lab Sample ID: 440-192835-1

Matrix: Solid

Matrix: Solid

Percent Solids: 67.4

5
7
8
9

Client Sample ID: CTMW-07D-130.0-20170922

Date Collected: 09/22/17 08:00 Date Received: 09/22/17 21:20

Bate Reconvea. 00/										
	Batch	Batch		Dil	Initial	Final	Batch	Prenared		
	Batch	Baten			initial	i intai	Daten	Trepured		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			431206	09/25/17 17:10	HTL	TAL IRV

Client Sample ID: CTMW-07D-130.0-20170922 Date Collected: 09/22/17 08:00 Date Received: 09/22/17 21:20

_	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5.04 g	10 mL	431823	09/28/17 13:53	WC	TAL IRV
Soluble	Leach	DI Leach			3.98 g	40 mL	431843	09/28/17 07:35	YZ	TAL IRV
Soluble	Analysis	300.1B		1			431675	09/28/17 20:42	YZ	TAL IRV
Soluble	Leach	DI Leach			4.01 g	40 mL	433370	10/05/17 18:07	СТН	TAL IRV
Soluble	Analysis	314.0		1			433554	10/07/17 10:31	СТН	TAL IRV
Total/NA	Prep	3060A			2.51 g	100 mL	431062	09/25/17 09:22	ΥZ	TAL IRV
Total/NA	Analysis	7199		3			431262	09/26/17 12:06	MN	TAL IRV
Total/NA	Prep	3050B			2.01 g	50 mL	431847	09/28/17 07:51	DT	TAL IRV
Total/NA	Analysis	6010B		10			432003	09/28/17 16:16	VS	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-431	823/3										Client S	Sample ID: N	/lethod	Blank
Matrix: Solid												Prep Ty	pe: To	tal/NA
Analysis Batch: 431823													•	
-		MB N	ſВ											
Analyte	Re	sult C	Qualifier	RL		MDL	Unit		D	P	repared	Analyze	ed	Dil Fac
Chloroform		ND		2.0		1.0	ug/Kg					09/28/17 0	8:10	1
			4 D											
Surrogata	% Passa		//B	Limito						Б	ronorod	Analyz	- d	Dil Eco
4 Bromofluorobenzene (Surr)	///Reco		uanner						-		repareu	Analyze		DII Fac
A-Bromofluoromethane (Surr)		90 105		60 120								09/28/17 0	0.10 18·10	1
Toluene d8 (Surr)		85		70 122								09/20/17 0	10.10 18.10	1
		65		19-123								09/20/17 0	0.10	,
Lab Sample ID: LCS 440-43	1823/4								CI	ient	Sample	D: Lab Co	ntrol S	ample
Matrix: Solid												Prep Ty	/pe: To	tal/NA
Analysis Batch: 431823														
				Spike	LCS	LCS						%Rec.		
Analyte				Added	Result	Qua	lifier	Unit		D	%Rec	Limits		
Chloroform				50.0	53.8			ug/Kg		—	108	70 - 130		
a (LCS	LCS	-											
Surrogate	%Recovery	Qualifi	er											
4-Bromonuorobenzene (Surr)	95			79 - 120										
Dibromotiuorometnane (Surr)	100			60 - 120 70 - 100										
Toluene-a8 (Surr)	103			79 - 123										
Lab Sample ID: 440-192727	A-6 MS										Client	Sample ID:	Matrix	Snike
Matrix: Solid											onent	Pron T		tal/NΔ
Analysis Batch: 431823												i ieb i j	/pe. 10	
Analysis Datch. 451025	Sample	Sample	е	Spike	MS	MS						%Rec.		
Analyte	Result	Qualifi	er	Added	Result	Qua	lifier	Unit		D	%Rec	Limits		
Chloroform	ND			71.3	79.4			ug/Kg		☆	111	65 - 135		
								0 0						
	MS	MS												
Surrogate	%Recovery	Qualifi	ier	Limits										
1 Promofluorohonzono (Surr)														
4-Biomonuorobenzene (Sum)	102			79 - 120										
Dibromofluoromethane (Surr)	102 101			79 - 120 60 - 120										
Dibromofluoromethane (Surr) Toluene-d8 (Surr)	102 101 100			79 - 120 60 - 120 79 - 123										
Dibromofluoromethane (Surr) Toluene-d8 (Surr)	102 101 100			79 - 120 60 - 120 79 - 123					Clier). Moteix Co	iko Dur	lieste
Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727	102 101 100 • A-6 MSD			79 - 120 60 - 120 79 - 123					Clier	nt Sa	ample IC): Matrix Sp	ike Dup	olicate
Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727 Matrix: Solid	102 101 100 - A-6 MSD			79 - 120 60 - 120 79 - 123					Clier	nt Sa	ample IC	D: Matrix Sp Prep Ty	ike Dur /pe: To	olicate tal/NA
Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727 Matrix: Solid Analysis Batch: 431823	102 101 100 •A-6 MSD	Sample	a.	79 - 120 60 - 120 79 - 123 Spike	MSD	MSD			Clier	nt Sa	ample IC	D: Matrix Sp Prep Ty %Rec	ike Dur /pe: To	blicate tal/NA
Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727 Matrix: Solid Analysis Batch: 431823	102 101 100 •A-6 MSD Sample Result	Sample	e	79 - 120 60 - 120 79 - 123 Spike Added	MSD	MSD	lifier	Unit	Clier	nt Sa	%Rec	D: Matrix Sp Prep Ty %Rec. Limits	ike Dup /pe: To RPD	blicate tal/NA RPD
Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727- Matrix: Solid Analysis Batch: 431823 Analyte Chloroform	102 101 100 •A-6 MSD •Sample 	Sample Qualifi	e er	79 - 120 60 - 120 79 - 123 Spike Added 70.6	MSD Result	MSD Qual	lifier	Unit ug/Ka	Clier	nt Sa D ╦	**************************************	D: Matrix Sp Prep Ty %Rec. Limits 65 - 135	ike Dur /pe: To 	Dicate tal/NA RPD Limit
Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform	102 101 100 •A-6 MSD •Sample <u>Result</u> ND	Sample Qualifi	e er	79 - 120 60 - 120 79 - 123 Spike Added 70.6	MSD Result 73.2	MSD Qual) lifier	Unit ug/Kg	Clier	nt Sa D ╦	%Rec 104	D: Matrix Sp Prep Ty %Rec. Limits 65 - 135	ike Dup ype: To RPD 8	Dicate tal/NA RPD Limit 20
Dibromofiluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform	102 101 100 •A-6 MSD • • • • • • • • • • • • • • • • • • •	Sample Qualifi MSD	e er	79 - 120 60 - 120 79 - 123 Spike Added 70.6	MSD Result 73.2	MSD Qual) lifier	Unit ug/Kg	Clier	nt Sa D ╦	where the second	D: Matrix Sp Prep Ty %Rec. Limits 65 - 135	ike Dup ype: To RPD 8	Dicate tal/NA RPD Limit 20
4-bioinduloidenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727- Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate	102 101 100 •A-6 MSD •Sample <u>Result</u> ND <i>MSD</i> %Recovery	Sample Qualifi MSD Qualifi	e er	79 - 120 60 - 120 79 - 123 Spike Added 70.6 Limits	MSD Result 73.2	MSD Qual) lifier	Unit ug/Kg	Clier	nt Sa D ╦	wRec 104	D: Matrix Sp Prep Ty %Rec. Limits 65 - 135	ike Dup ype: To RPD 8	blicate tal/NA RPD Limit 20
4-Bromoluorobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727- Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr)	102 101 100 •A-6 MSD • • • • • • • • • • • • • • • • • • •	Sample Qualifi MSD Qualifi	e er	79 - 120 60 - 120 79 - 123 Spike Added 70.6 Limits 79 - 120	MSD Result 73.2	MSD Qual) lifier	Unit ug/Kg	Clier	nt Sa D ∞	%Rec 104	D: Matrix Sp Prep Ty %Rec. Limits 65 - 135	ike Dup ype: To RPD 8	Dicate tal/NA RPD Limit 20
4-Bromoliuolobenzene (Surr) Dibromofluoromethane (Surr) Toluene-d8 (Surr) Lab Sample ID: 440-192727 Matrix: Solid Analysis Batch: 431823 Analyte Chloroform Surrogate 4-Bromofluorobenzene (Surr) Dibromofluoromethane (Surr)	102 101 100 •A-6 MSD • • • • • • • • • • • • • • • • • • •	Sample Qualifi MSD Qualifi	e er	79 - 120 60 - 120 79 - 123 Spike Added 70.6 Limits 79 - 120 60 - 120	MSD Result 73.2	MSD Quai) lifier	Unit ug/Kg	Clier	nt Sa D ∞	%Rec 104	D: Matrix Sp Prep Ty %Rec. Limits 65 - 135	<mark>ike Dup</mark> ype: To RPD 8	Dicate tal/NA RPD Limit 20

Lab Sample ID: MRL 440-431675/49

Method: 300.1B - Disinfection By-Products, (IC)

Client Sample ID: Lab Control Sample 5

8

Matrix: Solid													Prep Type	e: To	tal/NA
Analysis Batch: 431675															
				Spike		MRL	MRL						%Rec.		
Analyte				Added		Result	Qua	lifier	Unit		D	%Rec	Limits		
Chlorate				20.0		19.1	J		ug/L		_	96	50 _ 150		
	MRI	MRI													
Surrogate	%Recovery	Qua	lifier	l imits											
Dichloroacetic acid(Surr)		Quu		90 115											
	00			001110											
Lab Sample ID: MB 440-4318	343/2-A											Client S	Sample ID: Me	thod	Blank
Matrix: Solid													Prep Typ	be: Se	oluble
Analysis Batch: 431675															
-		ΜВ	MB												
Analyte	R	esult	Qualifier		RL		MDL	Unit		D	Р	repared	Analyzed		Dil Fac
Chlorate		ND			200		50	ug/Kg					09/28/17 19:3	50	1
Sumanata	<i></i>	MB	MB	1	_						_	wan arrest	A 4 4		
Surrogate	%Reco	overy	Qualifier		s					-	P	repared	Analyzed		Dil Fac
Dichloroacetic acid(Surr)		97		90 - 1	15								09/28/17 19:3	30	7
- Lab Sample ID: LCS 440-431	843/1-1									C 1	iont	Sample	D. Lab Cont	rol S	amplo
Matrix: Solid	043/1-4										lein	Jampie	Prop Tur		ample
Analysis Batch: 431675													Fiebiat	Je. 30	oluble
Analysis Batch. 431075				Snike		LCS	LCS						%Rec		
Analyte						Result	Qual	lifier	Unit		п	%Rec	l imits		
Chlorate				998		1030					_	103	75 125		
				000		1000			uging			100	10-120		
	LCS	LCS													
Surrogate	%Recovery	Qua	lifier	Limits											
Dichloroacetic acid(Surr)	99			90 - 115											
															
Lab Sample ID: 440-192835-	1 MS								Cliei	nt Sa	mpi	e ID: CT	MW-07D-130.0)-201	70922
Matrix: Solid													Prep Typ)e: So	oluble
Analysis Batch: 431675	0	0		0									0/ D		
A	Sample	Sam	ipie	Sріке Аліліалі		NIS Descrit	NIS		11		_	0/ D	%Rec.		
Chlorete		Qua	imer	Addea		Result	Qua	Inter				%Rec			
Chiorate	940			1490		2120			uy/ry		Ϋ́,	00	75 - 125		
	MS	MS													
Surrogate	%Recovery	Qua	lifier	Limits											
Dichloroacetic acid(Surr)	98			90 - 115											
-															
Lab Sample ID: 440-192835-	1 MSD								Clier	nt Sa	mpl	e ID: CT	MW-07D-130.0)-201	70922
Matrix: Solid													Prep Typ	be: Se	oluble
Analysis Batch: 431675															
	Sample	Sam	ple	Spike		MSD	MSD)					%Rec.		RPD
Analyte	Result	Qua	lifier	Added		Result	Qua	lifier	Unit		D	%Rec	Limits	RPD	Limit
Chlorate	940			1480		2250			ug/Kg		¢	89	75 - 125	6	25
	MSD	MSF	,												
Surrogate	%Recoverv	Qua	lifier	Limits											
Dichloroacetic acid(Surr)				90 - 115											

MRL MRL

4.08

Result Qualifier

MDL Unit

0.0095 mg/Kg

LCS LCS

0.499

Result Qualifier

Unit

ug/L

Unit

mg/Kg

D

D

%Rec

Prepared

100

102

Spike

Added

MB MB

ND

Result Qualifier

4.00

Spike

Added

0.500

Method: 314.0 - Perchlorate (IC)

Lab Sample ID: MRL 440-433554/7

Lab Sample ID: MB 440-433370/1-A

Lab Sample ID: LCS 440-433370/2-A

Lab Sample ID: 440-192727-A-6-O MS

Matrix: Solid

Analyte

Analyte

Analyte

Perchlorate

Matrix: Solid

Perchlorate

Matrix: Solid

Perchlorate

Matrix: Solid

Analysis Batch: 433554

Analysis Batch: 433554

Analysis Batch: 433554

Client Sample ID: Lab Control Sample

%Rec.

Limits

75 - 125

Client Sample ID: Method Blank

Analyzed

Prep Type: Total/NA

5 8

Prep Type: Soluble Dil Fac

Client Sample	10/06/17 16:57	1 1
	Prep Type: Solut	ole 1
D %Rec	%Rec. Limits	

Client Sample ID: Matrix Spike Prep Type: Soluble

85 - 115

Analysis Batch: 433554										
	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Perchlorate	1.2	F1	0.711	1.84		mg/Kg	<u>₩</u>	86	80 - 120	

RL

0.040

Lab Sample ID: 440-192727-A-6-P MSD Matrix: Solid Analysis Batch: 433554							Client Sa	ample IC): Matrix Sp Prep	oike Dup Type: So	olicate oluble
· ·····, ···· · ······	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Perchlorate	1.2	F1	0.710	1.70	F1	mg/Kg	<u></u>	67	80 - 120	8	20

Method: 7199 - Chromium, Hexavalent (IC)

Lab Sample ID: MB 440-431062/1-A											Client Sa	ample ID: Meth	nod Blank
Analysis Batch: 431262												Prep Batc	h: 431062
	МВ	MB											
Analyte	Result	Qualifier		RL		MDL	Unit		D	Pr	epared	Analyzed	Dil Fac
Chromium, hexavalent	ND			0.30		0.15	mg/Kg			09/25	5/17 09:22	09/26/17 07:15	3
									Cli	ient	Sample	ID: Lab Contro	ol Sample
Matrix: Solid												Prep Type:	Total/NA
Analysis Batch: 431262												Prep Batc	h: 431062
			Spike		LCS	LCS						%Rec.	
Analyte			Added		Result	Qual	ifier	Unit		D	%Rec	Limits	
Chromium, hexavalent			40.2		33.4			mg/Kg			83	80 - 120	

Method: 7199 - Chromium, Hexavalent (IC) (Continued)

_ Lab Sample ID: 440-192190-E-24-O MS Matrix: Solid								Client	Sample ID Prep 1	: Matrix ype: To	Spike tal/NA
Analysis Batch: 431262									Prep	Batch: 4	31062
Sa	nple	Sample	Spike	MS	MS				%Rec.		
Analyte Re	sult	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Chromium, hexavalent	0.19	J F1	46.0	35.2		mg/Kg	<u></u>	76	55 - 110		
 Lab Sample ID: 440-192190-E-24-P MS	C					Cli	ient Sa	ample IC): Matrix S	pike Dup	olicate
Matrix: Solid									Prep T	ype: To	tal/NA
Analysis Batch: 431262									Prep	Batch: 4	31062
Sa	nple	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte Re	sult	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chromium, hexavalent	0.19	J F1	46.6	36.2		mg/Kg	<u></u>	77	55 - 110	3	20
								Client	Sample ID	: Matrix	Spike
Matrix: Solid									Prep T	ype: To	tal/NA
Analysis Batch: 431262									Prep	Batch: 4	31062
Sar	nple	Sample	Spike	MSI	MSI				%Rec.		
Analyte Re	sult	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
Chromium, hexavalent	0.19	J F1	1070	551	F1	mg/Kg		51	55 ₋ 110		

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 440-431847 Matrix: Solid Analysis Batch: 432137	/1-A ^5	MB N	мв									Client Sa	ample ID: Prep Prep	Method Гуре: To Batch: 4	Blank tal/NA 31847
Analyte	Re	esult (Qualifier		RL		MDL	Unit		D	P	repared	Analy	zed	Dil Fac
Chromium		ND			0.99		0.50	mg/Kg			09/2	8/17 07:51	09/29/17	10:20	5
Lab Sample ID: LCS 440-43184	7/2-A ^5									CI	ient	Sample	ID: Lab C	ontrol S	ample
Matrix: Solid													Prep [·]	Гуре: To	tal/NA
Analysis Batch: 432137													Prep	Batch: 4	31847
				Spike		LCS	LCS						%Rec.		
Analyte				Added		Result	Qua	lifier	Unit		D	%Rec	Limits		
Chromium				49.5		51.1			mg/Kg			103	80 - 120		
Lab Sample ID: 440-192727-A-6 Matrix: Solid	-M MS ^10											Client S	Sample II Prep ⁻): <mark>Matri</mark> x Гуре: То	Spike tal/NA
Analysis Batch: 432137													Prep	Batch: 4	31847
	Sample	Sampl	e	Spike		MS	MS						%Rec.		
Analyte	Result	Qualif	ier	Added		Result	Qua	lifier	Unit		D	%Rec	Limits		
Chromium	13			71.3		88.5			mg/Kg		\\\	106	75 ₋ 125		
	-N MSD ^10									Clier	nt Sa	ample ID:	Matrix S	pike Du	olicate
Matrix: Solid													Prep [·]	Гуре: То	tal/NA
Analysis Batch: 432137													Prep	Batch: 4	31847
	Sample	Sampl	e	Spike		MSD	MSD)					%Rec.		RPD
Analyte	Result	Qualif	ier	Added		Result	Qua	lifier	Unit		D	%Rec	Limits	RPD	Limit
Chromium	13			71.0		89.3			mg/Kg		\\\	107	75 - 125	1	20

Method: Moisture - Percent Moisture

Lab Sample ID: 440-192727-B-0 Matrix: Solid Analysis Batch: 431206	6 DU						Client Sample ID: Dup Prep Type: To	olicate tal/NA
	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Percent Moisture	29.3		 29.9		%		2	20

TestAmerica Irvine

QC Association Summary

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

TestAmerica Job ID: 440-192835-1

GC/MS VOA

Analysis Batch: 431823

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192835-1	CTMW-07D-130.0-20170922	Total/NA	Solid	8260B	
MB 440-431823/3	Method Blank	Total/NA	Solid	8260B	
LCS 440-431823/4	Lab Control Sample	Total/NA	Solid	8260B	
440-192727-A-6 MS	Matrix Spike	Total/NA	Solid	8260B	
440-192727-A-6 MSD	Matrix Spike Duplicate	Total/NA	Solid	8260B	

HPLC/IC

Prep Batch: 431062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192835-1	CTMW-07D-130.0-20170922	Total/NA	Solid	3060A	
MB 440-431062/1-A	Method Blank	Total/NA	Solid	3060A	
LCS 440-431062/2-A	Lab Control Sample	Total/NA	Solid	3060A	
440-192190-E-24-O MS	Matrix Spike	Total/NA	Solid	3060A	
440-192190-E-24-P MSD	Matrix Spike Duplicate	Total/NA	Solid	3060A	
440-192190-E-24-Q MSI	Matrix Spike	Total/NA	Solid	3060A	

Analysis Batch: 431262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192835-1	CTMW-07D-130.0-20170922	Total/NA	Solid	7199	431062
MB 440-431062/1-A	Method Blank	Total/NA	Solid	7199	431062
LCS 440-431062/2-A	Lab Control Sample	Total/NA	Solid	7199	431062
440-192190-E-24-O MS	Matrix Spike	Total/NA	Solid	7199	431062
440-192190-E-24-P MSD	Matrix Spike Duplicate	Total/NA	Solid	7199	431062
440-192190-E-24-Q MSI	Matrix Spike	Total/NA	Solid	7199	431062

Analysis Batch: 431675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192835-1	CTMW-07D-130.0-20170922	Soluble	Solid	300.1B	431843
MB 440-431843/2-A	Method Blank	Soluble	Solid	300.1B	431843
LCS 440-431843/1-A	Lab Control Sample	Soluble	Solid	300.1B	431843
MRL 440-431675/49	Lab Control Sample	Total/NA	Solid	300.1B	
440-192835-1 MS	CTMW-07D-130.0-20170922	Soluble	Solid	300.1B	431843
440-192835-1 MSD	CTMW-07D-130.0-20170922	Soluble	Solid	300.1B	431843

Leach Batch: 431843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192835-1	CTMW-07D-130.0-20170922	Soluble	Solid	DI Leach	
MB 440-431843/2-A	Method Blank	Soluble	Solid	DI Leach	
LCS 440-431843/1-A	Lab Control Sample	Soluble	Solid	DI Leach	
440-192835-1 MS	CTMW-07D-130.0-20170922	Soluble	Solid	DI Leach	
440-192835-1 MSD	CTMW-07D-130.0-20170922	Soluble	Solid	DI Leach	

Leach Batch: 433370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192835-1	CTMW-07D-130.0-20170922	Soluble	Solid	DI Leach	
MB 440-433370/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 440-433370/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
440-192727-A-6-O MS	Matrix Spike	Soluble	Solid	DI Leach	
440-192727-A-6-P MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

TestAmerica Irvine

9

HPLC/IC (Continued)

Analy	vsis	Batch:	433554
	,	Batom	

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192835-1	CTMW-07D-130.0-20170922	Soluble	Solid	314.0	433370
MB 440-433370/1-A	Method Blank	Soluble	Solid	314.0	433370
LCS 440-433370/2-A	Lab Control Sample	Soluble	Solid	314.0	433370
MRL 440-433554/7	Lab Control Sample	Total/NA	Solid	314.0	
440-192727-A-6-O MS	Matrix Spike	Soluble	Solid	314.0	433370
440-192727-A-6-P MSD	Matrix Spike Duplicate	Soluble	Solid	314.0	433370

Metals

Prep Batch: 431847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-192835-1	CTMW-07D-130.0-20170922	Total/NA	Solid	3050B	
MB 440-431847/1-A ^5	Method Blank	Total/NA	Solid	3050B	
LCS 440-431847/2-A ^5	Lab Control Sample	Total/NA	Solid	3050B	
440-192727-A-6-M MS ^10	Matrix Spike	Total/NA	Solid	3050B	
440-192727-A-6-N MSD ^10	Matrix Spike Duplicate	Total/NA	Solid	3050B	
─ Analysis Batch: 432003					

Lab Sample IDClient Sample IDPrep TypeMatrixMethodPrep Batch440-192835-1CTMW-07D-130.0-20170922Total/NASolid6010B431847

Analysis Batch: 432137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 440-431847/1-A ^5	Method Blank	Total/NA	Solid	6010B	431847
LCS 440-431847/2-A ^5	Lab Control Sample	Total/NA	Solid	6010B	431847
440-192727-A-6-M MS ^10	Matrix Spike	Total/NA	Solid	6010B	431847
440-192727-A-6-N MSD ^10	Matrix Spike Duplicate	Total/NA	Solid	6010B	431847

General Chemistry

Analysis Batch: 431206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Batc
440-192835-1	CTMW-07D-130.0-20170922	Total/NA	Solid	Moisture
440-192727-B-6 MS	Matrix Spike	Total/NA	Solid	Moisture
440-192727-B-6 MSD	Matrix Spike Duplicate	Total/NA	Solid	Moisture
440-192727-B-6 DU	Duplicate	Total/NA	Solid	Moisture

Definitions/Glossary

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12

Qualifiers

Qualifiers		
HPLC/IC		
Qualifier	Qualifier Description	
F1	MS and/or MSD Recovery is outside acceptance limits.	5
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.	Ð

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.				
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis				
%R	Percent Recovery	8			
CFL	Contains Free Liquid				
CNF	Contains No Free Liquid	9			
DER	Duplicate Error Ratio (normalized absolute difference)				
Dil Fac	Dilution Factor	10			
DL	Detection Limit (DoD/DOE)				
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample				
DLC	Decision Level Concentration (Radiochemistry)				
EDL	Estimated Detection Limit (Dioxin)				
LOD	Limit of Detection (DoD/DOE)				
LOQ	Limit of Quantitation (DoD/DOE)	12			
MDA	Minimum Detectable Activity (Radiochemistry)	13			
MDC	Minimum Detectable Concentration (Radiochemistry)				
MDL	Method Detection Limit				
ML	Minimum Level (Dioxin)				
NC	Not Calculated				
ND	Not Detected at the reporting limit (or MDL or EDL if shown)				
PQL	Practical Quantitation Limit				
QC	Quality Control				
RER	Relative Error Ratio (Radiochemistry)				
RL	Reporting Limit or Requested Limit (Radiochemistry)				
RPD	Relative Percent Difference, a measure of the relative difference between two points				
TEF	Toxicity Equivalent Factor (Dioxin)				
TEQ	Toxicity Equivalent Quotient (Dioxin)				

Accreditation/Certification Summary

Client: Tetra Tech, Inc. Project/Site: NERT In-Situ Cr Treatability, M12 TestAmerica Job ID: 440-192835-1

Laboratory: TestAmerica Irvine

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	CA01531	06-30-18
Arizona	State Program	9	AZ0671	10-14-17 *
California	LA Cty Sanitation Districts	9	10256	06-30-18
California	State Program	9	CA ELAP 2706	06-30-18
Guam	State Program	9	Cert. No. 17-003R	01-23-18
Hawaii	State Program	9	N/A	01-29-18
Kansas	NELAP Secondary AB	7	E-10420	07-31-18
Nevada	State Program	9	CA015312018-1	07-31-18
New Mexico	State Program	6	N/A	01-29-18 *
Northern Mariana Islands	State Program	9	MP0002	01-29-17 *
Oregon	NELAP	10	4028	01-29-18
USDA	Federal		P330-15-00184	07-08-18
Washington	State Program	10	C900	09-03-18

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Irvine

ca Irvine	Suite 100	1.01
TestAmeri	17461 Deriai	

Chain of Cust. J Record

Test, nerica

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FIIUIE (343) 201-1022 FAX (343) 200-3231															
Client Information	Sampler: Jeff Richeson		Path	'M: ∕Mata					Carrier	[racking	No(s):		ŏ	OC No:	
Client Contact: Mike Crews	Phone: (805) 660-1774		E-Mai path	ł: / mata@tesi	america	inc.con	~						å	age:	
Company: Tetra Tech						Į ₹	alysis	Requ	leste	- -			<u>ې</u>	th #:	
Address: 17885 Von Karman Ave., Suite 500	Due Date Requested:			7		Xe			tr.			 	₫. ⊲	reservation Codes:	
City: Irvine State: Zio:	TAT Requested (days):) (W: H			164					- TICL M- TIC - NaOH N - Nor - Zn Acetate O - Ast - Natric Acid P - Na	VaO2 204S
CA 92614 Phone:	PO #			014		ORGF 0 28D	vn		010				<u>ш</u> г. О	E - NaHSO4 Q - Na; - MeOH R - Na; 5 - Amchior S - H2;	2503 25203 504
(949)-809-5033 Emait mike crews diterratedn rom	M12-CWP-01-WA2 W0 #:			0 (0) (0)		6617)0 19990	100		214				I _ ¬ S	1 - Ascorbic Acid T - TSF - Ice U - Ace - DI Water V - MC	 Dodecahydrate Itone AA
Project Name Structure of the state of the s	Project #: 44017166			58D es or l le (Xes	əueu	3_Ortho	195 145		2 C	spuno	$\langle \rangle$		nenistn 7 T	- EDTA W - PH	4-5 ar (specify)
Site: Henderson, NV	SSOW#:			dms2	is Met	. 365.,	-ilter 1	20	selitek Hu2 - C	duloo	telodə		of col	ther:	
Sample Identification	Sample Date Sam	Sample ple Type e (C=comp, G=grab)	Matrix	Field Filtered MSM mone 7041_81.005	25K_175 - Dia 2,51.2, 365.3, 5	300_ORGFMS 2320B, 2540C	2340C' 6010B	OT - 80163MS	25608_LL - Vo		194 - 77 0.41		rotal Number	Snecial Instructio	as/Note.
	X	Preserva	ation Code:	XX	A S	z	2 ; 0	<		Z	z	-			
CTMW-07D-130,0-2010922	080 LITER10	20	50,	X		Ń		Ĺ	X		X		=		
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Possible Hazard Identification				Samole	Dispos	1 4 60		he as		1 if sa		are ref	tained	fonder than 1 month)	Q
Non-Hazard Flammable Skin Imitant Poise	ion B Unknown	Radiologic	le		etum To	Client		ä ∏	posal	By Lai	en de la		Archive	For Months	7
Deliverable Requested: I, II, III, IV, Other (specify)				Special I	nstructio	ons/QC	Requin	ements	: Lev	el 4 Q	c Req	uired			
Empty Kit Relinquished by:	Date:			Time:					Me	thod of	Shipmen	ų			
Relinquished by:	Date/Time:		Company	Recei	- Ale	Y						ы С	17	ことと	X
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Relinquished by:	Dafte/Time:		Company	Recei	ved by:	2	/				6	Clad.	之	21:20 compar	A
Custody Seals Intact: Custody Seal No.: 720 G	Joy out	1		Coole	r Tempera	ture(s) °C	and Oth	er Rema	製	7	~	9	/	- b. ((d .)	hg
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Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Login Number: 192835 List Number: 1

Creator: Garcia, Veronica G

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Number: 440-192835-1

List Source: TestAmerica Irvine

Attachment C Physical Parameter Laboratory Report



5730 Centralcrest St. • Houston, TX 77092 Telephone (713) 316-1800 • Fax (877) 225-9953

January 5, 2018

Mike Crews Project Manager Tetra Tech, Inc. 17855 Von Karman Avenue, Suite 500 Irvine, CA 92614

Re: PTS File No: 47446 Project Name: NERT VER Treatability Study Project Number: 44017166

Dear Mr Crews:

Please find enclosed report for Physical Properties analyses conducted upon samples received from your NERT project. All analyses were performed by applicable ASTM, EPA, or API methodologies. The samples are currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact myself or Emeka Anazodo at (713) 316-1800.

Sincerely, PTS Laboratories, Inc.

Rick Schweizer

Rick Schweizer Laboratory Supervisor

Encl.

PTS Laboratories

NERT VER Treatability Study

Project Name: Project Number:

44017166

PTS File No: 47446

Client: Tetra Tech, Inc.

TEST	PRO	GRAM	- 20171	212
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CORE ID	Depth ft.	Core Recovery ft.	Hydraulic Conductivity Pkg.			Comments
		Plugs:	Vert. 1.5"			
Date Received: 20171031						
CTMW-07S-22.0-20170923	22		X			21/2" X 6" acetate sleeve or 21/2" X 6" ss tube
CTMW-07D-108.0-20170921	108		X			21/2" X 6" acetate sleeve or 21/2" X 6" ss tube
VMW-01I-62.0-20170928	62		X			21/2" X 6" acetate sleeve or 21/2" X 6" ss tube
VMW-01D-100.0-20170928	100		X			21/2" X 6" acetate sleeve or 21/2" X 6" ss tube
VMW-02I-62.0-20171018	62		X			21/2" X 6" acetate sleeve or 21/2" X 6" ss tube
VMW-02D-100.0-20171018	100		X			21/2" X 6" acetate sleeve or 21/2" X 6" ss tube
VER-01I-62.0-20171019	62		X			21/2" X 6" acetate sleeve or 21/2" X 6" ss tube
VER-01D-100.0-20171020	100		X			21/2" X 6" acetate sleeve or 21/2" X 6" ss tube
TOTALS:		0.0	8			8

Laboratory Test Program Notes

Contaminant identification:

Standard TAT for basic analysis is 10-15 business days.

Hydraulic Conductivity Package – Saturated Zone: Native-state permeability to water, total and air-filled porosity, grain and bulk density, moisture content, total pore fluid (water only) saturation. Horizontal sample orientation is +\$20/sample. Requires cores >2" diameter. PTS File No:47446Client:Tetra Tech, Inc.Report Date:01/05/18

PHYSICAL PROPERTIES DATA - HYDRAULIC CONDUCTIVITY PACKAGE

Project	Name:
Project	No:

NERT VER Treatability Study 44017166

		METHODS:	API RP 40 / ASTM D2216	API RI	⁻ 40	AP	I RP 40	API RP 40	API RP 40; EF	PA 9100
									25 PSI CONFININ	G STRESS
		SAMPLE	MOISTURE	DENS	ITY	POROS	ITY, %Vb (2)	TOTAL PORE FLUID	EFFECTIVE (4,5)	HYDRAULIC
SAMPLE	DEPTH,	ORIENTATION	CONTENT,	DRY BULK,	GRAIN,	TOTAL	AIR-FILLED	SATURATIONS (3),	PERMEABILITY TO WATER,	CONDUCTIVITY (4,5),
ID.	ft.	(1)	% weight	g/cc	g/cc		,	% Pv	millidarcy	cm/s
CTMW-07S-22.0-20170923	22.0-22.2	V	27.4	1.48	2.66	44.5	4.1	90.9	10.1	9.23E-06
CTMW-07D-108.0-20170921	108.0-108.2	V	85.0	0.78	2.65	70.7	4.8	93.2	1.25	1.15E-06
VMW-01I-62.0-20170928	62.0-62.17	V	42.9	1.19	2.58	54.0	3.0	94.5	9.56	8.86E-06
VMW-01D-100.0-20170928	100.0-100.2	V	23.8	1.58	2.69	41.4	3.9	90.5	0.228	2.13E-07
VMW-02I-62.0-20171018	62.0-62.17	V	95.5	0.71	2.67	73.3	5.2	92.8	0.356	3.43E-07
VMW-02D-100.0-20171018	100.0-100.2	V	23.9	1.56	2.69	42.2	4.9	88.4	0.085	8.32E-08
VER-01I-62.0-20171019	62.0-62.17	V	16.0	1.86	2.72	31.4	1.7	94.5	88.1	8.25E-05
VER-01D-100.0-20171020	100.0-100.17	V	37.0	1.30	2.69	51.7	3.7	92.9	0.182	1.71E-07

(1) Sample Orientation: H = horizontal; V = vertical; R = remold

(2) Total Porosity = all interconnected pore channels; Air Filled = pore channels not occupied by pore fluids.

(3) Fluid density used to calculate pore fluid saturations: Water = 0.9996 g/cc.

(4) Effective (Native) = With as-received pore fluids in place.

(5) Permeability to water and hydraulic conductivity measured at saturated conditions.

Vb = Bulk Volume, cc; Pv = Pore Volume, cc; ND = Not Detected

Water = filtered Laboratory Fresh (tap) or Site water.

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	Client Contact:	Phone:	r auy waw		<u> </u>			
	Wine Clews	(805) 660-1774	patty.mata@testamer	icaine.com		G	Page:	
	Tetra Tech						-# qop	
	Address;	Due Date Requested:		Analysis R	equested	, Y		
	11/000 VOII Narman Ave., Suite 500					ref .	Preservation	Codes:
	tryine	TAT Requested (days):				4:	A - HCL B - NaOH	M - Hexane
	State, Zip. CA 92614			W-		رېز	C - Zn Acetate D - Nitric Acid	N - NUIE 0 - ASNa02 P - Na204S
	Phone:			IS)		<u>"/</u> "	E - NaHSO4	0 - Na2SO3
	(949)-809-5033			-0-		vo	F - MeOH	R - N#2S203
	Emeit: Mike Crews/Aternateric nom	W0#:	on 1	slat 6617	·····)/	H - Ascorbic Ac	d T - TSP Dodecahydrate
			0 S	10 , 0	lej	(17)	 I - ICE Mater 	U - Acetone
	NERT Treatability Study	Project # 44047460	Jo SD NG NG NG NG NG NG	.00 dħC ssi	оТ,, sbi	11	H - DTA	y - MCAA W - pH 4-5
	Site	144017/100 SSOM#-	than Yes Yes	0 6 5 'p (uno əpy	<br 2 ⊖2	E - EDA	Z - other (specify)
	Henderson, NV		11.00 11.00 11.00	205 0alc 365 365	eeliti Sul	100	Cother:	~
		Sample	- Diss S/M/S D, 30	108 108 108 100 100 100	FA C		ier ol	
	Sample Identification	Sample Date Sample Type M	atrix 118_14	- [9p - [9p OKG OKG S' 302	∧ - วเ ร`ิ009 • ำา`โย	<i>ןי כמ</i> רד -	1cunN	
		G=grab)	300. 800. 800. 800.	1020 1000 1000 1000 1000 1000 1000 1000	2601 2601 2601	·)/	1870	
		Reservation 1			л 8 8	1 1 E	F Special	Instructions/Note:
7	Truillense A har and				A CB N	N		V
۰ ۱	Choller-Property - Min/17	1154 0 00 00 0 00 00 00 00 00 00 00 00 00 0	0/			х Х		
7	1290709. 0.801-070-WWT-2	5 9 4/12/2						
7	Scorre O CI-TIO-VININ							
						X		
\$	Q4401 108-01001-0110 MWN	913617 1300 6 50	0. (X		
7~	8101/102-072-9-IRO-MWA	10/18/17 1045 6 S	· / / ·			X		
>	VNW-020-100.0-20171018	10/18/11/255 6 Co				<>	,	
5	VFR-017-610					4		
	11/1/1/10/10/17	10/17/17/100 6 50	<i>'</i> , /			X		
2	VER-01D-100.0-2011020	10/20/1/225 6 50		4		×		
			-			·		

PTS LABS WC Company Company Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) 12:15 Date/Time: 10 31 17 Date/Time: Date/Time: Method of Shipment 2027 Special Instructions/QC Requirements: Cooler Temperature(s) °C and Other Remarks: Muldin X Received by: Received by: Received by: Company TCH & Tych Company Time: Company Radiological 1400 Unknown Date: Ū Date/Time: | | ())) | Date/Time: Date/Time: Poison B Skin Imtant Deliverable Requested: I, II, III, IV, Other (specify) Custody Seal No.: X Non-Hazard Hammable Empty Kit Relinquished by. elinquisbed bykelinquished by: elinquished by:

Possible Hazard Identification

Appendix D Summary of Groundwater Analytical Results – Biological Reduction Study

						Total Me	etals by USEPA Metho (mg/L)	od 6010B	USEPA Mer (mg	thod 300.1B g/L)	Anio	ns by USEPA Method (mg/L)	300.0
Well Location	Sample ID	Sample Date	Week	Perchlorate by USEPA Method 314.0 (mg/L)	Hexavalent Chromium by USEPA Method 7199 (mg/L)	Total Chromium	Total Iron	Total Manganese	Chlorate	Chlorite	Chloride	Nitrate as N	Sulfate
CTIW-01S	CTIW-01S-20170405	04/05/17	Baseline	390	13	14		0.011 J	3,100	<10	870	36	1,500
CTIW-01D	CTIW-01D-20170406	04/06/17	Baseline	650	18	20		0.028	3,800	<10	1,100	14	1,500
CTIW-02S	CTIW-02S-20170403	04/03/17	Baseline	400	12	11		0.026	2,400	<10	690	120	1,400
CTIW-02D	CTIW-02D-20170404	04/04/17	Baseline	900	20	20		0.056 J	4,100	<1	1,300	25	1,600
CTIW-03S	CTIW-03S-20170404	04/04/17	Baseline	380	11	11		0.040	2,300	<1	720	470	1,300
CTIW-03D	CTIW-03D-20170404	04/04/17	Baseline	1,100	21	23		<0.050	4,600	<1	1,300	58	1,400
	CTMW-01S-20170404	04/04/17	Baseline	410	11	11		0.030	2,500	<1	790	120	1,400
	CTMW-01S-20170503	05/03/17	PME1	340	0.026	1.7		0.55	870	<10	950	210	1,400
	CTMW-01S-20170516	05/16/17	PME2	280	<0.00025	0.49		0.55	730	<10	940	55	1,200
	CTMW-01S-20170531	05/31/17	PME3	140	<0.00025	0.18	1.4	0.99	650	<10	1,500	2.6	1,100
	CTMW-01S-20170619	06/19/17	PME4	39	<0.00025 UJ	1.9	17	3.3	64	<20	1,300	9.5	740
CTMW-01S	CTMW-01S-20170720	07/20/17	PME5	4	<0.00025	0.49	25	5.5	72	<5	1,500	<0.55	140
	CTMW-01S-20170824	08/24/17	PME6	32	0.0026	2.2	18	3.3	13	<10	1,300	4.8 J	1,000
	CTMW-01S-20170920	09/20/17	PME7	0.32	0.00037 J	0.086	11	3.6	<1	<10	970	<1.1	<130
	CTMW-01S-20171003	10/03/17	PME8	0.15 J+	<0.00025	0.084	21	2.8	0.61 J	<10	1,100	<0.55	76
	CTMW-01S-20180305	03/05/18	PME9	<0.0025	<0.00025	0.061	3.9	0.29	<0.5	<1	780	<1.1	<5.0
	CTMW-01S-20180621	06/21/18	PME10	0.15	0.0088	0.085	6.9	0.24	1.2	<10	1,100	<1.1	97
	CTMW-01D-20170403	04/03/17	Baseline	1,400	24	23		0.042	4,900	<10	1,900	20	1,900
	CTMW-01D-20170503	05/03/17	PME1	1,400	22	24		0.20	4,900	<10	1,900	21	1,800
	CTMW-01D-20170516	05/16/17	PIME2	1,400	21	24		0.037 J	4,500	<10	1,700	22	1,700
	CTMW-01D-20170531	05/31/17	PIME3	1,300	22	23	0.15 J	0.027 J	4,800	<10	1,700	20	1,600
	CTMW-01D-20170619	00/19/17	PIVIE4	1,400	20 J-	22	<0.25	<0.075	4,300	<10 R	1,700	17	1,700
	CTMW-01D-20170720	07/20/17	PIVIES DME5	1,400	16	16	<0.10	0.070	4,100	<10 K	2,000	14	1,700
CTMW-01D	CTMW-01D-20170824	08/24/17	PME5	1,300	13	13	0.17	0.005	4,100	<10	2,000	99	1,700
	CTMW-01D-20170824	09/20/17	PME7	1,400	13	14	0.71	0.20	3,700	<10	2,000	12	1,700
	CTMW-01D-20171003	10/03/17	PME8	1,300	12	10	0.13	0.21	3,500	<10	2,000	11	1,600
	CTMW-01D-20180305	03/05/18	PME9	910	7.5	7.4	<0.050	0.66	2,200	<10	1.800	6.0	990
	CTMW-01D-20180305-FD	03/05/18	PME9	900	7.5	7.3	<0.050	0.65	2,300	<10	1,900	5.0 J	990
	CTMW-01D-20180621	06/21/18	PME10	1,200	6.6	7.8	0.12 J	1.2	2,100	<10	2,700	5.2 J	1,200
	CTMW-01D-20180621-FD	06/21/18	PME10	1,300	7.5	8.5	0.10 J	1.1	2,100	<10	2,700	5.0 J	1,200
	CTMW-02S-20170405	04/05/17	Baseline	410	11	11		0.030	2,500	<10	780	160	1,500
	CTMW-02S-20170504	05/04/17	PME1	460	1.3	2.5		0.36	860	<10	1,300	540	1,500
	CTMW-02S-20170516	05/16/17	PME2	380	0.11	0.74		0.35	550	<10	1,200	530	1,400
	CTMW-02S-20170601	06/01/17	PME3	440	0.76	0.68	0.11	0.23	750	<10	1,300	320	1,500
	CTMW-02S-20170620	06/20/17	PME4	110	<0.00025	0.16	2.1	1.3	<0.5	<0.5	1,500	<1.1	890
CTMW-02S	CTMW-02S-20170719	07/19/17	PME5	26	<0.00025	0.084	13	2.7	<0.5	<10	1,400	0.63 J	29
	Not Analyzed	08/24/17	PME6				N	/ell Dry; Unable to sam	ple		·		
	CTMW-02S-20170920	09/20/17	PME7	13	<0.00025	0.097	13	1.4	<1	<10	1,600	<0.28	17
	CTMW-02S-20171003	10/03/17	PME8	0.29	<0.00025	0.13	7.9	1.1	<0.5	<10	1,600	<1.1	6.5 J
	CTMW-02S-20180306	03/06/18	PME9	0.034	<0.00025	0.049	4.2	0.51	<0.05	<0.05	1,600	<1.1	6.7 J
	Not Analyzed	06/22/18	PME10				N	/ell Dry; Unable to sam	ple				
	CTMW-02D-20170404	04/04/17	Baseline	960	20	23		0.090 J	4,800	<1	1,300	34	1,700
	CTMW-02D-20170404-FD	04/04/17	Baseline	930	20	21		0.076 J	4,600	<1	1,200	31	1,600
	CTMW-02D-20170503	05/03/17	PME1	1,100 J	15	19		0.10	4,200	<10	1,500	30	1,700
	CTMW-02D-20170503-FD	05/03/17	PME1	1,800 J	15	19		0.11	4,200	<10	1,600	29	1,700
	CTMW/02D-20170517	06/01/17	PME2	1,100	19	18		0.13	40,000	<10	1,500	26	1,500
		06/01/17		1,300	19	19	0.054	0.090	3,300	<10	1,000	20	1,000
CTMW-02D	CTMW_02D-20170607-FD	06/10/17		1,200	10	10	J.U31 J	0.10	3,400	<10	1,500	20	1,000
GT WWW-02D	CTMW-02D-20170610 ED	06/10/17		1,100	10	19	<0.20	0.13	2,000	<10	1,000	22	1,000
	CTMW-02D-20170019-FD	07/10/17	PME5	950	10	12	<0.20	0.13	4 400	<10	1,000	5.8	1 300
	CTMW-02D-20170713	08/24/17	PME6	1 200	14	16	0.000	0.20	3 500	<10 R	2 000	18	1,000
	CTMW-02D-20170920	09/20/17	PMF7	2,500	13	13	6.1	0.49	3,700	<10	2,000	14	1,400
	CTMW-02D-20171003	10/03/17	PME8	1.200	15	14	0.27	0.28	3.600	<10	1.900	17	1.500
	CTMW-02D-20180305	03/05/18	PME9	1,100	14	14	<0.25	0.48	3,900	<10	1,800	18	1,600
	CTMW-02D-20180621	06/21/18	PME10	1,200	13	16	0.81 J	0.54 J+	3,800	<10	1,800	17	1,600

						Total Me	etals by USEPA Metho (mg/L)	od 6010B	USEPA Met (mı	:hod 300.1B g/L)	Anio	ons by USEPA Method 3 (mg/L)	800.0
Well Location	Sample ID	Sample Date	Week	Perchlorate by USEPA Method 314.0 (mg/L)	Hexavalent Chromium by USEPA Method 7199 (mg/L)	Total Chromium	Total Iron	Total Manganese	Chlorate	Chlorite	Chloride	Nitrate as N	Sulfate
	CTMW-03S-20170405	04/05/17	Baseline	470	13	14		<0.050	2,900	<10	940	55	1,500
	CTMW-03S-20170505	05/05/17	PME1	460	13	15		0.060	3,200	<10	1,000	27	1,600
	CTMW-03S-20170517	05/17/17	PME2	490	14	15		0.058	3,200	<10	960	31	1,500
	CTMW-03S-20170601	06/01/17	PME3	610	14	13	<0.050	0.060	4,000	<10	1,000	38	1,500
CTMW-03S	CTMW-03S-20170620	06/20/17	PME4	670	4.4	5.7	0.23	0.33	1,600	<1	1,700	34	1,600
	CTMW-03S-20170718	07/18/17	PME5	540	14	14	0.055 J	0.33	3,100	<10	1,100	30	1,600
	CTMW-03S-20170823	08/23/17	PME6	600	4.8	5.7	0.15	0.60	1,600	<10	1,800	17	1,400
	CTMW-03S-20170921	09/21/17	PME7	540	14	16	<0.050	0.38	3,400	<10	1,100	26	1,500
	CTMW-03S-20171003	10/03/17	PME8	560	16	16	<0.050	0.36	3,400	<10	1,100	26	1,500
	CTMW-03D-20170406	04/06/17	Baseline	530	17	16		0.031	3,700	<10	1,100	47	1,600
	CTMW-03D-20170505	05/05/17	PME1	490	16	16		0.027	3,500	<10	1,100	48	1,600
	CTMW-03D-20170517	05/17/17	PME2	520	16	15		<0.020	3,400	<10 R	960	41	1,500
	CTMW-03D-20170601	06/01/17	PME3	570	15	15	<0.050	0.019 J	3,500	<10 R	1,000	34	1,500
CTMW-03D	CTMW-03D-20170620	06/20/17	PME4	520	15	18	<0.25	<0.075	3,400	<1	1,200	33	1,600
	CTMW-03D-20170719	07/19/17	PME5	580	14	14	<0.050	0.018 J	3,400	<10	1,100	27	1,500
	CTMW-03D-20170823	08/23/17	PME6	610	14	15	<0.050	0.022	3,200	<10	1,100	23	1,500
	CTMW-03D-20170921	09/21/17	PME7	540	14	16	0.24	0.051	3,400	<10	1,100	23	1,500
	CTMW-03D-20171003	10/03/17	PME8	540	15	16	0.095 J	0.030	3,500	<10	1,100	24	1,500
	CTMW-04S-20170405	04/05/17	Baseline	420	9.9	10		0.033	2,500	<10	780	150	1,500
	CTMW-04S-20170504	05/04/17	PME1	420	5.4	19		0.11	1,800	<10	1,100	120	1,500
	CTMW-04S-20170517	05/17/17	PME2	570	0.15	0.82		0.30	910	<10	1,500	93	1,400
	CTMW-04S-20170602	06/02/17	PME3	650	0.47	1.1	0.19	0.33	1,100	<10	1,500	51	1,400
	CTMW-04S-20170620	06/20/17	PME4	560	<0.00025	0.78	2.9	0.41	290	<1	1,800	18	1,500
CTMW-04S	CTMW-04S-20170718	07/18/17	PME5	180	0.00034 J	0.51	2.6	1.1	20	<5	1,900	<1.1	1,100
	CTMW-04S-20170823	08/23/17	PME6	140	<0.00025	0.23	8.7	2.1	16	<10	2,000	<1.1	190
	CTMW-04S-20170921	09/21/17	PME7	510	<0.00025	0.12	14	2.6	5.1	<10	2,200	<1.1	390 J+
	CTMW-04S-20171003	10/03/17	PME8	120	<0.00025	0.083	15	2.0	320	<10	2,300	5.3 J	920
	CTMW-04S-20180307	03/07/18	PME9	840	2.5 J	2.2	1.0	1.1	2,600	<10	1,400	130	1,500
	CTMW-04S-20180621	06/21/18	PME10	870	5.9	6.1	0.087 J	1.5	3,500	<1	1,300	90	1,400
	CTMW-04D-20170405	04/05/17	Baseline	980	19	20		0.013 J	4,300	<10	1,600	26	1,700
	CTMW-04D-20170504	05/04/17	PME1	950	16	6.2		0.16	4,200	<10	1,400	33	1,700
	CTMW-04D-20170517	05/17/17	PME2	870	19	22		<0.020	4,000	<10	1,200	32	1,500
	CTMW-04D-20170517-FD	05/17/17	PME2	890	20	21		<0.020	4,000	<10	1,200	33	1,500
	CTMW-04D-20170602	06/02/17	PME3	860	19	19	0.084 J	<0.010	4,700	<10	1,500	31	1,600
	CTMW-04D-20170621	06/21/17	PME4	990	19	21	<0.050	<0.015	3,700	<10	1,400	33	1,700
CTMW-04D	CTMW-04D-20170718	07/18/17	PME5	950	19	19	0.37	0.13	4,600	<10	1,900	34	2,200
	CTMW-04D-20170823	08/23/17	PME6	780	18	19	0.82	0.035	4,100	<10	1,400	36	1,600
	CTMW-04D-20170823-FD	08/23/17	PME6	810	18	18	1.1	0.038	4,100	<10	1,400	36	1,600
	CTMW-04D-20170920	09/20/17	PME7	820	17	19	0.34	<0.015	3,500	<10	1,300	36	1,600
	CTMW-04D-20171003	10/03/17	PME8	740	18	18	0.13	<0.015	3,900	<10	1,200	38	1,500
	CTMW-04D-20180307	03/07/18	PME9	660	15	17	<0.25	<0.075	3,700	<10	1,200	27	1,400
	CTMW-04D-20180621	06/21/18	PME10	740	14	17	0.59 J-	0.12	3,900	<1	1,200	27	1,400

						Total Me	tals by USEPA Meth (mg/L)	od 6010B	USEPA Me (m	thod 300.1B g/L)	Anio	ns by USEPA Method 3 (mg/L)	300.0
Well Location	Sample ID	Sample Date	Week	Perchlorate by USEPA Method 314.0 (mg/L)	Hexavalent Chromium by USEPA Method 7199 (mg/L)	Total Chromium	Total Iron	Total Manganese	Chlorate	Chlorite	Chloride	Nitrate as N	Sulfate
	CTMW-05S-20170621	06/21/17	PME4	560	4.9	5.5	0.088 J	0.21	2,100	<10	1,300	60	1,400
	CTMW-05S-20170717	07/17/17	PME5	570	2.5	2.8	<0.050	0.24	1,700	<10	1,600	24	1,400
CTMW-05S	CTMW-05S-20170822	08/22/17	PME6	610	3.4	3.7	5.6	0.40	2,000	<10	1,600	32	1,400
	CTMW-05S-20170919	09/19/17	PME7	570	2.3	2.2	<0.050	0.21	1,900	<10	1,700	14	1,300
	CTMW-05S-20171004	10/04/17	PME8	570	5.9	5.7	<0.050	0.21	2,700	<10	1,400	28	1,400
	CTMW-05D-20170621	06/21/17	PME4	660	16	16	<0.050	<0.015	3,400	<10	1,000	73	1,400
	CTMW-05D-20170621-FD	06/21/17	PME4	590	16	18	<0.050	0.015 J	3,500	<10	1,100	73	1,500
	CTMW-05D-20170718	07/18/17	PME5	510	15 J-	15	<0.050	0.10	3,400	<10 R	1,100	64 J+	1,500
CT WW-05D	CTMW-05D-20170822	08/22/17	PME6	550	15	16	0.055 J	<0.015	3,500	<10	1,100	52	1,500
	CTMW-05D-20170919	09/19/17	PME7	550	15	14	0.25	0.016 J	3,300	<10	1,100	52	1,500
	CTMW-05D-20171004	10/04/17	PME8	650	14	16	0.78 J+	0.028	3,400	<10 R	1,100	48	1,500
	CTMW-06S-20170621	06/21/17	PME4	460	<0.00025	0.31	2.5	2.0	20	<10	1,700	<1.1	950
	CTMW-06S-20170717	07/17/17	PME5	18 J-	<0.00025	0.29	5.2	4.3	19	<10	1,600	1.2 J	230
	CTMW-06S-20170822	08/22/17	PME6	13	<0.00025	0.13	42	5.7	0.29	<10	1,700	<1.1	14
CTMW-06S	CTMW-06S-20170919	09/19/17	PME7	<0.01	<0.00025	0.061	68	5.7	<0.5	<10	1,700	<1.1	<5.0
	CTMW-06S-20171004	10/04/17	PME8	<0.025	<0.00025	0.062	49	7.1	<1	<10	1,600	<2.8	<13
	CTMW-06S-20180306	03/06/18	PME9	0.13	<0.00025	0.028	7.9	1.4	0.1	<0.05	1,200	<1.1	6.4 J
	CTMW-06S-20180622	06/22/18	PME10	0.066	<0.00025	0.042 J+	3.8	0.63	0.16	<1	1,400	<0.55	24
	CTMW-06D-20170622	06/22/17	PME4	1,000	15	17	<0.050	0.042	4,000	<10	1,300	97	1,500
	CTMW-06D-20170717	07/17/17	PME5	920	17	18	<0.050	0.035	3,900	<10	1,400	84	1,500
	CTMW-06D-20170717-FD	07/17/17	PME5	830	17	17	0.067 J	0.034	4,200	<10	1,500	84	1,500
	CTMW-06D-20170822	08/22/17	PME6	950	15	15	0.63	0.10	3,700	<10	1,400	52	1,400
	CTMW-06D-20170919	09/19/17	PME7	800	14	13	0.85	0.15	2,700	<10	1,700	48	1,500
CT WW-00D	CTMW-06D-20170919-FD	09/19/17	PME7	810	13	13	0.79	0.15	2,600	<10	1,600	48	1,500
	CTMW-06D-20171004	10/04/17	PME8	970	12	13	0.83	0.19	3,100	<10	1,700	41	1,400
	CTMW-06D-20171004-FD	10/04/17	PME8	990	13	13	0.71	0.18	3,100	<10	1,700	39	1,400
	CTMW-06D-20180307	03/07/18	PME9	610	5.6	6.4	2.0	0.35	2,000	<10	1,800	18	1,100
	CTMW-06D-20180622	06/22/18	PME10	240	2.3	3.3 J+	2.1	0.35	800	<1	2,000	19	860
	Not Analyzed	10/09/17	PME8				V	Vell Dry; Unable to sam	ple				
CTMW-07S	CMTW-07S-20180306	03/06/18	PME9	510 J-	13	14	0.41 J	0.092 J	3,200	<10	990	66	1,400
	Not Analyzed	06/22/18	PME10				V	Vell Dry; Unable to sam	ple				
	CTMW-07D-20171009	10/09/17	PME8	14	0.025	0.097	14	0.27	48	<0.1	140	2.0	230
CTMW-07D	CTMW-07D-20180306	03/06/18	PME9	6.1	0.024	0.026	0.35 J+	0.11	16	<0.1	85	0.099 J	140
	CTMW-07D-20180622	06/22/18	PME10	1.9	0.012	0.018 J+	0.075 J	0.015 J	6.2	<1	91	1.3	180

Notes:

mg/L

< J

J+

J-

UJ

USEPA United States Environmental Protection Agency

Milligram per liter

The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

The result is an estimated quantity, but the result may be biased high.

The result is an estimated quantity, but the result may be biased low.

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.
 - Not Analyzed

							General Water Q	uality Parameters		
Well Location	Sample ID	Sample Date	Week	рН	Temp (°C)	Specific Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Sulfide (mg/L)
CTIW-01S	CTIW-01S-20170405	04/05/17	Baseline	7.30	25	9.5	170	1.2	0.0	0.00
CTIW-01D	CTIW-01D-20170406	04/06/17	Baseline	7.50	26	12	1120	1.3	1.2	0.01
CTIW-02S	CTIW-02S-20170403	04/03/17	Baseline	6.70	24.00	9.10	150	0.34	0.2	0.00
CTIW-02D	CTIW-02D-20170404	04/04/17	Baseline	7.20	23	12	210	1.9	38	0.00
CTIW-03S	CTIW-03S-20170404	04/04/17	Baseline	7.10	24.00	11	200	2.2	2.7	0.01
CTIW-03D	CTIW-03D-20170404	04/04/17	Baseline	7.70	25.00	13	160	2.4	33	0.02
	CTMW-01S-20170404	04/04/17	Baseline	7.40	26	9.1	170	1.7	0.0	0.00
	CTMW-01S-20170503	05/03/17	PIME1	6.00	29	14	-170	1.9	16	0.00
	CTMW-015-20170516	05/31/17	PIVIE2 PME3	6.70	24	11	-300	1.2	59	0.11
	CTMW-01S-20170531	06/19/17	PMF4	6.20	31	14	-130	0.56	460	0.08
CTMW-01S	CTMW-01S-20170720	07/20/17	PME5	5.90	29	14	-40	0.77	75	0.25
	CTMW-01S-20170824	08/24/17	PME6	6.50	30	14	-71	2.1	300	0.62
	CTMW-01S-20170920	09/20/17	PME7	6.40	31	12	-72	0.15	35	0.49
	CTMW-01S-20171003	10/03/17	PME8	7.80	26	12	-82	1.1	30	0.08
	CTMW-01S-20180305	03/05/18	PME9	7.38	26.20	8.75	-135	1.04	352	0.20
	CTMW-01S-20180621	06/21/18	PME10	7.94	31.85	8.03	39	6.82	534	0.52
	CTMW-01D-20170403	04/03/17	Baseline	7.00	26	15	100	1.6	85	0.03
	CTMW-01D-20170503	05/03/17	PME1	6.50	27	17	79	1.4	81	0.01
	CTMW-01D-20170516	05/16/17	PME2	7.50	27	14	-23	1.1	4.8	0.00
	CTMW-01D-20170531	05/31/17	PME3	7.00	27	15	-14	0.83	0.6	0.00
	CTMW-01D-20170619	05/19/17	PIVIE4	7.00	29	14	-130	0.49	4.2	0.00
	CTMW-01D-20170720-ED	07/20/17	PME5				-120			
CTMW-01D	CTMW-01D-20170824	08/24/17	PME6	6.40	27	16	-160	0.73	27	0.06
	CTMW-01D-20170920	09/20/17	PME7	6.50	26	15	-100	0.21	12	0.06
	CTMW-01D-20171003	10/03/17	PME8	7.30	27	14	-19	0.28	0.00	0.09
	CTMW-01D-20180305	03/05/18	PME9	7.10	26.92	9.31	137	1.39	7.0	0.00
	CTMW-01D-20180305-FD	03/05/18	PME9							
	CTMW-01D-20180621	06/21/18	PME10	6.52	27.44	14.2	109	0.38	3.6	0.00
	CTMW-01D-20180621-FD	06/21/18	PME10							
	CTMW-02S-20170405	04/05/17	Baseline	7.45	27.19	9.23	161	1.56	0.0	0.00
	CTMW-02S-20170504	05/04/17	PME1	5.05	33.65	13.3	190	7.53	62.9	0.00
	CTMW-02S-20170516	05/16/17	PME2	6.75	31.31	11.1	-43	1.68	0.00	0.11
	CTMW-025-20170601	06/00/17	PIVIE3	6.70	29.55	11.2	150	0.56	0.0	0.06
CTMW-02S	CTMW-023-20170620	07/19/17	PIVIE4	6.6	30.00	11.5	-145	0.58	08.1	0.10
	Not Analyzed	08/24/17	PME6	0.0	00.00		Well Drv: Una	ble to sample		0.10
	CTMW-02S-20170920	09/20/17	PME7			Hand b	ailed due to insufficier	it water column/slow i	recharge	
	CTMW-02S-20171003	10/03/17	PME8	7.30	26.14	9.15	-107	0.26	45.4	0.07
	CTMW-02S-20180306	03/06/18	PME9	7.33	20.71	8.39	-61	1.17	83.2	0.10
	Not Analyzed	06/22/18	PME10				Well Dry; Una	ble to sample		
	CTMW-02D-20170404	04/04/17	Baseline	7.60	28	13	120	1.2	29	0.06
	CTMW-02D-20170404-FD	04/04/17	Baseline							
	CTMW-02D-20170503	05/03/17	PME1	6.00	29	15	130	1.2	5.2	0.03
	CTMW-02D-20170503-FD	05/03/17	PME1							
	CTMW-02D-20170517	05/17/17	PME2	7.10	23	13	33	3.4	130	0.03
	CTMW-02D-20170601	06/01/17	PME3	6.70	27	13	160	0.52	6.6	0.04
CTMW-02D	CTMW_02D-20170601-FD	06/10/17								
GT WIVY-02D	CTMW-02D-20170610-ED	06/19/17		7.00			-100	0.41	1.2	0.00
	CTMW-02D-20170719	07/19/17	PME5	6.70	26	13	39	0.68	27	0.03
	CTMW-02D-20170824	08/24/17	PME6	6,60	26	15	-160	0.75	31	0.04
	CTMW-02D-20170920	09/20/17	PME7	6.80	25	13	53	0.12	39	0.02
	CTMW-02D-20171003	10/03/17	PME8	6.70	28	14	-14	0.13	20	0.00
	CTMW-02D-20180305	03/05/18	PME9	6.99	27.32	12.6	152	0.69	1.3	0.00
	CTMW-02D-20180621	06/21/18	PME10	6.91	27.57	12.9	145	0.86	4.3	0.00

Ferrous Iron (mg/L)
0.02
0.00
0.07
0.03
0.02
0.07
0.02
0.00
0.22
0.30
0.19
3.3
10
2.3
1.19
 0.07
0.05
0.05
0.00
0.03
0.07
0.06
0.00
0.09
0.01
0.16
0.10
0.30
0.17
3.23
4.0
0.11
0.14
0.00
0.05
 0.00
0.02
0.09
0.00
0.00

							General Water Q	uality Parameters		
Well Location	Sample ID	Sample Date	Week	рН	Temp (°C)	Specific Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Sulfide (mg/L)
	CTMW-03S-20170405	04/05/17	Baseline	7.30	28	9.4	160	1.9	0.0	0.00
	CTMW-03S-20170505	05/05/17	PME1	6.30	25	9.4	-3.0	1.4	0.50	0.00
	CTMW-03S-20170517	05/17/17	PME2	7.40	21	10	150	4.8	1.00	0.08
	CTMW-03S-20170601	06/01/17	PME3	6.90	28	11	170	1.1	0.0	0.00
CTMW-03S	CTMW-03S-20170620	06/20/17	PME4	6.50	26	11	33	0.26	84	0.00
	CTMW-03S-20170718	07/18/17	PME5	6.70	28	11	120	0.87	16	0.00
	CTMW-03S-20170823	08/23/17	PME6	6.40	28	12	14	1.50	100	0.16
	CTMW-03S-20170921	09/21/17	PME7	6.90	25	11	67	0.16	2.10	0.12
	CTMW-03S-20171003	10/03/17	PME8	7.30	29	8.8	120	0.84	0.0	0.00
	CTMW-03D-20170406	04/06/17	Baseline	7.40	23	11	210	3.4	2.1	0.00
	CTMW-03D-20170505	05/05/17	PME1	6.50	26	12	180	2.1	0.5	0.00
	CTMW-03D-20170517	05/17/17	PME2	8.70	23	11	170	4.3	0.8	0.01
	CTMW-03D-20170601	06/01/17	PME3	7.20	28	11	210	0.58	0.0	0.00
CTMW-03D	CTMW-03D-20170620	06/20/17	PME4	7.70	27	10	-190	1.2	4.6	0.00
	CTMW-03D-20170719	07/19/17	PME5	7.20	26	11	110	0.78	3.0	0.00
	CTMW-03D-20170823	08/23/17	PME6	7.30	27	11	-28	0.74	55	0.09
	CTMW-03D-20170921	09/21/17	PME7	7.60	24	9.9	71	0.12	1.0	0.03
	CTMW-03D-20171003	10/03/17	PME8	7.98	26.17	9.26	77	1.57	0.0	0.00
	CTMW-04S-20170405	04/05/17	Baseline	7.30	23	9.2	140	1.4	0.00	0.00
	CTMW-04S-20170504	05/04/17	PME1	5.80	27	12	120	1.4	6.0	0.00
	CTMW-04S-20170517	05/17/17	PME2	6.70	26	11	-12	1.2	47	0.17
	CTMW-04S-20170602	06/02/17	PME3	6.50	27	11	190	1.5	39	0.02
	CTMW-04S-20170620	06/20/17	PME4	6.90	31	10	-70	0.36	79	0.09
CTMW-04S	CTMW-04S-20170718	07/18/17	PME5	6.70	30	11	-1	1.4	60	0.07
	CTMW-04S-20170823	08/23/17	PME6	6.60	31	12	-240	1.5	70	0.17
	CTMW-04S-20170921	09/21/17	PME7	6.70	26	11	-120	0.16	19	0.11
	CTMW-04S-20171003	10/03/17	PME8	6.60	30	11	-240	0.18	32	0.00
	CTMW-04S-20180307	03/07/18	PME9	6.75	26.40	12.5	157	0.56	3.2	0.00
	CTMW-04S-20180621	06/21/18	PME10	6.70	34.29	10.4	174	0.92	0.0	0.00
	CTMW-04D-20170405	04/05/17	Baseline	7.20	25	13	140	1.1	4.7	0.01
	CTMW-04D-20170504	05/04/17	PME1	6.20	28	15	200	3.7	12	0.00
	CTMW-04D-20170517	05/17/17	PME2	8.70	23	12	190	0.89	14	0.01
	CTMW-04D-20170517-FD	05/17/17	PME2							
	CTMW-04D-20170602	06/02/17	PME3	7.10	27	12	180	0.34	6.4	0.00
	CTMW-04D-20170621	06/21/17	PME4	7.50	25	12	-66	0.5	6.1	0.00
CTMW-04D	CTMW-04D-20170718	07/18/17	PME5	7.30	26	13	-36	0.71	19	0.01
	CTMW-04D-20170823	08/23/17	PME6	7.20	25	13	-69	0.78	120	0.21
	CTMW-04D-20170823-FD	08/23/17	PME6							
	CTMW-04D-20170920	09/20/17	PME7	7.40	26	12	-96	0.16	4.7	0.18
	CTMW-04D-20171003	10/03/17	PME8	7.90	26	10	-130	0.16	0.0	0.00
	CTMW-04D-20180307	03/07/18	PME9	7.46	25.32	11.6	157	0.52	8.3	0.00
	CTMW-04D-20180621	06/21/18	PME10	7.30	29.10	10.6	120	0.66	3.2	0.00



Ferrous Iron (mg/L)
0.00
0.00
0.00
0.00
0.00
0.00
0.16
0.05
0.00
0.00
0.00
0.00
0.00
0.00
0.13
0.15
0.02
0.02
0.17
0.03
0.25
0.1
2.1
2.0
0.00
0.00
 0.00
0.00
 0.07
0.00
 0.00
0.00
0.26
0.00
0.00
0.00
0.00

							General Water Q	uality Parameters		
Well Location	Sample ID	Sample Date	Week	рН	Temp (°C)	Specific Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Sulfide (mg/L)
	CTMW-05S-20170621	06/21/17	PME4	7.00	27	11	110	1.1	19	0.02
	CTMW-05S-20170717	07/17/17	PME5	6.60	32	12	120	0.82	11	0.03
CTMW-05S	CTMW-05S-20170822	08/22/17	PME6	6.80	28	12	150	0.87	7.6	0.00
	CTMW-05S-20170919	09/19/17	PME7	6.60	29	11	160	0.17	4.9	0.01
	CTMW-05S-20171004	10/04/17	PME8	6.40	25	10	150	0.66	0.0	0.01
	CTMW-05D-20170621	06/21/17	PME4	7.60	27	10	140	1.6	8.8	0.00
	CTMW-05D-20170621-FD	06/21/17	PME4							
07101/ 055	CTMW-05D-20170718	07/18/17	PME5	7.20	26	11	140	0.8	3.4	0.00
CTMW-05D	CTMW-05D-20170822	08/22/17	PME6	7.50	26	12	88	0.72	9.6	0.03
	CTMW-05D-20170919	09/19/17	PME7	7.30	28	11	110	0.22	8.2	0.02
	CTMW-05D-20171004	10/04/17	PME8	6.90	25	9.9	140	2.5	15	0.01
	CTMW-06S-20170621	06/21/17	PME4	6.70	35	10	-130	0.66	250	0.02
	CTMW-06S-20170717	07/17/17	PME5	6.60	34	12	-120	0.61	160	0.09
	CTMW-06S-20170822	08/22/17	PME6	6.80	33	13	-92	6.5	120	0.33
CTMW-06S	CTMW-06S-20170919	09/19/17	PME7	6.60	30	12	-110	0.18	120	0.08
	CTMW-06S-20171004	10/04/17	PME8	6.50	28	12	-100	0.17	16	0.01
	CTMW-06S-20180306	03/06/18	PME9	7.17	25.89	5.6	-130	0.83	13.2	0.07
	CTMW-06S-20180622	06/22/18	PME10	7.09	28.35	6.68	-127	2.22	57.8	0.41
	CTMW-06D-20170622	06/22/17	PME4	7.20	25	11	85	0.15	9.7	0.00
	CTMW-06D-20170717	07/17/17	PME5	7.00	31	13	87	0.63	7.1	0.00
	CTMW-06D-20170717-FD	07/17/17	PME5							
	CTMW-06D-20170822	08/22/17	PME6	6.90	26	13	11	0.9	47	0.10
CTNW ACD	CTMW-06D-20170919	09/19/17	PME7	6.80	25	13	170	0.49	28	0.10
CTIMIVA-00D	CTMW-06D-20170919-FD	09/19/17	PME7							
	CTMW-06D-20171004	10/04/17	PME8	6.60	27	12	180	0.55	91	0.24
	CTMW-06D-20171004-FD	10/04/17	PME8							
	CTMW-06D-20180307	03/07/18	PME9	7.02	24.30	12.20	115	0.61	28.30	0.00
	CTMW-06D-20180622	06/22/18	PME10	6.93	28.17	10.30	92	0.35	8.00	0.00
	Not Analyzed	10/09/17	PME8				Well Dry; Una	ble to sample		
CTMW-07S	CMTW-07S-20180306	03/06/18	PME9	7.38	24.97	9.60	163	2.96	8.9	0.00
	Not Analyzed	06/22/18	PME10				Well Dry; Una	ble to sample		
	CTMW-07D-20171009	10/09/17	PME8	5.81	23.59	1.26	231	5.10	78.80	0.00
CTMW-07D	CTMW-07D-20180306	03/06/18	PME9	9.68	23.99	1.44	-56	0.73	8.50	0.00
	CTMW-07D-20180622	06/22/18	PME10	7.78	27.30	0.90	103	0.60	8.90	0.00

Notes:

USEPA United States Environmental Protection Agency

°C Celcius

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mg/L Milligram per liter

mV Millivolt

mS/cm Millisiesmens per centimeter

NTU Nephelometric Units

>3.00 Denotes concentration was greater than the test method upper limit indicated.

Not Analyzed

Ferrous Iron
(mg/L)
0.00
0.04
0.02
0.08
0.00
0.00
0.00
0.19
0.40
0.05
2.20
2.70
2.80
0.60
0.00
0.00
0.00
0.27
0.00
0.00
0.00
0.00
0.00
0.00

		General Chemistry (mg/L)													
Well Location	Sample ID	Sample Date	Week	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Chemical Oxygen Demand	Total Organic Carbon	Total Sulfide	Total Kjeldahl Nitrogen (TKN)	Total Phosphorus	Total Dissolved Solids	Hardness as CaCO3	Orthophosphate as P	Orthophosphorus as PO4	
CTIW-01S	CTIW-01S-20170405	04/05/17	Baseline	150	150		1.7	<0.020	0.12 J	<0.025	8,900	1,700	0.075	0.23	
CTIW-01D	CTIW-01D-20170406	04/06/17	Baseline	120	120		4.1	<0.020	<0.10	<0.025	11,000	2,000	0.050 J-	0.15 J-	
CTIW-02S	CTIW-02S-20170403	04/03/17	Baseline	170	170		1.8	<0.020	<0.10	<0.025	8,200	1,700	0.049 J	0.15 J-	
CTIW-02D	CTIW-02D-20170404	04/04/17	Baseline	130	130		3.7	0.028 J	<0.10	0.041 J	11,000	2,600	0.073 J-	0.22 J-	
CTIW-03S	CTIW-03S-20170404	04/04/17	Baseline	170	170		2.2	<0.020	<0.10	<0.025	9,800	2,300	0.041 J	0.13 J	
CTIW-03D	CTIW-03D-20170404	04/04/17	Baseline	88	88		2.5	0.028 J	<0.10	0.035 J	12,000	2,500	0.051 J-	0.16 J-	
	CTMW-01S-20170404	04/04/17	Baseline	200	200		2.4	0.024 J	<0.10	0.026 J	8,200	1,700	0.067 J-	0.21 J-	
	CTMW-01S-20170503	05/03/17	PME1	2,000	2,000	7,100	2,300	<0.020	<2.5	0.52	12,000	3,700	0.34	1.0	
	CTMW-01S-20170516	05/31/17	PIVIE2 PME3	2,000	2,000	7 200	3,000	<0.020	0.76	0.37	10,000	3,300	1.2	3.7 -	
	CTMW-01S-20170619	06/19/17	PME4	5.300	5,300	22.000	6.600	0.36 J-	190 J-	24 J-	18,000	5,700	18 J-	54 J-	
CTMW-01S	CTMW-01S-20170720	07/20/17	PME5	6,300	6,300	26,000	9,000	1.2	47	3.4	20,000	11,000	0.65	2.0	
	CTMW-01S-20170824	08/24/17	PME6	3,700	3,700	17,000 J-	6,700	<0.027	9,500 J-	5.5	17,000	3,900	5.6 J-	17 J-	
	CTMW-01S-20170920	09/20/17	PME7	5,200	5,200	19,000	6,200	0.035 J	240	0.79 J	17,000	4,800	0.76	2.3	
	CTMW-01S-20171003	10/03/17	PME8	2,700	2,700	17,000	6,300 J-	0.47	210	5.2	16,000	4,300	0.47	1.4	
	CTMW-01S-20180305	03/05/18	PME9	3,700	3,700		1,200 J	0.031 J	140	1.3	7,300	2,700	0.27	0.83	
	CTMW-01S-20180621	06/21/18	PME10	3,000	3,000	490	91	0.041 J	180	5.0	4,800	1,300	2.0	6.2	
	CTMW-01D-20170403	04/03/17	Baseline	140	140		25	0.044 J	<0.10	0.054	14,000	3,400	0.17	0.52	
	CTMW-01D-20170503	05/03/17	PME1	130	130	<20	8.0	0.030 J	<0.10	0.11	14,000	3,600	0.082	0.25	
	CTMW-01D-20170516	05/16/17	PME2	140	140	<20	9.8	<0.020	<0.10	<0.025	15,000	3,500	0.082	0.25	
	CTMW-01D-20170531	05/31/17	PME3	160	160	<50	16	<0.30	<0.10	0.035 J	15,000	3,600	0.051 J-	0.16 J-	
	CTMW-01D-20170619	05/19/17	PIVIE4	290	290	<50 R	11	<0.27 R	<0.10 R	0.028 J	14,000	3,400	0.085 J-	0.26 J-	
	CTMW-01D-20170720	07/20/17	PIVIES PME5	380	400	<50	66	<0.14	<0.10	0.029 J	12,000	3,700	0.080 J-	0.24 J-	
CTMW-01D	CTMW-01D-20170824	08/24/17	PME6	740	740	480 1-	350	<0.27	<0.10 R	0.030 3	13,000	4 000	0.10 J-	0.31 J-	
	CTMW-01D-20170920	09/20/17	PME7	640	640	410	430	<0.027	<0.10	0.16	14,000	4,000	0.20	0.61	
	CTMW-01D-20171003	10/03/17	PME8	920	920	630	440 J-	<0.027	<0.50	0.099	13,000	4,000	0.20	0.62	
	CTMW-01D-20180305	03/05/18	PME9	890	890		340	<0.027	<0.10	0.090	10,000	3,100	0.072 J	0.22 J	
	CTMW-01D-20180305-FD	03/05/18	PME9	890	890		340	<0.027	<0.10	0.083	10,000	3,100	0.17 J	0.51 J	
	CTMW-01D-20180621	06/21/18	PME10	1,400	1,400	870 J	330	<0.027	<0.10	0.17 J	11,000	4,100	0.21	0.65 J	
	CTMW-01D-20180621-FD	06/21/18	PME10	1,400	1,400	650 J	320	<0.027	<0.10	0.062	11,000	4,100	0.16	0.48 J	
	CTMW-02S-20170405	04/05/17	Baseline	160	160		2.0	<0.020	<0.10	<0.025	8,400	1,500	0.057	0.18	
	CTMW-02S-20170504	05/04/17	PME1	940	940	58	53	<0.080	<0.10	0.26	10,000	2,500	0.15 J-	0.46 J-	
	CTMW-02S-20170516	05/16/17	PME2	1,200	1,200	37 J	14	<0.020	<0.10	0.39	10,000	2,400	0.19	0.59	
	CTMW-02S-20170601	06/01/17	PME3	1,200	1,200	140	15	<0.14	<0.10 R	0.26 J-	8,700	1,900	0.27 J-	0.81 J-	
CTMW 000	CIMW-02S-20170620	06/20/17	PME4	3,300	3,300	5,200	1,500	0.090	16	2.1	9,900	2,400	1.2	3.7	
CTW/W-025	Not Applyzod	07/19/17	PME5	3,800	3,800	5,400	2,300	U.16	23 All Dry: Linable to con	2.6	11,000	2,700	U.36 J-	1./ J-	
1	CTMW-02S-20170920	09/20/17		5 900	5 900	5 400	2 000	-0.027	65	1.8	11 000	2 500	0.39	1 2	
	CTMW-028-20171003	10/03/17	PMF8	2,400	2,400	5,700	1.900 .I-	0.29	68	1.1	10,000	2,400	0.54	1.7	
	CTMW-02S-20180306	03/06/18	PME9	2,000	2,000		35 J	0.078	53	1.9	4,600	850	0.53	1.6	
1	Not Analyzed	06/22/18	PME10					w	/ell Dry; Unable to san	nple					
	CTMW-02D-20170404	04/04/17	Baseline	190	190		18	0.052	<0.10	0.045 J	11,000	2,500	0.074 J-	0.23 J-	
	CTMW-02D-20170404-FD	04/04/17	Baseline	190	190		18	0.025 J	<0.10	0.051	12,000	2,400	0.081 J-	0.25 J-	
	CTMW-02D-20170503	05/03/17	PME1	270	270	<20	12	<0.20	<0.10	<0.025	13,000	2,900	0.052	0.16	
	CTMW-02D-20170503-FD	05/03/17	PME1	270	270	<20	12	<0.020	<0.10	0.025 J	12,000	2,900	0.052	0.16	
	CTMW-02D-20170517	05/17/17	PME2	340	340	<20	11	<0.50	<0.10 R	0.030 J	13,000	3,200	0.064 J-	0.19 J-	
	CTMW-02D-20170601	06/01/17	PME3	290	290	<50	6.2	<0.27	<0.10 R	0.029 J	13,000	3,200	0.065 J-	0.20 J-	
071011 000	CTMW-02D-20170601-FD	06/01/17	PME3	320	320	<50	7.5	<0.38	<0.10 R	0.029 J	13,000	3,100	0.065 J-	0.20 J-	
CTMW-02D	CTMW-02D-20170619	06/19/17	PME4	450	450	<50 R	90	<0.27 R	<0.10 R	<0.025 R	12,000	3,100	0.033 J	0.10 J	
	CTMW 02D-20170619-FD	05/19/17	PME4	420	420	<50 K	88	<0.27 R	<0.10 R	<0.025 R	12,000	3,100	0.035 J	0.11 J	
	CTMW-02D-20170719	08/24/17		540	5/0	<00	100	<0.004	<0.10	0.027 J	13 000	3,100	0.12 J-	0.30 J-	
	CTMW-02D-20170024	09/20/17		510	540	<00 K	11	<0.027	<0.10 K	0.11	12 000	3,300	0.10 J-	0.52 J-	
	CTMW-02D-20171003	10/03/17	PMF8	590	590	<20	7.8	<0.027	<0.50	<0.025	12,000	3,300	0.11	0.34	
1	CTMW-02D-20180305	03/05/18	PME9	410	410		6.5	<0.027	<0.10	<0.025	12,000	3,100	0.081	0.25	
	CTMW-02D-20180621	06/21/18	PME10	410	410	<50	6.0	<0.027	<0.10	0.036 J	11,000	3,000	0.093	0.28	

Well Location		Sample		General Chemistry (mg/L)													
Well Location	Sample ID	Sample Date	Week	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Chemical Oxygen Demand	Total Organic Carbon	Total Sulfide	Total Kjeldahl Nitrogen (TKN)	Total Phosphorus	Total Dissolved Solids	Hardness as CaCO3	Orthophosphate as P	Orthophosphorus as PO4			
	CTMW-03S-20170405	04/05/17	Baseline	140	140		1.8	<0.020	<0.10	<0.025	8,700	1,700	0.036 J	0.11 J			
	CTMW-03S-20170505	05/05/17	PME1	200	200	<20	2.4	<0.020	<0.10	<0.025	9,600	1,900	0.081 J-	0.25 J-			
	CTMW-03S-20170517	05/17/17	PME2	190	190	<20	2.5	<0.50	<0.10 R	<0.025 R	9,500	1,900	0.053 J-	0.16 J-			
	CTMW-03S-20170601	06/01/17	PME3	200	200	<50	2.1	<0.27	<0.10 R	0.028 J	9,800	1,900	0.059 J-	0.18 J-			
CTMW-03S	CTMW-03S-20170620	06/20/17	PME4	1,200	1,200	850	250	<0.14	<0.10	0.88	10,000	2,400	0.44	1.4			
	CTMW-03S-20170718	07/18/17	PME5	320	320	<50 R	5.4	0.077 J-	<0.10 R	0.046 J	9,400	2,000	0.17 J-	0.51 J-			
	CTMW-03S-20170823	08/23/17	PME6	880	880	<20	39	<0.027	<0.10	0.18	9,600	2,200	0.10	0.31			
	CTMW-03S-20170921	09/21/17	PME7	300	300	<50	2.8	<0.027	<0.10	0.094	10,000	2,000	0.18 J-	0.54 J-			
	CTMW-03S-20171003	10/03/17	PME8	370	370	<20	2.6	<0.027	<0.50	0.049 J	10,000	2,000	0.16	0.48			
	CTMW-03D-20170406	04/06/17	Baseline	130	130		2.7	<0.020	<0.10	<0.025	9,600	1,800	0.038 J	0.12 J			
	CTMW-03D-20170505	05/05/17	PME1	150	150	<20	3.0	<0.020	<0.10	<0.025	11,000	1,700	0.044 J	0.14 J			
	CTMW-03D-20170517	05/17/17	PME2	150	150	<20 R	2.5	<0.50	<0.10 R	<0.025 R	9,800	1,700	0.033 J	0.10 J			
	CTMW-03D-20170601	06/01/17	PME3	160	160	<50 UJ	2.0	<0.27	<0.10 R	<0.025 UJ	9,900	1,700	0.031 J	0.094 J			
CTMW-03D	CTMW-03D-20170620	06/20/17	PME4	170	170	<20	2.2	<0.081	<0.10	<0.025	9,700	1,700	0.022 J	0.068 J			
	CTMW-03D-20170719	07/19/17	PME5	180	180	<20	2.0	<0.054	<0.10	<0.025	10,000	1,800	0.064 J-	0.20 J-			
	CTMW-03D-20170823	08/23/17	PME6	170	170	<20	2.0	<0.027	<0.10	0.040 J	9,900	1,700	0.042 J	0.13 J			
	CTMW-03D-20170921	09/21/17	PME7	150	150	<50	1.9	<0.027	<0.10	<0.025	9,800	1,700	0.055 J-	0.17 J-			
	CTMW-03D-20171003	10/03/17	PME8	180	180	<20	2.8	<0.027	<0.50	<0.025	9,700	1,700	0.058	0.18			
	CTMW-04S-20170405	04/05/17	Baseline	180	180		2.0	<0.020	<0.10	0.037 J	8,200	1,700	0.078	0.24			
	CTMW-04S-20170504	05/04/17	PME1	730	730	<20	56	<0.020	<0.10	0.095	8,700	2,000	0.049 J	0.15 J-			
	CTMW-04S-20170517	05/17/17	PME2	1,600	1,600	1,100	250	<0.50	<0.10 R	0.32 J-	8,800	2,600	0.54 J-	1.6 J-			
	CTMW-04S-20170602	06/02/17	PME3	1,400	1,400	360	58	<0.11	<0.10	0.41 J-	9,600	2,500	0.067 J-	0.21 J-			
	CTMW-04S-20170620	06/20/17	PME4	1,600	1,600	820	170	<0.054	<0.10	0.43	8,300	2,300	0.23	0.69			
CTMW-04S	CTMW-04S-20170718	07/18/17	PME5	1,900	1,900	980	320	0.073 J-	<0.10 R	0.38 J-	7,600	2,400	0.51 J-	1.6 J-			
	CTMW-04S-20170823	08/23/17	PME6	2,900	2,900	3,000	1,800	0.41	<0.10	0.97	9,300	2,700	1.0	3.1			
	CTMW-04S-20170921	09/21/17	PME7	1,600	1,600	1,400	820	<0.027	1.8	1.3	8,000	2,400	0.036 J	0.11 J			
	CTMW-04S-20171003	10/03/17	PME8	2,100	2,100	440	140 J-	0.47	<0.50	1.0	8,000	2,300	0.43	1.3			
	CTMW-04S-20180307	03/07/18	PME9	640	640		4.9	<0.027	<0.10	0.026 J	10,000	2,400	0.082	0.25			
	CTMW-04S-20180621	06/21/18	PME10	500	500	<20	3.1	<0.027	<0.10	<0.025	10,000	2,100	0.061	0.19			
	CTMW-04D-20170405	04/05/17	Baseline	120	120		5.7	0.020 J	<0.10	<0.025	12,000	2,500	0.029 J	0.089 J			
	CTMW-04D-20170504	05/04/17	PME1	140	140	<20	2.9	<0.040	<0.10	0.041 J	12,000	2,400	0.037 J	0.11 J			
	CTMW-04D-20170517	05/17/17	PME2	140	140	<20	3.4	<0.50	<0.10 R	<0.025 R	12,000	2,400	0.044 J	0.14 J			
	CTMW-04D-20170517-FD	05/17/17	PME2	140	140	<20	3.6	<0.50	<0.10 R	<0.025 R	12,000	2,400	0.058 J-	0.18 J-			
	CTMW-04D-20170602	06/02/17	PME3	140	140	<50	3.0	<0.14	<0.10	<0.025	12,000	2,500	0.055	0.17			
	CTMW-04D-20170621	06/21/17	PME4	140	140	<50	2.6	<0.054	<0.10	<0.025	11,000	2,500	0.044 J	0.14 J			
CTMW-04D	CTMW-04D-20170718	07/18/17	PME5	140	140	<50	2.4	<0.027 UJ	<0.10 R	<0.025 R	12,000	2,400	0.052 J-	0.16 J-			
	CTMW-04D-20170823	08/23/17	PME6	130	130	<20	2.8	<0.027	<0.10	0.032 J	12,000	2,400	0.051	0.16			
	CTMW-04D-20170823-FD	08/23/17	PME6	120	120	<20	2.6	<0.027	<0.17	<0.025	12,000	2,400	0.061	0.19			
	CTMW-04D-20170920	09/20/17	PME7	130	130	<50	3.3	<0.027	<0.10	<0.025	11,000	2,100	0.12	0.36			
	CTMW-04D-20171003	10/03/17	PME8	160	160	<20	3.7	<0.027	<0.50	<0.025	11,000	2,100	0.056	0.17			
	CTMW-04D-20180307	03/07/18	PME9	180	180		2.8	<0.027	<0.10	<0.025	10,000	2,000	0.042 J	0.13 J			
	CTMW-04D-20180621	06/21/18	PME10	180	180	<20 R	2.5	<0.027 R	<0.10 R	<0.025 R	10,000	1,900	0.051 J-	0.16 J-			

									General Chemistry (mg/L)					
Well Location	Sample ID	Sample Date	Week	Alkalinity as CaCO3	Bicarbonate Alkalinity as CaCO3	Chemical Oxygen Demand	Total Organic Carbon	Total Sulfide	Total Kjeldahl Nitrogen (TKN)	Total Phosphorus	Total Dissolved Solids	Hardness as CaCO3	Orthophosphate as P	Orthophosphorus as PO4
	CTMW-05S-20170621	06/21/17	PME4	760	760	<50	8.6	<0.081	<0.10	0.033 J	9,300	2,300	0.099	0.30
	CTMW-05S-20170717	07/17/17	PME5	1,100	1,100	<50	7.1	0.028 J	<0.10	0.027 J	9,600	2,300	0.13	0.40
CTMW-05S	CTMW-05S-20170822	08/22/17	PME6	820	820	<20	11	<0.027	<0.10	0.19	9,300	2,400	0.039 J	0.12 J
	CTMW-05S-20170919	09/19/17	PME7	750	750	<20	7.1	<0.027	<0.10	0.037 J	9,600	2,300	0.82	2.5
	CTMW-05S-20171004	10/04/17	PME8	800	800	<20	3.5	<0.027	<0.10	<0.025	10,000	2,200	0.31	0.94
	CTMW-05D-20170621	06/21/17	PME4	160	160	<50	3.5	<0.054	<0.10	<0.025	9,900	1,900	0.078	0.24
	CTMW-05D-20170621-FD	06/21/17	PME4	160	160	<50	3.1	<0.054	<0.10	<0.025	9,900	1,900	0.054	0.17
CTMW OFD	CTMW-05D-20170718	07/18/17	PME5	160	160	<50 R	2.3	<0.027 UJ	<0.10 R	<0.025 R	9,700	1,900	0.053 J-	0.16 J-
CTWW-05D	CTMW-05D-20170822	08/22/17	PME6	160	160	<20	2.6	<0.027	<0.17	<0.025	10,000	1,800	0.024 J	0.073 J
	CTMW-05D-20170919	09/19/17	PME7	140	140	<20	2.3	<0.027	<0.10	<0.025	11,000	2,000	0.42	1.3
	CTMW-05D-20171004	10/04/17	PME8	180	180	<20 R	2.3	<0.027 UJ	<0.10 R	<0.025 UJ	10,000	1,800	0.077 J-	0.24 J-
	CTMW-06S-20170621	06/21/17	PME4	2,400	2,400	3,300	730	0.58	0.48	0.40	7,300	2,600	0.084	0.26
	CTMW-06S-20170717	07/17/17	PME5	3,800	3,800	9,800	3,100	7.3	15	0.93	11,000	3,700	0.67	2.0
	CTMW-06S-20170822	08/22/17	PME6	4,400	4,400	6,700	3,200	<0.027	30	2.0	11,000	3,600	0.30	0.93
CTMW-06S	CTMW-06S-20170919	09/19/17	PME7	2,300	2,300	7,100	2,700	<0.027	44	1.6	12,000	3,700	2.7	8.2
	CTMW-06S-20171004	10/04/17	PME8	2,600	2,600	10,000	3,000 J-	0.20	54	2.7	12,000	3,700	2.2	6.7
	CTMW-06S-20180306	03/06/18	PME9	1,800	1,800		17	0.15	22	0.86	3,500	910	0.23	0.69
	CTMW-06S-20180622	06/22/18	PME10	1,700	1,700	<50	13	0.14	18	0.61	4,400	1,000	0.45	1.4
	CTMW-06D-20170622	06/22/17	PME4	240	240	<50	3.5	<0.11	<0.10	<0.025	12,000	2,600	0.054	0.17
	CTMW-06D-20170717	07/17/17	PME5	210	210	<50	4.9	0.030 J	<0.10	<0.025	11,000	2,600	0.064	0.20
	CTMW-06D-20170717-FD	07/17/17	PME5	210	210	<50	5.8	0.029 J	<0.10	<0.025	12,000	2,700	0.057	0.18
	CTMW-06D-20170822	08/22/17	PME6	340	340	<50	25	<0.027	<0.10	0.13	12,000	2,700	0.084	0.26
	CTMW-06D-20170919	09/19/17	PME7	390	390	<20	85	<0.027 R	<0.10	0.034 J	11,000	2,600	0.58	1.8 J
CTWW-06D	CTMW-06D-20170919-FD	09/19/17	PME7	400	400	<20	82	<0.027 R	<0.10	0.040 J	11,000	2,600	0.44	1.3 J
	CTMW-06D-20171004	10/04/17	PME8	590	590	<50	120	<0.027	<0.10	<0.025	11,000	2,800	0.15	0.46
	CTMW-06D-20171004-FD	10/04/17	PME8	590	590	<20	110	<0.027	<0.10	0.029 J	11,000	2,700	0.12	0.36
	CTMW-06D-20180307	03/07/18	PME9	1,300	1,300		52	<0.027	<0.10	0.032 J	10,000	2,500	0.11	0.33
	CTMW-06D-20180622	06/22/18	PME10	1,400	1,400	<50	20	<0.027	<0.10	<0.025	8,000	1,900	0.11	0.33
	Not Analyzed	10/09/17	PME8					W	ell Dry; Unable to san	nple				
CTMW-07S	CMTW-07S-20180306	03/06/18	PME9	210	210		1.9	<0.027 R	<0.10 R	<0.025 R	9,000	1,600	0.049 J	0.15 J-
	Not Analyzed	06/22/18	PME10		•	•	·	w	ell Dry; Unable to san	ple	-			
	CTMW-07D-20171009	10/09/17	PME8	100	100	55	1.7	<0.027	0.21	0.54	770	380	0.16	0.48
CTMW-07D	CTMW-07D-20180306	03/06/18	PME9	170	<4.0		2.3	<0.027	0.93	0.045 J	570	36	0.031 J	0.096 J
	CTMW-07D-20180622	06/22/18	PME10	120	120	<10	4.4	<0.027	<0.10	0.25	600	150	0.54	1.7

Notes:

USEPA United States Environmental Protection Agency

mg/L Milligram per liter

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UJ

The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

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. J+

J-The result is an estimated quantity, but the result may be biased low.

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. _

Not Analyzed

Net Losson Sage D Person Per						Volatile Fatty Acids (mg/L)										
CTW045 CTW0450 201904 Control Feature Control	Well Location	Sample ID	Sample Date	Week	Dissolved Methane (mg/L)	Acetic Acid	Formic-acid	Lactic Acid	n-Butyric Acid	Propionic Acid	Pyruvic Acid					
CTIWeth CTWeth CTW/COUND COUNT Basing Col 301 Col 301 <thcol 301<="" th=""> <thcol 301<="" th=""> <thcol< td=""><td>CTIW-01S</td><td>CTIW-01S-20170405</td><td>04/05/17</td><td>Baseline</td><td><0.00025</td><td><1.5</td><td><1.3</td><td><1.6</td><td><1.3</td><td><1.8</td><td><1.9</td></thcol<></thcol></thcol>	CTIW-01S	CTIW-01S-20170405	04/05/17	Baseline	<0.00025	<1.5	<1.3	<1.6	<1.3	<1.8	<1.9					
CTW 628 CTW 628 CTW 620 Order Beacher Beacher Composition	CTIW-01D	CTIW-01D-20170406	04/06/17	Baseline	<0.00025	<1.5	<1.3	<1.6	<1.3	<1.8	<1.9					
CTW 000 CTW 0005	CTIW-02S	CTIW-02S-20170403	04/03/17	Baseline	0.00034 J	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4					
CTW 628 CTW 628 CTW 628 OLAND 2 Ad.27	CTIW-02D	CTIW-02D-20170404	04/04/17	Baseline	<0.00025	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4					
CTIMe400 CTIMe4000 0.00017 8.0000 0.020 0.020 0.010 0.011 0.013 0.035 0.74 CTIMe405 0.00017 PUET 0.00025 0.00 0.00 0.031 0.035 0.74 CTIMe405 0.0017 PUET 0.00025 0.00 0.00 0.01 0.000 0.01 0.000 0.000 0.01 0.000 0.000 0.000 0.000 0.01 0.000	CTIW-03S	CTIW-03S-20170404	04/04/17	Baseline	<0.00025	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4 UJ					
CTIMU 05 2017030 COUNT 05 201703 COUNT 05	CTIW-03D	CTIW-03D-20170404	04/04/17	Baseline	<0.00025	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4					
CHW of 32000000 000007 PMI 4.000270 580 480 680 990 200 674 CHW of 32000000 0000077 PMIC3 4.00027 560 100 4.00 <t< td=""><td></td><td>CTMW-01S-20170404</td><td>04/04/17</td><td>Baseline</td><td><0.00025</td><td><0.29</td><td>3.0</td><td><0.31</td><td><0.26</td><td><0.35</td><td><7.4</td></t<>		CTMW-01S-20170404	04/04/17	Baseline	<0.00025	<0.29	3.0	<0.31	<0.26	<0.35	<7.4					
CTIMA-05 2017061 000117 PME2 4.00025 540 110 -431 6.000 300 -437 CTIMA-05 2017061 001117 PME3 -400025 800 -428 -431 4.10 2.000 -427 CTIMA-05 2017020 0021017 PME3 0.100 -428 -431 -461 -433 -461 -430 -471 CTIMA-05 2017020 0021017 PME5 0.16 -430 -421 -421 -4200 -431 -4000 -421 -4200 -431 -4000 -421 -4200 -431 -4000 -431 -400 -431 -400 -431 -400 -431 -400 -431 -400 -431 -401<		CTMW-01S-20170503	05/03/17	PME1	<0.00025	820	400	660	990	200	<7.4					
CTIM-01520170531 0.650171 PMC3 0.00025 800 <13 <16 <13 380 <16 CTIM-015201702 0.70171 PMC3 0.00025 3.000 <23		CTMW-01S-20170516	05/16/17	PME2	<0.00025	540	180	<31	1,600	300	<37					
CTMW 48 C MM 415 2017/031 0 MM 3		CTMW-01S-20170531	05/31/17	PME3	<0.00025	880	<13	<16	<13	380	<19					
C1MM 415 C1MM 415 2(17)(2) (0)(2)(7) PME5 0.15 1.300 (-1.3) (-1.6) (-1.3) (-1.6) (-1.3) (-1.6) (-1.3) (-1.6)	07101/010	CTMW-01S-20170619	06/19/17	PME4	<0.00025	3,000	<26	<31	4,100	2,000	<37					
Children is Sourced Bases Constraint Bases Constraint Constraint <thconstraint< th=""> Constraint Constrain</thconstraint<>	CTWW-01S	CTMW 018-20170720	07/20/17	PME5	0.16	<15	<13	<16	<13	<18	<19					
CTUM<015.2017/0201 Disk/1 Lag.// Lag./// Lag.// Lag.// Lag.// Lag.// Lag./// Lag.//// Lag.///// Lag.///// Lag.////// Lag.///// Lag.///// Lag.///// Lag.///// Lag.///// Lag.////// Lag.////// Lag.////// Lag.////// Lag.////// Lag.////// Lag.////// Lag.		CTMW-015-20170824	00/20/17	PME6	0.15	3,900	<5.2	<0.2	2,400	1,800	.4</td					
CTUM-05 COUNT Field 2.9.4 Count 1.000 4.6.7 CTUM-05		CTMW-01S-20170920	10/03/17		0.90 1.8 L	4,400	<2.0	<3.1 	2,000	2,000	<3.1 -7 A					
CTMW 09 3010001 002/110 PHEC0 0.97 0.23 0.26 0.25 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.25 0.25 0.25 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.24 0.25 0.24 0.25 </td <td></td> <td>CTMW-013-20171003</td> <td>03/05/18</td> <td></td> <td>1.0 J-</td> <td>4,200</td> <td>361</td> <td></td> <td>2,500</td> <td>2,000</td> <td><7.4</td>		CTMW-013-20171003	03/05/18		1.0 J-	4,200	361		2,500	2,000	<7.4					
CTMW-0D-2017083 080207 Baseline 0.00205 0.029 0.038 0.031 0.036 0.036 0.047 CTMW-0D-20170616 06/0177 PMEE -0000055 -0.29 -0.28 -0.31 -0.26 -0.33 -0.4 CTMW-0D-20170616 06/0177 PME2 -000025 -15 -13 -16 -13 -18 -018 -019 CTMW-0D-20170616 06/0177 PME5 -000025 -15 -13 -16 -13 -18 -19 CTMW-0D-20170518 05/0177 PME5 0.00025 -15 -13 -16 -11 -18 -19 CTMW-0D-2017020 07/2017 PME5 0.00025 38 -6.2 120 -6.2 -7.0 -7.4 -7.0 -7.4 CTMW-0D-20170824 08/2017 PME5 0.0025 160 -6.2 -80 220 7.0 -7.4 -7.0 -7.4 CTMW-0D-20170824 08/2017 PME5 0.019 280 -		CTMW-01S-20180503	06/21/18	PME10	0.87.1	<29	<26		<26	<35	<37111					
CTMV-01D 040017 PME1 <0.0005 <0.25 <0.25 <0.21 <0.23 <0.25 <0.24 CTMV-01D 060017 PME2 <0.0005		CTMW-01D-20170403	04/03/17	Baseline	<0.0025	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4					
CTMW-01D 0:01/017 PME2 -0:00/026 -1:5 -1:3 -1:6 -1:1 <td></td> <td>CTMW-01D-20170503</td> <td>05/03/17</td> <td>PME1</td> <td><0.00025</td> <td><0.29</td> <td><0.26</td> <td><0.31</td> <td><0.26</td> <td><0.35</td> <td><7.4</td>		CTMW-01D-20170503	05/03/17	PME1	<0.00025	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4					
CTMW-01D-2017051 0531/17 PME3 0-00025 -415 -413 -416 -413 -418 -419 CTMW-01D-20170545 0571071 PME5 0-00025 -45 -413 -416 -413 -416 -413 -416 -41 CTMW-01D-20170724 0.77017 PME5 0-000025 38 -452 22 -45.2 -47.6 -47.4 CTMW-01D-20170264 0.82117 PME5 0-000025 38 -45.2 160 -22 7.0 -7.4 -7.4 CTMW-01D-20170824 0.82117 PME5 0.00017 PME5 0.00025 -7.6 -7.4 <td></td> <td>CTMW-01D-20170516</td> <td>05/16/17</td> <td>PME2</td> <td><0.00025</td> <td><15</td> <td><13</td> <td><16</td> <td><13</td> <td><18</td> <td><19</td>		CTMW-01D-20170516	05/16/17	PME2	<0.00025	<15	<13	<16	<13	<18	<19					
CTMW-010-2017081 069197 PME4 4-00025 -13 -16 -13 -16 -13 -18 -19 CTMW-010-20170720 072017 PME5 -0.00025 38 -452 22 -62 -7.0 -7.4 -7.4 CTMW-010-2017020 097017 PME5 -0.00025 38 -452 18.J -45.2 -7.0 -7.4 CTMW-010-2017082 082417 PME5 -0.0008 160 -45.2 80 220 7.0.J -7.4 CTMW-010-2017082 082417 PME5 0.038 160 -45.2 190 7.3 -7.4 CTMW-010-2018005 030561 PME5 0.039 260 -2.6 190 7.1 -7.7 CTMW-010-2018021 021618 PME10 0.011 498 -2.6 120 66 -3.7 CTMW-010-2018021 021718 PME10 0.011 498 -4.6 120 -4.7		CTMW-01D-20170531	05/31/17	PME3	<0.00025	<15	<13	<16	<13	<18	<19					
CTMW-010-2017020 0720/17 PME5 0.00940 J 50		CTMW-01D-20170619	06/19/17	PME4	<0.00025	<15	<13	<16	<13	<18	<19					
CTNW-01D CTNM-01D		CTMW-01D-20170720	07/20/17	PME5	0.00040 J	50	<5.2	22	<5.2	<7.0	<7.4 UJ					
CTMM-010 CTMM-010-20170220 092/017 PWE6 0.014 170 <5.2 90 220 7.0 J CTMM-01D-20170200 092/017 PWE7 0.29 160 <5.2	CTMW-01D	CTMW-01D-20170720-FD	07/20/17	PME5	<0.00025	38	<5.2	18 J	<5.2	<7.0	<7.4					
CTMW-01D-2017020 092017 PME7 0.29 160 -2.6 54 350 -3.5 -47LU CTMW-01D-2017030 1000/17 PME8 0.039 260 -2.6 110 71 -4.7 CTMW-01D-20180305-F0 0300/16 PME9 0.059 260 -2.6 120 65 -4.7 CTMW-01D-20180325-F0 052118 PME10 0.068 426 120 -6.5 -4.7 CTMW-01D-20180627-F0 062118 PME10 0.068 426 30 120 -4.7 CTMW-025-2017050 050417 PME1 -0.0025 -113 -16 -13 -16 -19 CTMW-025-2017050 050417 PME3 -0.0025 -15 -13 -16 433 -16 -19 CTMW-025-2017050 050171 PME3 -0.0025 -15 -13 -16 430 -60 -74 CTMW-025-2017061 05017 PME3 <t< td=""><td>CTMW-01D-20170824</td><td>08/24/17</td><td>PME6</td><td>0.014</td><td>170</td><td><5.2</td><td>80</td><td>220</td><td>7.0 J</td><td><7.4</td></t<>		CTMW-01D-20170824	08/24/17	PME6	0.014	170	<5.2	80	220	7.0 J	<7.4					
CTMW-01D-2017003 1002H7 PME8 0.038 160 -5.2 350 33.J. CTMW-01D-20180365 0.050H8 PME9 0.050 260 -2.6 110 71 -4.37 CTMW-01D-201803621 062118 PME10 0.086 490 -2.6 120 6.5 -3.7 CTMW-01D-20180621+7 062118 PME10 0.011 480 -2.6 20 120 -3.7 CTMW-01D-20180621+7 062118 PME10 0.011 480 -2.6 30 120 -3.7 CTMW-025-20170501 0621/17 PME2 -0.0025 <1.5		CTMW-01D-20170920	09/20/17	PME7	0.29	160	<2.6	54	350	<3.5	<3.7 UJ					
CTMW-010-20180305-PD 0306/18 PME9 0.039 260 -2.6 110 71 -3.7 CTMW-01D-20180821 062/178 PME10 0.098 490 -2.6 120 66 -3.7 CTMW-01D-20180821 P0E10 0.011 480 -2.6 29 120 -3.7 CTMW-01D-20180821 P0E10 0.011 480 -2.6 30 120 -3.7 CTMW-022-2017060 0.601/17 PME1 -0.00025 -1.5 -1.3 -1.6 -1.3 -1.8 -1.9 CTMW-025-2017060 0.601/17 PME1 -0.00025 -1.5 -1.3 -1.6 -1.3 -1.8 -1.9 CTMW-025-2017060 0.601/17 PME3 -0.0025 -1.5 -1.3 -1.6 -1.3 -1.6 -1.9 -1.9 -1.9 -1.9 -1.9 -2.6 2.0 0.60 -7.4 CTMW-025-2017020 0.620/17 PME6		CTMW-01D-20171003	10/03/17	PME8	0.038	160	<5.2		350	33 J+	<7.4 UJ					
CTMW-01b-20180305-FD 0300518 PME9 0.050 260 120 66 120 66 120 120 120 120		CTMW-01D-20180305	03/05/18	PME9	0.039	260	<2.6		110	71	<3.7					
CTMW-01D-2016021* 062/118 PME10 0.098 490 <2.6 29 120 <3.7 CTMW-020106021* 062/116 PME10 0.11 480 <2.6		CTMW-01D-20180305-FD	03/05/18	PME9	0.050	260	<2.6		120	66	<3.7					
CTMW-025-20170405 04/2/17 PME10 0.11 460 30 120 CTMW-025-20170405 04/06/7 Besline <0.00025		CTMW-01D-20180621	06/21/18	PME10	0.098	490	<2.6		29	120	<3.7					
CTIMU-025-2017080b 04/09/17 Baseline		CTMW-01D-20180621-FD	06/21/18	PME10	0.11	480	<2.6		30	120	<3.7					
CTIMV-025-0170504 00/01/17 PME1 < < < < < < < < < < < < < <		CTMW-02S-20170405	04/05/17	Baseline	<0.00025	<1.5	<1.3	<1.6	<1.3	<1.8	<1.9					
CTIMV-025-20170610 06/01/17 PME2 < < << << << << <<<<		CTMW-02S-20170504	05/04/17	PME1	<0.00025	- 11	<0.26	<0.31	<0.26	<0.35	<7.4					
CTMW-025 CTMW-025-20170301 00/01/1 PME3 CO.00025 1500 <13 <16 <13 <16 <19 CTMW-025-2017030 08/2/017 PME4 0.027 1,500 <13		CTMW-025-20170516	05/16/17	PIVIEZ	<0.00025	<15	<13	<10	<13	<10	<19					
CTMW-025 CTMW-025-20170701 OP/1017 PME5 0.027 1,300 C10 C10 <thc< td=""><td></td><td>CTMW-028-20170601</td><td>06/20/17</td><td></td><td><0.00025</td><td>1 500</td><td><13</td><td><16</td><td><13 400</td><td><10 400</td><td><19</td></thc<>		CTMW-028-20170601	06/20/17		<0.00025	1 500	<13	<16	<13 400	<10 400	<19					
Orimital Original	CTMW-02S	CTMW-02S-20170020	07/19/17	PME5	0.027	4 000	<52	<62	430	490	<74					
CTMW-025-20170920 09/2017 PME7 1.9 3,300 <2.6 20 480 340 <3.7 CTMW-025-2017003 10/03/17 PME8 2.3.J. 3,200 <5.2	0	Not Analyzed	08/24/17	PME6	0.10	4,000	We	ell Drv: Unable to sam	ple	000	SI T					
CTMW-02S-20171003 10/03/17 PME8 2.3 J. 3.200 <5.2 <6.2 560 280 <7.4 CTMW-02S-20180306 03/06/18 PME9 3.9 J. 4.6 J 3.6 J <3.1		CTMW-02S-20170920	09/20/17	PME7	1.9	3,300	<2.6	20	480	340	<3.7					
CTMW-025-20180306 03/06/18 PME9 3.9.J. 4.6.J 3.6.J <3.1 <2.6 <3.5 <3.7 Not Analyzed 06/22/18 PME10 Well Dry; Unable to sample Well Dry; Unable to sample CTMW-02D-20170404 04/04/17 Baseline <0.00025		CTMW-02S-20171003	10/03/17	PME8	2.3 J-	3,200	<5.2	<6.2	560	280	<7.4					
Not Analyzed 06/22/18 PME10 Well Dry; Unable to sample CTMW-02D-20170404 04/04/17 Baseline <0.00025		CTMW-02S-20180306	03/06/18	PME9	3.9 J-	4.6 J	3.6 J	<3.1	<2.6	<3.5	<3.7					
CTMW-02D-20170404 04/04/17 Baseline <0.00025 <0.29 <0.26 UJ <0.31 UJ <0.26 UJ <0.31 UJ <0.26 UJ <0.35 <7.4 CTMW-02D-20170404-FD 04/04/17 Baseline <0.00025		Not Analyzed	06/22/18	PME10			We	ell Dry; Unable to sam	ple							
CTMW-02D-20170404-FD 04/04/17 Baseline <0.00025 <0.29 <0.26 <0.31 <0.26 <0.35 <7.4 CTMW-02D-20170503 05/03/17 PME1 <0.00025		CTMW-02D-20170404	04/04/17	Baseline	<0.00025	<0.29	<0.26 UJ	<0.31 UJ	<0.26 UJ	<0.35	<7.4					
CTMW-02D-20170503 05/03/17 PME1 <0.00025 <0.29 <0.26 <0.31 <0.26 <0.35 <7.4 CTMW-02D-20170503-FD 05/03/17 PME1 <0.00025		CTMW-02D-20170404-FD	04/04/17	Baseline	<0.00025	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4					
CTMW-02D-20170503-FD 05/03/17 PME1 <0.00025 <0.29 UJ <0.26 <0.31 UJ <0.26 UJ <0.35 UJ <7.4 CTMW-02D-20170507 05/17/7 PME2 <0.00025		CTMW-02D-20170503	05/03/17	PME1	<0.00025	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4					
CTMW-02D-20170517 05/17/17 PME2 <0.00025 <15 <13 <16 <13 <18 <19 CTMW-02D-20170601 06/01/17 PME3 <0.00025		CTMW-02D-20170503-FD	05/03/17	PME1	<0.00025	<0.29 UJ	<0.26	<0.31 UJ	<0.26 UJ	<0.35 UJ	<7.4					
CTMW-02D-20170601 06/01/17 PME3 <0.00025 <15 <13 <16 <13 <18 <19 CTMW-02D-20170601-FD 06/01/17 PME3 <0.00025		CTMW-02D-20170517	05/17/17	PME2	<0.00025	<15	<13	<16	<13	<18	<19					
CTMW-02D CTMW-02D-20170601-FD 06/01/17 PME3 <0.00025 <15 <13 <16 <13 <18 <19 CTMW-02D-20170619 06/19/17 PME4 0.00041 J 49 J <13		CTMW-02D-20170601	06/01/17	PME3	<0.00025	<15	<13	<16	<13	<18	<19					
C1MW-02D C1MW-02D-20170619 00/19/17 PME4 0.00041 J 49 J <13 <16 40 J 27 J <19 CTMW-02D-20170619-FD 06/19/17 PME4 0.00054 J 50 <13	07101/ 000	CTMW-02D-20170601-FD	06/01/17	PME3	<0.00025	<15	<13	<16	<13	<18	<19					
CTMW-02D-2017/0519+FD 00/19/17 PME4 0.00034 J 50 <13 <16 42 J 31 J <19 CTMW-02D-20170719 07/19/17 PME5 0.00038 J 220 <1.3	CTMW-02D	CIMW-02D-20170619	06/19/17	PME4	0.00041 J	49 J	<13	<16	40 J	27 J	<19					
C MWW-02D-2017019 07/1917 PME5 0.00038 J 220 <1.3 <1.6 <1.3 <1.8 <19 CTMW-02D-20170824 08/24/17 PME6 0.079 7.0 J <5.2		CTMW-02D-20170619-FD	05/19/17	PME4	0.00054 J	50	<13	<16	42 J	31 J	<19					
CTMW-02D-20170024 00/2417 PME0 0.079 7.03 <5.2 <5.2 <7.0 <7.4 UJ CTMW-02D-20170920 09/20/17 PME7 0.11 <2.9		CTMW 02D-20170719	09/04/47	PIVIE5	0.00038 J	220	<1.3	<1.0	<1.3	<1.8	<19					
CTMW-02D-2017003 00/2017 PME7 0.11 <2.9 <2.0 <3.1 <2.0 <3.5 <3.7 CTMW-02D-20171003 10/03/17 PME8 0.058 <2.9		CTMW-02D-20170824	00/24/17		0.079	1.U J	<0.2	<0.2	<0.2	<1.0	<1.4 UJ					
CTMW-02D-20180305 03/05/18 PME9 0.090 <2.9 3.6 J <2.6 <3.5 <3.7 CTMW-02D-20180621 06/21/18 PME10 0.29 <2.9		CTMW-02D-20170920	10/03/17		0.058	<2.9	<2.0		<2.0	<3.5	<3.7					
CTMW-02D-20180621 06/21/18 PME10 0.29 <2.9 <2.6 <2.6 <3.5 <3.7		CTMW-02D-20180305	03/05/18	PME9	0.090	<2.9	3.6 J		<2.6	<3.5	<3.7					
		CTMW-02D-20180621	06/21/18	PME10	0.29	<2.9	<2.6		<2.6	<3.5	<3.7					

					Volatile Fatty Acids (mg/L)										
Well Location	Sample ID	Sample Date	Week	Dissolved Methane (mg/L)	Acetic Acid	Formic-acid	Lactic Acid	n-Butyric Acid	Propionic Acid	Pyruvic Acid					
	CTMW-03S-20170405	04/05/17	Baseline	<0.00025	<1.5	<1.3 UJ	<1.6 UJ	<1.3	<1.8	<1.9 UJ					
	CTMW-03S-20170505	05/05/17	PME1	<0.00025	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4					
	CTMW-03S-20170517	05/17/17	PME2	<0.00025	<15	<13	<16	<13	<18	<19					
	CTMW-03S-20170601	06/01/17	PME3	<0.00025	<15	<13	<16	<13	<18	<19					
CTMW-03S	CTMW-03S-20170620	06/20/17	PME4	<0.00025	120	<13	<16	140	72	<19					
	CTMW-03S-20170718	07/18/17	PME5	0.0033	<1.5	<1.3	<1.6	<1.3	<1.8	<19					
	CTMW-03S-20170823	08/23/17	PME6	0.025	66	<5.2	<6.2	<5.2	<7.0	<7.4					
	CTMW-03S-20170921	09/21/17	PME7	0.014	<1.5	<1.3	<1.6	<1.3	<1.8	<1.9					
	CTMW-03S-20171003	10/03/17	PME8	0.41	<2.9	<2.6		<2.6	<3.5	<3.7					
	CTMW-03D-20170406	04/06/17	Baseline	<0.00025	<1.5	<1.3	<1.6	<1.3	<1.8	<1.9					
	CTMW-03D-20170505	05/05/17	PME1	<0.00025	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4					
	CTMW-03D-20170517	05/17/17	PME2	<0.00025	<15	<13	<16 UJ	<13	<18	<19					
CTMW-03D	CTMW-03D-20170601	06/01/17	PME3	<0.00025	<15	<13	<16	<13	<18	<19					
	CTMW-03D-20170620	06/20/17	PME4	<0.00025	<15	<13	<16	<13	<18	<19					
	CTMW-03D-20170719	07/19/17	PME5	<0.00025	<1.5	<1.3	<1.6	<1.3	<1.8	<19					
	CTMW-03D-20170823	08/23/17	PME6	0.030	<5.8	<5.2	<6.2	<5.2	<7.0	<7.4					
	CTMW-03D-20170921	09/21/17	PME7	0.0084	<1.5	<1.3	<1.6	<1.3	<1.8	<1.9					
	CTMW-03D-20171003	10/03/17	PME8	0.0096	<2.9	<2.6		<2.6	<3.5	<3.7					
	CTMW-04S-20170405	04/05/17	Baseline	<0.00025	<1.5	<1.3	<1.6	<1.3	<1.8	<1.9					
	CTMW-04S-20170504	05/04/17	PME1	<0.00025	55	<0.26	<0.31	<0.26	<0.35	<7.4					
	CTMW-04S-20170517	05/17/17	PME2	<0.00025	70	<13	<16	54	<18	<19					
	CTMW-04S-20170602	06/02/17	PME3	<0.00025	<29	<26	<31	<26	<35	<37					
	CTMW-04S-20170620	06/20/17	PME4	<0.00025	85	<13	<16	30 J	83	<19					
CTMW-04S	CTMW-04S-20170718	07/18/17	PME5	0.0037	570	<1.3	<1.6	<1.3	<1.8	<1.9					
	CTMW-04S-20170823	08/23/17	PME6	0.0052	2,800	<5.2	<6.2	<5.2	<7.0	<7.4					
	CTMW-04S-20170921	09/21/17	PME7	<0.00025	1,800	<2.6	<3.1	<2.6	<3.5	<3.7					
	CTMW-04S-20171003	10/03/17	PME8	0.094 J-	300	<13		<13	<18	<19					
	CTMW-04S-20180307	03/07/18	PME9	3.6	<2.9	<2.6		<2.6	<3.5	<3.7					
	CTMW-04S-20180621	06/21/18	PME10	2.2	<2.9	<2.6		<2.6	<3.5	<3.7					
	CTMW-04D-20170405	04/05/17	Baseline	<0.00025	<1.5	<1.3	<1.6	<1.3	<1.8	<1.9					
	CTMW-04D-20170504	05/04/17	PME1	<0.00025	<0.29	<0.26	<0.31	<0.26	<0.35	<7.4					
	CTMW-04D-20170517	05/17/17	PME2	<0.00025	<15	<13	<16	<13	<18	<19					
	CTMW-04D-20170517-FD	05/17/17	PME2	<0.00025	<15	<13	<16	<13	<18	<19					
	CTMW-04D-20170602	06/02/17	PME3	<0.00025	<15	<13	<16	<13	<18	<19					
	CTMW-04D-20170621	06/21/17	PME4	<0.00025	<15	<13	<16	<13	<18	<19					
CTMW-04D	CTMW-04D-20170718	07/18/17	PME5	<0.00025	<1.5	<1.3	<1.6	<1.3	<1.8	<19					
	CTMW-04D-20170823	08/23/17	PME6	0.014	<5.8	<5.2	<6.2	<5.2	<7.0	<7.4					
	CTMW-04D-20170823-FD	08/23/17	PME6	0.015	<5.8	<5.2	<6.2	<5.2	<7.0	<7.4					
	CTMW-04D-20170920	09/20/17	PME7	0.032	<1.5	<1.3	<1.6	<1.3	<1.8	<1.9					
	CTMW-04D-20171003	10/03/17	PME8	0.029	<2.9	<2.6		<2.6	<3.5	<3.7					
	CTMW-04D-20180307	03/07/18	PME9	0.13	<2.9	<2.6		<2.6	<3.5	<3.7					
	CTMW-04D-20180621	06/21/18	PME10	0.071 J	<2.9	<2.6		<2.6	<3.5	<3.7 UJ					

					Volatile Fatty Acids (mg/L)										
Well Location	Sample ID	Sample Date	Week	Dissolved Methane (mg/L)	Acetic Acid	Formic-acid	Lactic Acid	n-Butyric Acid	Propionic Acid	Pyruvic Acid					
	CTMW-05S-20170621	06/21/17	PME4	<0.00025	<15	<13	<16	<13	<18	<19					
	CTMW-05S-20170717	07/17/17	PME5	<0.00025	<5.8	<5.2	<6.2	<5.2	<7.0	<7.4					
CTMW-05S	CTMW-05S-20170822	08/22/17	PME6	0.0037	9.5 J	<5.2	<6.2	<5.2	<7.0	<7.4					
	CTMW-05S-20170919	09/19/17	PME7	<0.00025	<1.5	<1.3		<1.3	<1.8	<1.9					
	CTMW-05S-20171004	10/04/17	PME8	0.11	<2.9	<2.6	<3.1	<2.6	<3.5	<19					
	CTMW-05D-20170621	06/21/17	PME4	<0.00025	<15	<13	<16	<13	<18	<19					
	CTMW-05D-20170621-FD	06/21/17	PME4	<0.00025	<15	<13	<16	<13	<18	<19					
CTMW-05D	CTMW-05D-20170718	07/18/17	PME5	<0.00025	<1.5 UJ	<1.3 UJ	<1.6 UJ	<1.3	<1.8 UJ	<19 UJ					
CTMW-05D	CTMW-05D-20170822	08/22/17	PME6	<0.00025	<15	<13	<16	<13	<18	<19					
	CTMW-05D-20170919	09/19/17	PME7	<0.00025	<1.5	<1.3		<1.3	<1.8	<1.9					
	CTMW-05D-20171004	10/04/17	PME8	0.00044 J	<2.9	<2.6	<3.1 UJ	<2.6	<3.5 UJ	<19 UJ					
	CTMW-06S-20170621	06/21/17	PME4	<0.00025	430	<13	<16	240	100	<19					
	CTMW-06S-20170717	07/17/17	PME5	0.0084	2,800	<13	<16	710	550	<19					
	CTMW-06S-20170822	08/22/17	PME6	0.049	3,200	<13	<16	690	550	<19					
CTMW-06S	CTMW-06S-20170919	09/19/17	PME7	0.078 J-	3,600	<5.2	<6.2	970	440	<7.4					
	CTMW-06S-20171004	10/04/17	PME8	0.27 J-	3,700	<13	<16	1,200	750	<19					
	CTMW-06S-20180306	03/06/18	PME9	6.0 J-	3.1 J	3.5 J	<3.1	<2.6	<3.5	<3.7					
	CTMW-06S-20180622	06/22/18	PME10	2.1	<2.9	<2.6	<3.1	<2.6	<3.5	<3.7					
	CTMW-06D-20170622	06/22/17	PME4	<0.00025	<5.8	<5.2	<6.2	<5.2	<7.0	<7.4					
	CTMW-06D-20170717	07/17/17	PME5	<0.00025	<5.8	<5.2	<6.2	<5.2	<7.0	<7.4					
	CTMW-06D-20170717-FD	07/17/17	PME5	<0.00025	<5.8	<5.2	<6.2	<5.2	<7.0	<7.4					
	CTMW-06D-20170822	08/22/17	PME6	0.00071 J	<29	<26	<31	<26	<35	<37					
CTMW-06D	CTMW-06D-20170919	09/19/17	PME7	0.00034 J	96	<1.3	<1.6	26	<1.8	<1.9					
01	CTMW-06D-20170919-FD	09/19/17	PME7	0.00033 J	97	<1.3	<1.6	26	<1.8	<1.9					
	CTMW-06D-20171004	10/04/17	PME8	0.0029	140	<2.6	<3.1	16	<3.5 UJ	<19					
	CTMW-06D-20171004-FD	10/04/17	PME8	0.0024	130	<2.6	11	<2.6	26 J	<19					
	CTMW-06D-20180307	03/07/18	PME9	1.3	32 J	<13	<16	<13	<18	<19					
	CTMW-06D-20180622	06/22/18	PME10	1.7	<2.9	<2.6	<3.1	<2.6	<3.5	<3.7					
	Not Analyzed	10/09/17	PME8			w	ell Dry; Unable to sam	ple	T	1					
CTMW-07S	CMTW-07S-20180306	03/06/18	PME9	1.0	<2.9	3.6 J	<3.1	<2.6	<3.5	<3.7 UJ					
	Not Analyzed	06/22/18	PME10			w	ell Dry; Unable to sam	ple	1	1					
	CTMW-07D-20171009	10/09/17	PME8	0.00050 J	<2.9	<2.6	<3.1	<2.6	<3.5	<3.7					
CTMW-07D	CTMW-07D-20180306	03/06/18	PME9	0.073	<2.9	3.8 J	<3.1	<2.6	<3.5	<3.7					
	CTMW-07D-20180622	06/22/18	PME10	0.19	<2.9	<2.6	<3.1	<2.6	<3.5	<3.7					

Notes:

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USEPA United States Environmental Protection Agency

mg/L Milligram per liter

The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit. <

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.

The result is an estimated quantity, but the result may be biased low. J-

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Not Analyzed

				Dissolved Metals by USEPA Method 6020 (ug/L)																		
Well Location	Sample ID	Sample Date	Week	minum	nony	nic	Ę	llium	nium	mium	ait	per		_	ganese	e	mium	-	lium	ium	adium	
				Alum	Antir	Arse	Bariu	Bery	Cadr	Chro	Coba	Copp	Lon	Lead	Manç	Nick	Selei	Silve	Thall	Uran	Vana	Zinc
CTIW-01S	CTIW-01S-20170405	04/05/17	Baseline	<50	<5.0	120	28	<2.5	<2.5	13	<5.0	<5.0	<800	<5.0	15	<5.0	<5.0	<5.0	<5.0	29	<100	<25
CTIW-01D	CTIW-01D-20170406	04/06/17	Baseline	<50	<5.0	60	32	<2.5	<2.5	15	<5.0	<5.0	<80	<5.0	31	5.0 J	<5.0	<5.0	<5.0	26	<100	74 J
CTIW-02S	CTIW-02S-20170403	04/03/17	Baseline	<50	<5.0	98	32	<2.5	<2.5	11	<5.0	<5.0	<320	<5.0	32	<5.0	<5.0	<5.0	<5.0	43	<40	<25
CTIW-02D	CTIW-02D-20170404	04/04/17	Baseline	<50	<5.0	35	37	<2.5	<2.5	18	<5.0	<5.0	<80	<5.0	42	5.3 J	<5.0	<5.0	<5.0	20	<100	74 J
CTIW-03S	CTIW-03S-20170404	04/04/17	Baseline	76 22	74 <0.50	170	120	6 7	67 <0.25	9.6	81 0.64 I	63 16 I	580	67	110	68 3.2	61 3.7	72 <0.50	70 <0.50	130	<100	62
CTIW-03D	CTMW-03D-20170404	04/04/17	Baseline	<50	<5.0	85	41	<0.25	<2.5	10	<5.0	<5.0	<80	<5.0	32	551	<5.0	<5.0	<5.0	38	<50	-25
	CTMW-01S-20170404 CTMW-01S-20170503	05/03/17	PME1	49	8.8	200	62	<0.25	<0.25	1.1	5.0	10	660	<0.50	510	51	2.5	<0.50	<0.50	200	3.5	9.3 J
	CTMW-01S-20170516	05/16/17	PME2	26	0.53 J	210	58	<0.25	<0.25	0.36	3.4	4.6	32	0.62 J	480	7.6	2.3	< 0.50	< 0.50	210	19	10 J
	CTMW-01S-20170531	05/31/17	PME3	<50	<5.0	350	75	<2.5	<2.5	0.15	<5.0	<5.0	780	<5.0	910	13 J	<5.0	<5.0	<5.0	190	<10	<25
	CTMW-01S-20170619	06/19/17	PME4	<50	<5.0	460	47	<2.5	<2.5	0.15	5.2 J	13 J	370	<5.0	2,600	61	<5.0	<5.0	<5.0	23	<10	<25
CTMW-01S	CTMW-01S-20170720	07/20/17	PME5	48 J	<2.5	380	400	<1.3	<1.3	0.11	3.7 J	4.2 J	5,200	<2.5	4,500	37	<2.5	<2.5	<2.5	6.6	<5.0	17 J
	CTMW-01S-20170824	08/24/17	PME6	<50	<5.0	910	360	<2.5	<2.5	0.09	<5.0	<5.0	390	<5.0	2,300	30	<5.0	<5.0	<5.0	80	19 J	<25
	CTMW-01S-20170920	10/03/17	PIVIE7 PME8	<25	4.2 J	700	570 610	<1.3	<1.3	0.067	2.8 J	3.0 J	430	<2.5	3,200	18	<2.5	<2.5	<2.5	44 5.2	8.1 J	<13 16 I
	CTMW-01S-20171003	03/05/18	PME9	<25	<2.5	590	390	<1.3	<1.3	0.043	<2.5	2.0 J	250	<2.5	160	2.9 J	<2.5	<2.5	<2.5	16	<3.0 6.1 J	10 J
	CTMW-01S-20180621	06/21/18	PME10	<25	2.7 J	440	530	<1.3	<1.3	0.073	<2.5	<2.5	230	<2.5	94	9.0 J	2.7 J	<2.5	<2.5	4.5 J	11	<13
	CTMW-01D-20170403	04/03/17	Baseline	<500	<50	<50	<50	<25	<25	22	<50	<50	<320	<50	<50	<50	<50	<50	<50	<50	<40	<250
	CTMW-01D-20170503	05/03/17	PME1	36	0.96 J	20	47	<0.25	<0.25	28	0.77 J	2.5	65	<0.50	44	5.1	3.5	<0.50	<0.50	29	<150	6.7 J
	CTMW-01D-20170516	05/16/17	PME2	12	<0.50	21	43	<0.25	<0.25 UJ	21	0.83 J	2.3 J-	55	1.2	58 J-	6.6 J-	2.4 J-	<0.50	<0.50	30	<250 R	9.5 J
	CTMW-01D-20170531	05/31/17	PME3	<50	<5.0	24	43	<2.5	<2.5	21	<5.0	<5.0	<80	<5.0	36	6.3 J	<5.0	<5.0	<5.0	43	<10	<25
	CTMW-01D-20170619	06/19/17	PME4	<50	<5.0	33	43	<2.5	<2.5	18	<5.0	<5.0	<80	<5.0	46	<5.0	<5.0	<5.0	<5.0	67	<10 R	<25
	CTMW-01D-20170720	07/20/17	PME5	<25	<2.5	39	47	<1.3	<1.3	15	<2.5	3.5 J	<40	<2.5	85	8.0 J	7.3 J	<2.5	<2.5	140	<5.0 R	32 J
CTMW-01D	CTMW-01D-20170720-FD	07/20/17	PIVIES	<20	<2.5	43	49	<1.3	<1.3	17	<2.5	3.2 J	-100	<2.5	00 180	7.0 J	6.0 J	<2.5	<2.5	220	<5.0	<13
	CTMW-01D-20170824	09/20/17	PIVIE0	<25	<2.5	32	51	<2.5	<2.5	12	<2.5	3.0.J	<00 83 J	<2.5	200	7.4.J	5.3 J	<2.5	<2.5	230	<5.0	<13
	CTMW-01D-20171003	10/03/17	PME8	6.2 J	0.54 J	29	53	<0.25	<0.25	13	0.50 J	0.58 J	<8.0	<0.50	200	2.7	4.8	<0.50	<0.50	220	7.5	3.7 J
	CTMW-01D-20180305	03/05/18	PME9	<25	<2.5	40	270	<1.3	<1.3	8.6	<2.5	<2.5	<40	<2.5	760	4.7 J	4.7 J	<2.5	<2.5	240	10	45 J
	CTMW-01D-20180305-FD	03/05/18	PME9	<25	<2.5	37	270	<1.3	<1.3	8.4	<2.5	2.6 J	<40	<2.5	740	4.6 J	<2.5	<2.5	<2.5	220	9.9 J	50 J
	CTMW-01D-20180621	06/21/18	PME10	<25	<2.5	45	400	<1.3	<1.3	7.4	<2.5	<2.5	<40	<2.5	1,000	4.4 J	4.1 J	<2.5	<2.5	290	9.5 J	<13
	CTMW-01D-20180621-FD	06/21/18	PME10	<25	<2.5	44	370	<1.3	<1.3	7.8	<2.5	<2.5	<40	<2.5	990	4.5 J	<2.5	<2.5	<2.5	310	9.8 J	<13
	CTMW-02S-20170405	04/05/17	Baseline	<50	<5.0	73	36	<2.5	<2.5	11	<5.0	<5.0	<800 R	<5.0	38	11 J	<5.0	<5.0	<5.0	31	<100 R	86 J
	CTMW-02S-20170504	05/04/17	PME1	2/	1.6 J	85	58	<0.25	<0.25	1.5	2.1	24	79	<0.50	290	11	1.6 J	<0.50	<0.50	200	<150	18 J
	CTMW-023-20170318	06/01/17	PIVIE2 PME3	87.1	<0.50	55 110	40	<0.25	<0.25	0.24	13	5.2	-8 0	<0.50	180	44	2.4	<0.50	<0.50	380	13	51.1
	CTMW-02S-20170620	06/20/17	PME4	<50	<5.0	850	58	<2.5	<2.5	0.13	<5.0	<5.0	2.000	<5.0	1.000	-1 19 J	<5.0	<5.0	<5.0	420	10 11 J	<25
CTMW-02S	CTMW-02S-20170719	07/19/17	PME5	<50	5.0 J	640	350	<2.5	<2.5	0.042	<5.0	<5.0	6,800	<5.0	2,400	9.0 J	<5.0	<5.0	<5.0	63	<10	<25
	Not Analyzed	08/24/17	PME6									Well Dr	y; Unable to	sample								
	CTMW-02S-20170920	09/20/17	PME7	<25	3.0 J	530	360	<1.3	<1.3	0.046	<2.5	24	3,500	<2.5	1,200	11	<2.5	<2.5	<2.5	25	9.8 J	14 J
	CTMW-02S-20171003	10/03/17	PME8	<10	2.5 J	340	430	<0.50	<0.50	0.037	<1.0	18	340	1.2 J	850	5.9	<1.0	<1.0	<1.0	4.1	6.4	22 J
	CTMW-02S-20180306	03/06/18	PME9	<25	13	1,300	250	<1.3	<1.3	0.037	<2.5	<2.5	140	<2.5	590	6.8 J	<2.5	<2.5	<2.5	2.5 J	8.2 J	<13
	Not Analyzed	06/22/18	PME10 Baseline	-5.0	-0.50	20	41	-0.25	-0.25	10	0 80 1	well Dr	y; Unable to	sample	E 9	27	421	-0.50	-0.50	20	-100 P	261
	CTMW-02D-20170404	04/04/17	Baseline	<3.0 64.1	<0.50	20	39	<0.25	<0.25	10	0.80 J	1.9 J	<80	<0.50	55	3.7	4.2 J-	<0.50	<0.50	39	<100 K	3.0 J
	CTMW-02D-20170503	05/03/17	PME1	30	1.0 J	36	44	<0.25	<0.25	20	0.81 J	1.8 J	64	<0.50	100	5.0	3.2	<0.50	<0.50	62	<150	9.3 J
	CTMW-02D-20170503-FD	05/03/17	PME1	40	0.91 J	38	47	<0.25	<0.25	22	0.84 J	1.9 J	81	< 0.50	110	5.0	3.5	< 0.50	< 0.50	65	<150	9.8 J
	CTMW-02D-20170517	05/17/17	PME2	<25	<2.5	27	47	<1.3	<1.3	19	<2.5	<2.5	82 J	<2.5	86	5.6 J	4.9 J	<2.5	<2.5	86	<200	14 J
	CTMW-02D-20170601	06/01/17	PME3	<50	<5.0	39	52	<2.5	<2.5	21	<5.0	<5.0	<80	<5.0	120	6.5 J	<5.0	<5.0	<5.0	94	<10	<25
	CTMW-02D-20170601-FD	06/01/17	PME3	<50	<5.0	39	52	<2.5	<2.5	20	<5.0	<5.0	<80	<5.0	140	5.5 J	<5.0	<5.0	<5.0	100	<10	<25
CTMW-02D	CTMW-02D-20170619	06/19/17	PME4	<50	<5.0	47	42	<2.5	<2.5	15	<5.0	<5.0	<80	<5.0	120	<5.0	<5.0	<5.0	<5.0	110	<10	<25
	CTMW-02D-20170619-FD	06/19/17	PME4	<50	<5.0	45	43	<2.5	<2.5	16	<5.0	6.6 J	<80	<5.0	120	5.4 J	5.4 J	<5.0	<5.0	110	<10	<25
	CTMW 02D 20170719	08/24/47	PME5	<50	<5.0	88	56	<2.5	<2.5	12	<5.0	<5.0	<80 UJ	<5.0	290	5.4 J	<5.0	<5.0	<5.0	150	<10 R	<25
	CTMW-02D-20170824	09/20/17	PME7	<00	<0.0	40 55	57	<2.0 <1 3	<2.0	13	<0.0	<0.0 3.0.1	<0U 60.1	<0.0	380	9.2 J 6.9 J	4.9.I	<0.0	<0.0	150	<10 K	33 J <13
	CTMW-02D-20171003	10/03/17	PME8	<25	<2.5	47	54	<1.3	<1.3	14	<2.5	16	<40	<2.5	320	7.3 J	3.4 J	<2.5	<2.5	140	<5.0 UJ	39 J
	CTMW-02D-20180305	03/05/18	PME9	<25	<2.5	59	110	<1.3	<1.3	15	<2.5	<2.5	<40	<2.5	510	2.8 J	4.0 J	<2.5	<2.5	170	15	<13
	CTMW-02D-20180621	06/21/18	PME10	<25	<2.5	59	80	1.4 J	<1.3	14	<2.5	<2.5	<40	<2.5	460	3.9 J	6.0 J	<2.5	<2.5	210	16	<13
											Dis	solved Meta	als by USEF (ug/L)	PA Method 6	6020							
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Well Location	Sample ID	Sample Date	Week	Aluminum	Antimony	Arsenic	3arium	3eryllium	Cadmium	Chromium	Cobalt	Copper	ron	-ead	Manganese	Vickel	Selenium	Silver	Thallium	Jranium	/anadium	Zinc
	CTMW-03S-20170405	04/05/17	Baseline	<50	<5.0	120	29	<2.5	<2.5	13	<5.0	<5.0	<800	<5.0	9.1 J	<5.0	<5.0	<5.0	<5.0	27	<100	<25
	CTMW-03S-20170505	05/05/17	PME1	26 J	<2.5	97	31	<1.3	<1.3	13	<2.5	<2.5	<8.0	<2.5	60	3.1 J	4.9 J	<2.5	<2.5	27	<100	<13
	CTMW-03S-20170517	05/17/17	PME2	30 J	<2.5	110	33	<1.3	<1.3	14	<2.5	<2.5	100	<2.5	68	3.3 J	3.9 J	<2.5	<2.5	31	<200	22 J
	CTMW-03S-20170601	06/01/17	PME3	<50	<5.0	140	45	<2.5	<2.5	17	<5.0	<5.0	<80	<5.0	87	<5.0	<5.0	<5.0	<5.0	43	<10	<25
CTMW-03S	CTMW-03S-20170620	06/20/17	PME4	63 J	<5.0	160	51	<2.5	<2.5	4.8	<5.0	<5.0	<80	<5.0	320	10 J	<5.0	<5.0	<5.0	110	<10	<25
	CTMW-03S-20170718	07/18/17	PME5	<25	<2.5	130	43	<1.3	<1.3	16	<2.5	<2.5	<40	<2.5	240	4.9 J	<2.5	<2.5	<2.5	47	<5.0	<13
	CTMW-03S-20170823	08/23/17	PME6	9.2 J	0.51 J	180	61	<0.25	<0.25	4.6	3.1	4.0	36	<0.50	520	7.2	3.0	0.56 J	<0.50	98	<1.0 R	8.1 J
	CTMW-03S-20170921	09/21/17	PME7	<25	<2.5	110	43	<1.3	<1.3	14	<2.5	4.9 J	<40	<2.5	330	4.6 J	8.6 J	57 J-	<2.5	44	<5.0 R	<13
	CTMW-03S-20171003	10/03/17	PME8	<25	<2.5	120	42	<1.3	<1.3	13	<2.5	29	<40	<2.5	320	6.5 J	3.9 J	<2.5	<2.5	45	41	31 J
	CTMW-03D-20170406	04/06/17	Baseline	110 J-	<5.0	100	32	<2.5	<2.5	16	<5.0	<5.0	<80	<5.0	36	<5.0	<5.0	<5.0	<5.0	29	<50 R	36 J
	CTMW-03D-20170505	05/05/17	PME1	<25	<2.5	98	30	<1.3	<1.3	14	<2.5	4.3 J	9.1 J	<2.5	24	<2.5	5.8 J	12	<2.5	32	<100 R	<13
	CTMW-03D-20170517	05/17/17	PME2	<25	<2.5	110	31	<1.3	<1.3	15	<2.5	3.1 J	42 J	<2.5	22	3.9 J	5.3 J	<2.5	<2.5	36	<200 R	44 J
	CTMW-03D-20170601	06/01/17	PME3	<50	<5.0	120 J+	36	<2.5	<2.5	16	<5.0	<5.0	<80	<5.0	26	5.7 J	<5.0	<5.0	<5.0	40	<10 R	<25
CTMW-03D	CTMW-03D-20170620	06/20/17	PME4	<50	<5.0	100	29	<2.5	<2.5	14	<5.0	<5.0	<80	<5.0	22	<5.0	<5.0	<5.0	<5.0	46	<10	<25
	CTMW-03D-20170719	07/19/17	PME5	<50	<5.0	110	31	<2.5	<2.5	15	<5.0	<5.0	<80	<5.0	25	<5.0	5.7 J	<5.0	<5.0	52	<10	<25
	CTMW-03D-20170823	08/23/17	PME6	<25	<2.5	110	31	<1.3	<1.3	14	<2.5	<2.5	89 J	<2.5	23	3.8 J	5.3 J	<2.5	<2.5	63	<5.0	<13
	CTMW-03D-20170921	09/21/17	PME7	<25	<2.5	100	29	<1.3	<1.3	13	<2.5	<2.5	<40	<2.5	25	3.1 J	6.0 J	<2.5	<2.5	49	<5.0	<13
	CTMW-03D-20171003	10/03/17	PME8	<25	<2.5	92	27	<1.3	<1.3	13	<2.5	18	<40	<2.5	22	3.3 J	3.4 J	<2.5	<2.5	48	<5.0 UJ	29 J
	CTMW-04S-20170405	04/05/17	Baseline	<50	<5.0	65	33	<2.5	<2.5	9.9	<5.0	<5.0	<800	<5.0	38	7.2 J	<5.0	<5.0	<5.0	34	<100	<25
	CTMW-04S-20170504	05/04/17	PME1	41	0.89 J	120	35	<0.25	<0.25	6	1.2	1.5 J	100	<0.50	150	4.3	3.0	<0.50	<0.50	130	<150	5.5 J
	CTMW-04S-20170517	05/17/17	PME2	20	<0.50	130	44	<0.25	<0.25	0.55	2.0	2.3	29	<0.50	320	6.3	2.7	<0.50	<0.50	260	17	7.1 J
	CTMW-04S-20170602	06/02/17	PME3	11	<0.50	170	40	<0.25	<0.25	0.71	1.6	3.1	54	<0.50	290	6.5	2.0	<0.50	<0.50	230	9.6	11 J
	CTMW-04S-20170620	06/20/17	PME4	<50	<5.0	130	43	<2.5	<2.5	0.18	5.1 J	<5.0	140 J	<5.0	460	130	<5.0	<5.0	<5.0	320	16 J	26 J
CTMW-04S	CTMW-04S-20170718	07/18/17	PME5	<25	<2.5	510	57	<1.3	<1.3	0.2	5.3	<2.5	170	<2.5	1,200	53	<2.5	<2.5	<2.5	480	6.4 J	<13
	CTMW-04S-20170823	08/23/17	PME6	16	2.1	440	99	<0.25	<0.25	0.12	1.5	1.6 J	460	<0.50	1,800	7.6	1.4 J	<0.50	<0.50	140	4.2	16 J
	CTMW-04S-20170921	09/21/17	PME7	26	1.3 J	370	100	<0.50	<0.50	0.086	<1.0	1.9 J	530	<1.0	1,400	160	1.3 J	<1.0	<1.0	40	3.8 J	5.0 J
	CTMW-04S-20171003	10/03/17	PME8	<25	<2.5	150	200	<1.3	<1.3	0.07	<2.5	13	62 J	<2.5	2,000	2.5 J	<2.5	<2.5	<2.5	190	<5.0	21 J
	CTMW-04S-20180307	03/07/18	PME9	20 J+	0.93 J	66	130	<0.25	<0.25	2	2.9	1.0 J	41	<0.50 UJ	930	6.2 J-	3.9	<0.50	0.99 J	150	42	7.4 J
	CTMW-04S-20180621	06/21/18	PME10	37 J	3.0 J	61	100	<1.3	<1.3	6	3.5 J	<2.5	<40	<2.5	1,600	5.5 J	8.1 J	<2.5	<2.5	140	55	<13
	CTMW-04D-20170405	04/05/17	Baseline	<50	<5.0	72	39	<2.5	<2.5	18	<5.0	<5.0	<800	<5.0	16	<5.0	<5.0	<5.0	<5.0	32	<100	<25
	CTMW-04D-20170504	05/04/17	PME1	28	<0.50	78	45	<0.25	<0.25	22	0.50 J	1.5 J	52	<0.50	15	3.1	3.3 J-	<0.50	<0.50	33	<150 R	17 J
	CTMW-04D-20170517	05/17/17	PME2	<25	<2.5	92	41	<1.3	<1.3	19	<2.5	<2.5	71 J	<2.5	11	3.5 J	<2.5	<2.5	<2.5	33	<250	<13
	CTMW-04D-20170517-FD	05/17/17	PME2	<25	<2.5	95	43	<1.3	<1.3	20	<2.5	<2.5	65 J	<2.5	12	3.8 J	4.0 J	<2.5	<2.5	35	<250	<13
	CTMW-04D-20170602	06/02/17	PME3	<50	<5.0	110	49	<2.5	<2.5	22	<5.0	<5.0	<80	<5.0	22	5.8 J	<5.0	<5.0	<5.0	50	<10	<25
	CTMW-04D-20170621	06/21/17	PME4	<50	<5.0	80	40	<2.5	<2.5	18	<5.0	<5.0	<80	<5.0	11	<5.0	<5.0	<5.0	<5.0	32	<10	<25
CTMW-04D	CTMW-04D-20170718	07/18/17	PME5	<25	<2.5	120	51	<1.3	<1.3	23	<2.5	<2.5	<40	<2.5	14	4.8 J	3.4 J	<2.5	<2.5	42	<5.0	<13
	CTMW-04D-20170823	08/23/17	PME6	<25	<2.5	93	41	<1.3	<1.3	18	<2.5	<2.5	100	<2.5	14 J	4.5 J	5.6 J	<2.5	<2.5	34	<5.0	<13
	CTMW-04D-20170823-FD	08/23/17	PME6	<25	<2.5	90	40	<1.3	<1.3	17	<2.5	<2.5	100	<2.5	21 J	4.7 J	5.1 J	<2.5	<2.5	32	<5.0	<13
	CTMW-04D-20170920	09/20/17	PME7	<25	<2.5	110	40	<1.3	<1.3	17	<2.5	<2.5	90 J	<2.5	11	4.8 J	5.2 J	<2.5	<2.5	43	<5.0	<13
	CTMW-04D-20171003	10/03/17	PME8	55	<2.5	110	40	<1.3	<1.3	17	<2.5	8.6 J	<40	<2.5	9.4	4.0 J	3.2 J	<2.5	<2.5	45	<5.0 UJ	19 J
	CTMW-04D-20180307	03/07/18	PME9	30 J	<2.5	96	63	<1.3	<1.3	13	<2.5	<2.5	<40	<2.5	27	<2.5	4.3 J	<2.5	<2.5	60	17	<13
	CTMW-04D-20180621	06/21/18	PME10	<25	<2.5	110	56	<1.3	<1.3	15	<2.5	2.5 J	65 J	<2.5	19	2.6 J	5.1 J	<2.5	<2.5	73	22	40 J

											Dis	solved Meta	als by USEF (ug/L)	PA Method 6	6020							
Well Location	Sample ID	Sample Date	Week	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
	CTMW-05S-20170621	06/21/17	PME4	<50	<5.0	88	50	<2.5	<2.5	4.9	<5.0	<5.0	<80	<5.0	190	<5.0	<5.0	<5.0	<5.0	170	<10	<25
	CTMW-05S-20170717	07/17/17	PME5	<25	<2.5	130	54	<1.3	<1.3	3	<2.5	<2.5	<40	<2.5	260	5.5 J	<2.5	<2.5	<2.5	250	<5.0	<13
CTMW-05S	CTMW-05S-20170822	08/22/17	PME6	120	<0.50	110	56	<0.25	<0.25	3.2	1.2	1.9 J	80	<0.50	210	4.1	4.1	<0.50	<0.50	160	<1.0	5.5 J
	CTMW-05S-20170919	09/19/17	PME7	<10	<1.0	140	53	<0.50	<1.3	2.1	1.3 J	2.8 J	<16	<1.0	230	4.9	4.2	<1.0	<1.0	170	<10	9.3 J
	CTMW-05S-20171004	10/04/17	PME8	530	<0.50	110	49	<0.25	<0.25	6.5	0.52 J	85	17 J	8.0	190	2.6	3.3	<0.50	<0.50	110	20	74
	CTMW-05D-20170621	06/21/17	PME4	<50	<5.0	85	34	<2.5	<2.5	14	<5.0	<5.0	<80	<5.0	16	<5.0	<5.0	<5.0	<5.0	40	<10	<25
	CTMW-05D-20170621-FD	06/21/17	PME4	<50	<5.0	94	33	<2.5	<2.5	14	<5.0	<5.0	<80	<5.0	19	<5.0	18 J	<5.0	<5.0	37	<10	<25
	CTMW-05D-20170718	07/18/17	PME5	<25	<2.5	130	46	<1.3	<1.3	19	<2.5	<2.5	<40	<2.5	21	3.5 J	6.1 J	<2.5	<2.5	57 J+	<5.0 R	<13
CTWW-05D	CTMW-05D-20170822	08/22/17	PME6	92 J	<5.0	110	34	<2.5	<2.5	14	<5.0	<5.0	130 J	<5.0	12	5.2 J	6.6 J	<5.0	<5.0	52	<10	<25
	CTMW-05D-20170919	09/19/17	PME7	<25	<2.5	120	36	<1.3	<5.0	14	<2.5	<2.5	<40	<2.5	21	3.9 J	5.6 J	<2.5	<2.5	56	<100	<13
	CTMW-05D-20171004	10/04/17	PME8	<25	3.6 J	110	34	<1.3	<1.3	13	<2.5	16 J-	<40	<2.5	17	<2.5	5.2 J	<2.5	<2.5	60	21	25 J
	CTMW-06S-20170621	06/21/17	PME4	56 J	<5.0	190	210	<2.5	<2.5	0.16	<5.0	<5.0	110 J	<5.0	1,600	15 J	8.3 J	<5.0	<5.0	450	<10	<25
	CTMW-06S-20170717	07/17/17	PME5	<25	4.0 J	660	1,100	<1.3	<1.3	0.12	3.1 J	<2.5	<40	<2.5	4,300	34	<2.5	<2.5	<2.5	370	11	<13
	CTMW-06S-20170822	08/22/17	PME6	58	1.6 J	120	1,400	<0.25	<0.25	0.062	3.9	1.7 J	410	<0.50	4,700	11	1.2 J	<0.50	<0.50	19	2.7	5.9 J
CTMW-06S	CTMW-06S-20170919	09/19/17	PME7	43	1.9 J	190	1,200	<0.50	<0.50	0.053	1.3 J	2.9 J	210	<1.0	5,400	8.2	1.1 J	<1.0	<1.0	1.4 J	2.0 J	16 J
	CTMW-06S-20171004	10/04/17	PME8	7.2 J	2.1	210	920	<0.25	<0.25	0.047	<0.50	<0.50	100	<0.50	5,600	4.1	0.82 J	<0.50	<0.50	1.3	1.4 J	3.3 J
	CTMW-06S-20180306	03/06/18	PME9	<25	<2.5	430	510	<1.3	<1.3	0.027	<2.5	<2.5	89 J	<2.5	1,500	3.3 J	<2.5	<2.5	<2.5	5.6	<5.0	<13
	CTMW-06S-20180622	06/22/18	PME10	27 J+	1.3 J	300	500	<0.25	0.25 J	0.035	<0.50	0.75 J	66	<0.50	630	2.8	0.59 J	<0.50	<0.50	13	4.6	<2.5
	CTMW-06D-20170622	06/22/17	PME4	<10	<1.0	74	37	<0.50	<0.50	18	<1.0	1.9 J	96 J	<1.0	50	3.6 J	3.4 J	<1.0	<1.0	74	<10	7.2 J
	CTMW-06D-20170717	07/17/17	PME5	<25	<2.5	110	46	<1.3	<1.3	22	<2.5	<2.5	<40	<2.5	61	4.7 J	2.9 J	<2.5	<2.5	110	<5.0	<13
	CTMW-06D-20170717-FD	07/17/17	PME5	<25	<2.5	110	46	<1.3	<1.3	23	<2.5	3.8 J	<40	<2.5	55	5.4 J	3.8 J	<2.5	<2.5	110	<5.0	<13
	CTMW-06D-20170822	08/22/17	PME6	<50	<5.0	90	40	<2.5	<2.5	15	<5.0	<5.0	<80	<5.0	92	8.0 J	7.4 J	<5.0	<5.0	130	<10 R	<25
	CTMW-06D-20170919	09/19/17	PME7	<25	<2.5	99	46	<1.3	<5.0	13	<2.5	<2.5	<40	<2.5	140	5.8 J	11	36 J	<2.5	160	<100 R	<13
CTWW-00D	CTMW-06D-20170919-FD	09/19/17	PME7	<25	<2.5	100	46	<1.3	<5.0	13	<2.5	<2.5	<40	<2.5	140	5.7 J	5.1 J	<2.5 UJ	<2.5	160	<100 R	<13
	CTMW-06D-20171004	10/04/17	PME8	<25	<2.5	110	64	<1.3	<1.3	12	<2.5	<2.5	<40	<2.5	180	2.7 J	4.1 J	<2.5	<2.5	170	19	<13
	CTMW-06D-20171004-FD	10/04/17	PME8	35 J	<2.5	120	64	<1.3	<1.3	12	<2.5	<2.5	<40	<2.5	180	2.6 J	4.3 J	<2.5	<2.5	180	20	<13
	CTMW-06D-20180307	03/07/18	PME9	23 J+	<0.50	94	310	<0.25	<0.25	4.6	0.55 J	<0.50	33	<0.50	280	3.1	2.3	<0.50	<0.50	160	10	5.0 J
	CTMW-06D-20180622	06/22/18	PME10	46 J+	<0.50	77	340	<0.25	<0.25	2.2	0.74 J	0.63 J	29	<0.50	320	3.8	2.1	<0.50	<0.50	270	10	<2.5
	Not Analyzed	10/09/17	PME8									Well Dr	; Unable to	sample								
CTMW-07S	CMTW-07S-20180306	03/06/18	PME9	<25	<2.5	120	30	<1.3	<1.3	14	<2.5	3.6 J	<40	<2.5	61	<2.5	5.5 J	38 J-	<2.5	47	44	40 J
	Not Analyzed	06/22/18	PME10					•		•	•	Well Dr	; Unable to	sample						•		h
	CTMW-07D-20171009	10/09/17	PME8	30	1.1 J	14	12	<0.25	<0.25	0.023	<0.50	0.55 J	20 J+	<0.50	5.9	0.68 J	2.1	<0.50	<0.50	5.0	7.1	2.5 J
CTMW-07D	CTMW-07D-20180306	03/06/18	PME9	<25	<2.5	<2.5	63	<1.3	<1.3	0.027	<2.5	5.2 J	<40	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<13
	CTMW-07D-20180622	06/22/18	PME10	62 J+	<0.50	16	17	<0.25	<0.25	0.014	<0.50	<0.50	<8.0	<0.50	10	<0.50	1.3 J	<0.50	<0.50	7.1	9.8	<2.5

Notes:

USEPA United States Environmental Protection Agency

ug/L Microgram per liter

The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

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.

J- The result is an estimated quantity, but the result may be biased low.

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.

Not Analyzed

													Detected	ا VOCs by U (ug	ISEPA Meth g/L)	od 8260B									
Well Location	Sample ID	Sample Date	Week	Acetone	Benzene	Bromodichloro- methane	Bromoform	2-Butanone (MEK)	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,1- Dichloroethene	1,2- Dichlorobenzene	1,3- Dichlorobenzene	1,4- Dichlorobenzene	Hexachloro- butadiene	2-Hexanone	Methylene Chloride	Methyl-t-Butyl Ether (MTBE)	Naphthalene	p- Isopropyltoluene	Tetrachloro- ethene	1,2,3- Trichlorobenzene	1,2,4- Trichlorobenzene	Trichlor o- ethene
CTIW-01S	CTIW-01S-20170405	04/05/17	Baseline	<400	<10	<10	<16	<100	<10	<10	950	<10	<10	<10	<10	<10	<100	<35	<10	<16	<10	<10	<16	<16	<10
CTIW-01D	CTIW-01D-20170406	04/06/17	Baseline	2,400	<6.3	<6.3	<10	1,200	<6.3	<6.3	1,100	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
CTIW-02S	CTIW-02S-20170403	04/03/17	Baseline	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	960	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
CTIW-02D	CTIW-02D-20170404	04/04/17	Baseline	650	<6.3	<6.3	<10	<63	<6.3	<6.3	1,400	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
CTIW-03S	CTIW-03S-20170404	04/04/17	Baseline	<100	<2.5	<2.5	<4.0	<25	<2.5	<2.5	/80	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<8.8	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
CTIW-03D	CTIW-03D-20170404	04/04/17	Baseline	<200	<0.3	<0.3	<10	<03	<0.5	<0.5	1,700	<0.3	10	<0.5	7.03	<0.3	<03	<22	<0.5	<10	<0.5	<0.5	<10	<10	<0.3
	CTMW-015-20170404	04/04/17	PMF1	<100 2 800	<2.5	<2.5	<4.0	<20 360	<2.5	<2.5	420	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<8.8	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-01S-20170516	05/16/17	PME2	<1.000	<25	<25	<40	1.200	<25	<25	340	<25	<25	<25	<25	<25	<250	<88	<25	<40	<25	<25	<40	<40	<25
	CTMW-01S-20170531	05/31/17	PME3	<250	<6.3	<6.3	<10	1,300	<6.3	<6.3	230	<6.3	<6.3	<6.3	<6.3	<6.3	<63	45 J	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-01S-20170619	06/19/17	PME4	300 J	<6.3	<6.3	<10	3,500	<6.3	<6.3	140	<6.3	<6.3	<6.3	<6.3	<6.3	<63	27 J	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
CTMW-01S	CTMW-01S-20170720	07/20/17	PME5	<400	<10	<10	<16	2,400	<10	<10	130	<10	<10	<10	<10	<10	<100	<35	<10	<16	<10	<10	<16	<16	<10
	CTMW-01S-20170824	08/24/17	PME6	630 J	<13	<13	<20	6,400	<13	<13	86	<13	<13	<13	<13	<13	<130	78 J	<13	<20	<13	<13	<20	<20	<13
	CTMW-01S-20170920	09/20/17	PME7	750 J	<13	<13	<20	7,200	<13	<13	19 J	<13	<13	<13	<13	<13	<130	<44	<13	<20	<13	<13	<20	<20	<13
	CTMW-01S-20171003	10/03/17	PME8	<1,000 R	<25 R	<25 R	<40 R	11,000 J-	<25 R	<25 R	<25 R	35 J	<25 R	<25 R	<25 R	<25 R	<250 R	140 J	<25 R	<40 R	<25 R	<25 R	<40 R	<40 R	<25 R
	CTMW-015-20180305	06/21/18	PIVIE9 PME10	54 1	0.44 J	<0.25	<0.40	6,000	<0.25	<0.25	-0.25.111	<0.25	0.45 J	0.35	0.36	<0.25	4.3 J	1.4 J	0.30 J	<0.40	0.02	<0.25	1.0	0.49 J	<0.25
	CTMW-01D-20170403	04/03/17	Baseline	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1.800	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-01D-20170503	05/03/17	PME1	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,700	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-01D-20170516	05/16/17	PME2	<400	<10	<10	<16	<100	<10	<10	1,700	<10	<10	<10	<10	<10	<100	<35	<10	<16	<10	<10	<16	<16	<10
E	CTMW-01D-20170531	05/31/17	PME3	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,800	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-01D-20170619	06/19/17	PME4	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,600	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-01D-20170720	07/20/17	PME5	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,700	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
CTMW-01D	CTMW-01D-20170720-FD	07/20/17	PME5	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,700	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-01D-20170824	08/24/17	PIVIE0	320 J 440	<5.0	<5.0	<8.0	360	<5.0	<5.0	1,500	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-01D-20171003	10/03/17	PME8	560 J	<10	<10	<16	440	<10	<10	1,300	<10	<10	<10	<10	<10	<100	<35	<10	<16	<10	<10	<16	<16	<10
	CTMW-01D-20180305	03/05/18	PME9	640	<2.5	<2.5	<4.0	730	<2.5	<2.5	750	<2.5	<2.5	<2.5	<2.5	<2.5	<25	13 J	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-01D-20180305-FD	03/05/18	PME9	650	<2.5	<2.5	<4.0	650	<2.5	<2.5	720	<2.5	<2.5	<2.5	<2.5	<2.5	<25	12 J	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-01D-20180621	06/21/18	PME10	440	<5.0	<5.0	<8.0	940 J	<5.0	<5.0	1,300	<5.0	<5.0	<5.0	<5.0	<5.0	<50	27 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-01D-20180621-FD	06/21/18	PME10	510 J	<5.0 UJ	<5.0 UJ	<8.0 UJ	1,300 J	<5.0 UJ	<5.0 UJ	1,500 J	<5.0 UJ	<5.0 UJ	<5.0 UJ	<5.0 UJ	<5.0 UJ	<50 UJ	36 J	<5.0 UJ	<8.0 UJ	<5.0 UJ	<5.0 UJ	<8.0 UJ	<8.0 UJ	<5.0 UJ
	CTMW-02S-20170405	04/05/17	Baseline	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	950	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-02S-20170504	05/04/17	PME1 PME2	420 <100	0.37 J	<0.25	<0.40	-25	<0.25	<0.25	620	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<0.88	0.87	<0.40	<0.25	0.28 J	0.57 J	<0.40	1.2
	CTMW-02S-20170510	06/01/17	PME3	47 J	<0.63	<0.63	<1.0	<6.3	<0.63	<0.63	520	<0.63	<0.63	<0.63	<0.63	<0.63	<6.3	4.3 J	<0.63	<1.0	<0.63	<0.63	<1.0	<1.0	<0.63
	CTMW-02S-20170620	06/20/17	PME4	260	1.0 J	<0.63	<1.0	2,000	< 0.63	<0.63	210	<0.63	<0.63	<0.63	< 0.63	<0.63	<6.3	24	< 0.63	<1.0	<0.63	< 0.63	3.0	<1.0	<0.63
CTMW-02S	CTMW-02S-20170719	07/19/17	PME5	<250	<6.3	<6.3	<10	1,600	<6.3	<6.3	180	<6.3	<6.3	<6.3	<6.3	<6.3	<63	41 J	<6.3	12 J	<6.3	<6.3	<10	<10	<6.3
	Not Analyzed	08/24/17	PME6		_	-		-					W	ell Dry; Una	able to sam	ole			-	-			-		
	CTMW-02S-20170920	09/20/17	PME7	<250	<6.3	<6.3	<10	1,500	<6.3	<6.3	78	<6.3	<6.3	<6.3	<6.3	<6.3	<63	25 J	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-02S-20171003	10/03/17	PME8	<200 R	<5.0 R	<5.0 R	<8.0 R	1,200 J-	<5.0 R	<5.0 R	13 J-	<5.0 R	<5.0 R	<5.0 R	<5.0 R	<5.0 R	<50 R	27 J	<5.0 R	<8.0 R	<5.0 R	<5.0 R	<8.0 R	<8.0 R	<5.0 R
	CTMW-02S-20180306	03/06/18	PME9	<10	0.66	<0.25	<0.40	6.9	<0.25	<0.25	1.9	<0.25	0.59	0.28 J	0.36 J	<0.25	<2.5	<0.88	0.30 J	<0.40	0.60	<0.25	3.8	0.43 J	<0.25
	CTMW-02D-20170404	04/04/17	Baseline	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1.500	<6.3	9.4.I	<6.3		<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-02D-20170404-FD	04/04/17	Baseline	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,500	<6.3	9.4 J	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-02D-20170503	05/03/17	PME1	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,500	<6.3	13	<6.3	6.5 J	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-02D-20170503-FD	05/03/17	PME1	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,500	<6.3	14	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-02D-20170517	05/17/17	PME2	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,300	<5.0	17	<5.0	6.7 J	<5.0	<50	29 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-02D-20170601	06/01/17	PME3	<400	<10	<10	<16	<100	<10	<10	1,900	<10	19 J	<10	<10	<10	<100	38 J	<10	<16	<10	<10	<16	<16	<10
СТМW-02D	CTMW-02D-20170601-FD	06/01/17	PME3	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,800	<5.0	15	<5.0	7.2 J	<5.0	<50	22 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-02D-20170619	06/19/17	PME4	<400	<10	<10	<16	<100	<10	<10	1,500	<10	16 J	<10	<10	<10	<100	<35	<10	<16	<10	<10	<16	<16	<10
	CTMW-02D-20170019-FD	07/19/17	PME5	<200	<0.0	<0.0	<0.0	02 J 290	<0.0	<0.0	1,600	<0.0	12.1	<0.0	7.9J <63	<0.0	<00	<10	<0.0	<0.0 <10	<0.0	<0.0	<0.U <10	<0.U <10	<0.0
	CTMW-02D-20170824	08/24/17	PME6	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,400	<5.0	18	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-02D-20170920	09/20/17	PME7	<100	<2.5	<2.5	<4.0	<25	<2.5	<2.5	1,500	<2.5	15	<2.5	6.4	<2.5	<25	<8.8	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-02D-20171003	10/03/17	PME8	<400	<10	<10	<16	<100	<10	<10	1,500	<10	22	<10	10 J	<10	<100	<35	<10	<16	<10	<10	<16	<16	<10
	CTMW-02D-20180305	03/05/18	PME9	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	990	<5.0	7.5 J	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-02D-20180621	06/21/18	PME10	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,600	<5.0	13	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0

Well Location													Detected	VOCs by U (uç	ISEPA Meth g/L)	od 8260B									
Well Location	Sample ID	Sample Date	Week	Acetone	Benzene	Bromodichloro- methane	Bromoform	2-Butanone (MEK)	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,1- Dichloroethene	1,2- Dichlorobenzene	1,3- Dichlorobenzene	1,4- Dichlorobenzene	Hexachloro- butadiene	2-Hexanone	Methylene Chloride	Methyl-t-Butyl Ether (MTBE)	Naphthalene	p- Isopropyltoluene	Tetrachloro- ethene	1,2,3- Trichlorobenzene	1,2,4- Trichlorobenzene	Trichloro- ethene
	CTMW-03S-20170405	04/05/17	Baseline	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	930	<5.0	<5.0	<5.0	<5.0	<5.0	<50	21 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-03S-20170505	05/05/17	PME1	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,100	<5.0	<5.0	<5.0	<5.0	<5.0	<50	18 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-03S-20170517	05/17/17	PME2	<100	<2.5	<2.5	<4.0	<25	<2.5	<2.5	970	<2.5	<2.5	<2.5	<2.5	<2.5	<25	17 J	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-03S-20170601	06/01/17	PME3	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,200	<5.0	<5.0	<5.0	<5.0	<5.0	<50	18 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
CTMW-03S	CTMW-03S-20170620	06/20/17	PME4	250	<2.5	<2.5	<4.0	690	<2.5	<2.5	920	<2.5	<2.5	<2.5	<2.5	<2.5	<25	16 J	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-03S-20170718	07/18/17	PME5	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,300	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-03S-20170823	08/23/17	PME6	<100	<2.5	<2.5	<4.0	280	<2.5	<2.5	900	<2.5	<2.5	<2.5	<2.5	<2.5	<25	19 J	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-03S-20170921	09/21/17	PME7	<50	<1.3	<1.3	<2.0	<13	<1.3	<1.3	510	<1.3	<1.3	<1.3	<1.3	<1.3	<13	<4.4	<1.3	<2.0	<1.3	<1.3	<2.0	<2.0	<1.3
	CTMW-03S-20171003	10/03/17	PME8	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	700	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-03D-20170406	04/06/17	Baseline	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	880	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-03D-20170505	05/05/17	PME1	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,300	<5.0	<5.0	<5.0	<5.0	<5.0	<50	19 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-03D-20170517	05/17/17	PME2	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,100	<5.0	<5.0	<5.0	<5.0	<5.0	<50	26 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-03D-20170601	06/01/17	PME3	<100	<2.5	<2.5	<4.0	<25	<2.5	<2.5	1,400	<2.5	<2.5	<2.5	<2.5	<2.5	<25	11 J	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	2.5 J
CTMW-03D	CTMW-03D-20170620	06/20/17	PME4	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,200	<5.0	<5.0	<5.0	<5.0	<5.0	<50	29 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-03D-20170719	07/19/17	PME5	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,300	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-03D-20170823	08/23/17	PME6	<50	<1.3	<1.3	<2.0	<13	<1.3	<1.3	1,100	<1.3	<1.3	<1.3	<1.3	<1.3	<13	<4.4	<1.3	<2.0	<1.3	<1.3	<2.0	<2.0	3.0
	CTMW-03D-20170921	09/21/17	PME7	<10	<0.25	<0.25	<0.40	<2.5	0.58	<0.25	1,100	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<0.88	1.2	<0.40	<0.25	0.37 J	<0.40	<0.40	2.9
	CTMW-03D-20171003	10/03/17	PME8	<400	<10	<10	<16	<100	<10	<10	1,000	<10	<10	<10	<10	<10	<100	<35	<10	<16	<10	<10	<16	<16	<10
	CTMW-04S-20170405	04/05/17	Baseline	<10	<0.25	<0.25	0.82 J	<2.5	0.41 J	<0.25	720	<0.25	<0.25	<0.25	<0.25	0.58	<2.5	<0.88	0.86	<0.40	<0.25	0.26 J	<0.40	<0.40	2.0
	CTMW-04S-20170504	05/04/17	PME1	220	<2.5	<2.5	<4.0	<25	<2.5	<2.5	810	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<8.8	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-04S-20170517	05/17/17	PME2	1,800	<2.5	<2.5	<4.0	1,000	<2.5	<2.5	640	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<8.8	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-04S-20170602	06/02/17	PME3	860	<2.5	<2.5	<4.0	370	<2.5	<2.5	610	<2.5	<2.5	<2.5	<2.5	<2.5	<25	9.7 J	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-04S-20170620	06/20/17	PME4	1,900	0.46 J	<0.25	<0.40	670	<0.25	<0.25	590	<0.25	<0.25	<0.25	<0.25	0.36 J	3.3 J	2.6	0.81	<0.40	<0.25	<0.25	<0.40	<0.40	0.92
CTMW-04S	CTMW-04S-20170718	07/18/17	PME5	920	<2.5	<2.5	<4.0	650	<2.5	<2.5	620	<2.5	<2.5	<2.5	<2.5	<2.5	<25	15 J	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-04S-20170823	08/23/17	PME6	1,200	<1.3	<1.3	<2.0	1,300	<1.3	<1.3	520	<1.3	<1.3	<1.3	<1.3	<1.3	<13	24	<1.3	<2.0	<1.3	<1.3	<2.0	<2.0	<1.3
	CTMW-04S-20170921	09/21/17	PME7	770	<0.25	<0.25	<0.40	1,900	<0.25	<0.25	67	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	1.7 J	0.49 J	<0.40	<0.25	<0.25	<0.40	<0.40	<0.25
	CTMW-04S-20171003	10/03/17	PME8	89	<0.25	<0.25	<0.40	140	<0.25	<0.25	48	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	4.3	0.89	<0.40	<0.25	<0.25	<0.40	<0.40	<0.25
	CTMW-04S-20180307	03/07/18	PME9	<100	<2.5	<2.5	<4.0	<25	<2.5	<2.5	580	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<8.8	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-04S-20180621	06/21/18	PME10	<50	<1.3	<1.3	<2.0	<13	<1.3	<1.3	570	<1.3	<1.3	<1.3	<1.3	<1.3	<13	<4.4	<1.3	<2.0	<1.3	<1.3	<2.0	<2.0	<1.3
	CTMW-04D-20170405	04/05/17	Baseline	<50	<1.3	<1.3	<2.0	<13	<1.3	<1.3	1,600	<1.3	5.1	<1.3	3.7	<1.3	<13	<4.4	<1.3	<2.0	<1.3	<1.3	<2.0	<2.0	<1.3
	CTMW-04D-20170504	05/04/17	PME1	<10	<0.25	<0.25	0.81 J	<2.5	0.46 J	<0.25	1,400	<0.25	2.8	0.34 J	1.9	<0.25	<2.5	<0.88	0.85	<0.40	<0.25	0.36 J	<0.40	<0.40	1.1
	CTMW-04D-20170517	05/17/17	PME2	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,600	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-04D-20170517-FD	05/17/17	PME2	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,600	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-04D-20170602	06/02/17	PME3	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,600	<5.0	<5.0	<5.0	<5.0	<5.0	<50	24 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-04D-20170621	06/21/17	PME4	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,600	<6.3	<6.3	<6.3	<6.3	<6.3	<63	34 J	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
CTMW-04D	CTMW-04D-20170718	07/18/17	PME5	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,700	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-04D-20170823	08/23/17	PME6	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,700	<5.0	<5.0	<5.0	<5.0	<5.0	<50	24 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-04D-20170823-FD	08/23/17	PME6	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,700	<5.0	<5.0	<5.0	<5.0	<5.0	<50	27 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-04D-20170920	09/20/17	PME7	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,400	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-04D-20171003	10/03/17	PME8	<400	<10	<10	<16	<100	<10	<10	1,300	<10	<10	<10	<10	<10	<100	<35	<10	<16	<10	<10	<16	<16	<10
	CTMW-04D-20180307	03/07/18	PME9	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	960	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-04D-20180621	06/21/18	PME10	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,300	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0

													Detected	l VOCs by L (u	JSEPA Meth g/L)	od 8260B									
Well Location	Sample ID	Sample Date	Week	Acetone	Benzene	Bromodichloro- methane	Bromoform	2-Butanone (MEK)	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,1- Dichloroethene	1,2- Dichlorobenzene	1,3- Dichlorobenzene	1,4- Dichlorobenzene	Hexachloro- butadiene	2-Hexanone	Methylene Chloride	Methyl-t-Butyl Ether (MTBE)	Naphthalene	p- Isopropyltoluene	Tetrachloro- ethene	1,2,3- Trichlorobenzene	1,2,4- Trichlorobenzene	Trichloro- ethene
	CTMW-05S-20170621	06/21/17	PME4	<100	<2.5	<2.5	<4.0	<25	<2.5	<2.5	960	<2.5	<2.5	<2.5	<2.5	<2.5	<25	14 J	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-05S-20170717	07/17/17	PME5	<100	<2.5	<2.5	<4.0	<25	<2.5	<2.5	1,100	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<8.8	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
CTMW-05S	CTMW-05S-20170822	08/22/17	PME6	<100	<2.5	<2.5	<4.0	<25	<2.5	<2.5	750	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<8.8	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-05S-20170919	09/19/17	PME7	<50	<1.3	<1.3	<2.0	<13	<1.3	<1.3	410	<1.3	<1.3	<1.3	<1.3	<1.3	<13	<4.4	<1.3	<2.0	<1.3	<1.3	<2.0	<2.0	<1.3
	CTMW-05S-20171004	10/04/17	PME8	<100	<2.5	<2.5	<4.0	<25	<2.5	<2.5	630	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<8.8	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-05D-20170621	06/21/17	PME4	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,300	<5.0	<5.0	<5.0	<5.0	<5.0	<50	30 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-05D-20170621-FD	06/21/17	PME4	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,300	<5.0	<5.0	<5.0	<5.0	<5.0	<50	35 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-05D-20170718	07/18/17	PME5	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,300	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
CTWW-05D	CTMW-05D-20170822	08/22/17	PME6	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,200	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-05D-20170919	09/19/17	PME7	<100	<2.5	<2.5	<4.0	<25	<2.5	<2.5	630	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<8.8	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-05D-20171004	10/04/17	PME8	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,000	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-06S-20170621	06/21/17	PME4	1,700	<2.5	<2.5	<4.0	730	<2.5	<2.5	670	<2.5	<2.5	<2.5	<2.5	<2.5	<25	18 J	<2.5	<4.0	<2.5	<2.5	<4.0	<4.0	<2.5
	CTMW-06S-20170717	07/17/17	PME5	1,400	<10	<10	<16	2,800	<10	<10	610	<10	<10	<10	<10	<10	<100	<35	<10	<16	<10	<10	<16	<16	<10
	CTMW-06S-20170822	08/22/17	PME6	1,400	<5.0	<5.0	<8.0	3,200	<5.0	<5.0	320	<5.0	<5.0	<5.0	<5.0	<5.0	<50	30 J	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
CTMW-06S	CTMW-06S-20170919	09/19/17	PME7	780 J-	<5.0 R	<5.0 R	<8.0 R	3,700 J-	<5.0 R	<5.0 R	170 J-	<5.0 R	<5.0 R	<5.0 R	<5.0 R	<5.0 R	<50 R	41 J-	<5.0 R	<8.0 R	<5.0 R	<5.0 R	<8.0 R	<8.0 R	<5.0 R
	CTMW-06S-20171004	10/04/17	PME8	620 J-	2.6 J	<2.5 R	<4.0 R	4,000 J-	<2.5 R	<2.5 R	120 J-	<2.5 R	<2.5 R	<2.5 R	<2.5 R	<2.5 R	<25 R	13 J	<2.5 R	<4.0 R	<2.5 R	<2.5 R	<4.0 R	<4.0 R	<2.5 R
	CTMW-06S-20180306	03/06/18	PME9	<10	<0.25	<0.25	<0.40	<2.5	<0.25	<0.25	16	<0.25	0.43 J	0.74	<0.25	0.52	<2.5	1.7 J	0.30 J	<0.40	<0.25	<0.25	0.64 J	<0.40	<0.25
	CTMW-06S-20180622	06/22/18	PME10	12 J	<0.25 UJ	<0.25 UJ	<0.40 UJ	<2.5 UJ	<0.25 UJ	<0.25 UJ	4.9 J	<0.25 UJ	<0.25 UJ	0.33 J	<0.25 UJ	0.30 J	<2.5 UJ	1.4 J	<0.25 UJ	<0.40 UJ	<0.25 UJ	<0.25 UJ	0.49 J	<0.40 UJ	<0.25 UJ
	CTMW-06D-20170622	06/22/17	PME4	<400	<10	<10	<16	<100	<10	<10	1,500	<10	<10	<10	<10	<10	<100	<35	<10	<16	<10	<10	<16	<16	<10
	CTMW-06D-20170717	07/17/17	PME5	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,700	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-06D-20170717-FD	07/17/17	PME5	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,700	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	CTMW-06D-20170822	08/22/17	PME6	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,400	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
07100/ 000	CTMW-06D-20170919	09/19/17	PME7	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	1,200	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
CTWW-06D	CTMW-06D-20170919-FD	09/19/17	PME7	250	<0.25	0.27 J	<0.40	150	0.54	<0.25	1,000	<0.25	3.6	0.32 J	1.0	0.45 J	<2.5	1.1 J	0.68	<0.40	<0.25	0.44 J	0.72 J	<0.40	1.0
	CTMW-06D-20171004	10/04/17	PME8	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,200	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-06D-20171004-FD	10/04/17	PME8	<250	<6.3	<6.3	<10	<63	<6.3	<6.3	1,200	<6.3	<6.3	<6.3	<6.3	<6.3	<63	<22	<6.3	<10	<6.3	<6.3	<10	<10	<6.3
	CTMW-06D-20180307	03/07/18	PME9	69 J	<1.3	<1.3	<2.0	140	<1.3	<1.3	440 J	<1.3	<1.3	<1.3	<1.3	<1.3	<13	11	<1.3	<2.0	<1.3	<1.3	<2.0	<2.0	<1.3
	CTMW-06D-20180622	06/22/18	PME10	<50 UJ	<1.3 UJ	<1.3 UJ	<2.0 UJ	<13 UJ	<1.3 UJ	<1.3 UJ	270 J	<1.3 UJ	<1.3 UJ	<1.3 UJ	<1.3 UJ	<1.3 UJ	<13 UJ	19 J	<1.3 UJ	<2.0 UJ	<1.3 UJ	<1.3 UJ	<2.0 UJ	<2.0 UJ	<1.3 UJ
	Not Analyzed	10/09/17	PME8		•	•		·	•	•		•	W	ell Dry; Una	able to sam	ble	•	•	•		•		•		
CTMW-07S	CMTW-07S-20180306	03/06/18	PME9	<200	<5.0	<5.0	<8.0	<50	<5.0	<5.0	830	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<18	<5.0	<8.0	<5.0	<5.0	<8.0	<8.0	<5.0
	Not Analyzed	06/22/18	PME10			•	•	•			•	•	N	lell Dry; Una	able to sam	ble		•				•			
	CTMW-07D-20171009	10/09/17	PME8	<10	<0.25	<0.25	<0.40	<2.5	<0.25	0.64	11	<0.25	0.90	<0.25	<0.25	<0.25	<2.5	<0.88	<0.25	<0.40	<0.25	<0.25	<0.40	<0.40	<0.25
CTMW-07D	CTMW-07D-20180306	03/06/18	PME9	<10	<0.25	<0.25	<0.40	<2.5	<0.25	<0.25	1.5	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<0.88	<0.25	<0.40	<0.25	<0.25	<0.40	<0.40	<0.25
	CTMW-07D-20180622	06/22/18	PME10	34	<0.25	<0.25	<0.40	5.3	<0.25	<0.25	0.41 J	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	0.97 J	<0.25	<0.40	<0.25	<0.25	<0.40	<0.40	<0.25

Notes:

USEPA United States Environmental Protection Agency

ug/L Microgram per liter

< The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

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.

J- The result is an estimated quantity, but the result may be biased low.

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.

Not Analyzed

TE TETRA TECH

Appendix E Data Validation Summary Report

Data Validation Summary Report (DVSR ID: TetraTech-M12Addendum-2019) Addendum to the In-Situ Chromium Treatability Study Results Report Nevada Environmental Response Trust Site Henderson, Nevada

PREPARED FOR

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APPENDICES

- Appendix E.1 Validation Checklists
- Appendix E.2 Laboratory Data Packages
- Appendix E.3 DVSR Database

LIST OF ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
ССВ	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
EDL	estimated detection limit
EMPC	estimated maximum possible concentration
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/LCSD	laboratory control sample/laboratory control sample duplicate
MDL	method detection limit
mg/kg	milligram per kilogram
mg/L	milligram per liter
MS/MSD	matrix spike/matrix spike duplicate
MSI	matrix spike-insoluble
Ν	normal field sample
N/A	not applicable
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

Acronyms/Abbreviations	Definition
PARCCS	precision, accuracy, representativeness, comparability, completeness, sensitivity
PQL	practical quantitation limit
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RL	reporting limit
RPD	relative percent difference
RRF	relative response factor
SDG	sample delivery group
SO	soil
SQL	sample quantitation limit
SVOC	semivolatile organic compound
Tetra Tech	Tetra Tech, Inc.
Treatability Study	In-Situ Chromium Treatability Study
USEPA	United States Environmental Protection Agency
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
VOC	volatile organic compound
WG	groundwater
WQ	water quality

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 additional groundwater monitoring completed for the biological reduction study component of the In-Situ Chromium Treatability Study (Treatability Study) for the NERT site, located in Clark County, Nevada. Sampling protocol can be found in the *In-Situ Chromium Treatability Study Work Plan* (Tetra Tech, 2016). Tetra Tech performed the Treatability Study, which included the collection and analyses of samples to assess the effectiveness of the Treatability Study. Tetra Tech collected additional quality assurance and quality control (QA/QC) samples to aid in assessing data quality. Data associated with the In-Situ Chromium Treatability Study that were submitted previously as an appendix to the *In-Situ Chromium Treatability Study Results Report* (Tetra Tech, 2018) are not included in this DVSR.

TestAmerica 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 sample with its analysis, SDG, collection date, client sample number, laboratory sample number, QC type, matrix, and stage of validation. Samples included in Table 2 are those submitted in the DVSR electronic data deliverable (EDD). Field readings and microbial data for the samples in Table 2 are submitted in a separate EDD file because they are not validated.

The laboratory analytical data were verified and validated in accordance with procedures described in the *Quality Assurance Project Plan, Revision 2* (Ramboll Environ, 2017), *NDEP Data Verification and Validation Requirements* (NDEP, 2018), and the references contained therein. Analytical field sample results from groundwater and field quality blanks were validated to Stage 2A. Approximately ninety percent of the analytical results from soil were validated to Stage 2B and at least ten percent were validated to Stage 4.

Data validation checklists are compiled in Appendix E.1. Laboratory data packages may be found in Appendix E.2. A database of the analytical results is provided in Appendix E.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 duplicates (FDs), and matrix spike/matrix spike duplicates (MS/MSDs), and trip blanks (TBs). Laboratory QA/QC samples include method blanks, laboratory control samples/laboratory control sample duplicates (LCS/LCSDs), laboratory duplicates (DUP), matrix spike-insoluble (MSI) samples, 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:

where:

%RSD = percent relative standard deviation

s = standard deviation

ā = 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 or LCS/LCSD pair can be analyzed as an alternative means of assessing precision. An additional measure of sampling precision is obtained by collecting and analyzing field duplicate 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. The MSI is used to evaluate soil samples that are analyzed by methods developed for waters. 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. 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 LCS/LCSD 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, MSI, LCS, and LCSD. 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.

 $%R = (A-B)/C \times 100$

Percent recovery is calculated using the following equation:

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, MSIs, and LCS/LCSD is evaluated with the acceptance criteria specified by the QAPP 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 TBs.

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.

TBs consist of analyte-free water prepared at the laboratory, shipped to the field with sample containers, and returned to the laboratory with the samples receiving volatile organic compound (VOC) analysis. The trip blank is analyzed for VOCs using the same sample preparation and analysis procedures used for the actual field samples.

Contaminants found in both the environmental sample and the blank sample are assumed to be laboratory artifacts if 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. The qualifiers and bias recommendations are taken from USEPA National Functional Guidelines (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 QAPP, with the number determined above.

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 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 according to the QAPP in place at the time of validation (Ramboll Environ, 2017).

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 each validation level. The actual elements are methoddependent.

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 an 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 method SW-8260B and provides a means of evaluating precision within an analytical system. Calibration criteria are not reviewed in Stage 2A validation.

3.1.2 MS/MSD and Laboratory Duplicate Samples

MS/MSD and laboratory duplicate RPDs were within the acceptance criteria stated in the QAPP.

3.1.3 LCS/LCSD Samples

No data were qualified for LCS/LCSD RPD outliers.

3.1.4 Field Duplicate Samples

For results > 5X the PQL, the FD samples were evaluated for acceptable precision with RPDs. If one or both results was < 5X the PQL, samples were evaluated by the difference between the two measurements. Table 7 includes results where RPDs exceeded 30 percent for water or 50 percent for soils, or the difference between the values was greater than the absolute value of the PQL. Ten results were qualified for imprecision between the

parent and FD. They are found in Table 6 with reason code "fd." The parent sample and the FD were qualified "J" for detects.

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 criteria are not reviewed in Stage 2A validation. In cases where an outlier is mentioned in the case narrative, the outlier is reviewed and may be qualified. For method SW-8260B, 2,2-dichloropropane %D was 35.3% in CCV sample CCVIS 440-485540/2. The allowed limit is 30%. Two 2,2-dichloropropane results were qualified "UJ." They are found in Table 6 with reason code "c."

3.2.2 MS/MSD and MSI Samples

Several MS/MSD %Rs were outside of acceptance criteria shown in the QAPP. MS/MSD %R exceedances can be found in Table 8. 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 FDs were analyzed in the same SDG. Table 8 contains the spiked sample only. In cases where dilutions caused the low recoveries, the data were not rejected or qualified. Per the inorganic NFG, MS/MSD recoveries < 30% resulted in rejection of the data point. In cases where dilutions caused the low recoveries, the data were not rejected or qualified. Per the inorganic NFG, MS/MSD recoveries < 30% resulted in rejection of the data point. In cases where dilutions caused the low recoveries, the data were not rejected or qualified. Per the inorganic NFG, MS/MSD recoveries < 30% resulted in rejection of the data point. In cases where dilutions caused the low recoveries, the data were not rejected or qualified. Per the inorganic NFG, MS/MSD recoveries < and the parent sample 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 approaches this on a case-by-case basis. Twenty-six results were qualified for MS/MSD %Rs. Seven results were rejected. Associated results qualified for MS/MSD recoveries can be found in Table 6 with reason code "m."

3.2.3 LCS/LCSD Samples

No data were qualified for LCS/LCSD %R outliers.

3.2.4 Surrogates

Surrogates are added to all samples analyzed by EPA 300.1B and SW-8260B to measure the efficiency of the analytical method. No data were qualified for surrogate recovery outliers.

3.3 REPRESENTATIVENESS

3.3.1 Sample Condition, Preservation, and Holding Times

Sample condition, preservation, and holding times were evaluated to verify compliance with the analytical methods.

Two methane results were qualified "J" because they were received at the lab with headspace. They are designated with reason code "vh" for volatile headspace in Table 6. The samples are shown in Table 9.

Two TOC results were qualified for improper preservation and holding time infractions, designated with reason codes "h" for holding time and "pH" for preservation in Table 6. The samples were collected in jars containing HCl, but when checked, the pH was >2. The lab adjusted the pH of the samples to pH < 2 prior to analysis. Since the samples were not analyzed within the 4-hour holding time for unpreserved samples, the holding time was grossly exceeded. The preservation infractions are shown in Table 9. The holding time exceedances are shown in Table 10. The results were qualified "J- ".

Six samples analyzed for VOCs by SW-8260B and three samples analyzed for methane by RSK175 were analyzed outside of the 7-day analytical holding time for unpreserved samples. The samples were collected in vials containing HCl, but when checked prior to analysis, the pH was >2. 263 undetected VOC compound results were qualified "UJ" according to current NDEP guidance. Fifteen VOC results were qualified "J." No bias was assigned to the VOC detected results, based on NFG and professional judgment. The methane results were qualified "J-." All are designated with reason code "h" in Table 6. The holding time exceedances are shown in Table 10.

3.3.2 Blanks

Method blanks, ICBs, CCBs, EBs, and TBs 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 radiochemistry methods, the normalized difference was used to determine if sample results differed from blank results.

For concentrations detected in the sample below the PQL, the sample result was qualified "J." Based on the 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 results were qualified "J."

3.3.2.1 Method and Calibration Blanks

Several contaminants were detected in the laboratory blanks. Fifteen results were qualified because of contamination in laboratory blanks. Laboratory blank detections, including preparation and calibration blanks, that resulted in qualification are shown in Table 10. Qualified results are shown in Table 6 with reason code "bl."

3.3.2.2 Equipment Blanks and Trip Blanks

There were three detections in the EBs and TBs associated with this dataset. Hexavalent chromium was detected in CTMW-07D-130.0-20170922-EB at a concentration of 0.39 μ g/L. Tetrachloroethene and methylene chloride were detected in M12-20180622-TB at concentrations of 0.38 μ g/L and 1 μ g/L, respectively. No associated data required qualification.

3.4 COMPARABILITY

The laboratory used standard analytical methods for all analyses. In all cases, the SQLs attained were at or below the PQLs. Target compounds detected below the PQLs were flagged "J" by the laboratory and should be considered estimated. A total of 132 qualified results are shown with reason code "sp" in Table 6. The comparability of the data is acceptable.

3.5 COMPLETENESS

The completeness level attained for the field samples, equipment blanks, and trip blanks is 99.8% and meets the project goal of 90 percent. Seven results were rejected because of MS/MSD recoveries. 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. A completeness summary by method is provided in Table 12.

3.6 SENSITIVITY

Due to high analyte concentrations, many analytical runs were analyzed at dilutions. For diluted analyses, SQLs and PQLs were elevated.

In Stage 2A validation, the calibrations are not evaluated for instrument sensitivity. In cases where an outlier is known however, the outlier will be qualified. For method SW-8260B, the relative response factor (RRF) for 1,1,2-trichloroethane in ICAL 17676 was 0.1809. In CCVIS 440-435536/2, the 1,1,2-trichloroethane RRF was 0.1899. The organic NFG requires an RRF of 0.200 for this compound and recommends rejecting the data point. Since method SW-8260B and the lab's operating procedure do not require a minimum RRF for 1,1,2-trichloroethane, the validator using professional judgment qualified the result "UJ." The PQL may be inaccurate or imprecise. One 1,1,2-trichloroethane result in CTMW-07D-20171009 was qualified "UJ" and found in Table 6 with reason code "c."

4.0 CONCLUSIONS AND RECOMMENDATIONS

The analytical data quality assessment for the soil and water laboratory analytical results generated during the additional sampling at the In-Situ Treatability Study site at the NERT site in Henderson, Nevada, established that the overall project requirements and completeness levels were met. Most sample results were found to be usable. Seven results were rejected because of MS/MSD recoveries. Rejected results are not usable. Sample results that were qualified as estimated are usable for limited purposes only.

5.0 REFERENCES

Nevada Division of Environmental Protection. (2018). NDEP Data Verification and Validation Requirements.

Ramboll Environ. (2017). *Quality Assurance Project Plan, Revision 2, Nevada Environmental Response Trust Site, Henderson, Nevada*

Tetra Tech. (2016). In-Situ Chromium Treatability Study Work Plan.

Tetra Tech. (2018). In-Situ Chromium Treatability Study Results Report.

Tables

Method	Parameters	Number of Aqueous Samples	Number of Soil Samples
EPA 300.0	Chloride	21	0
EPA 300.0	Nitrate [as N]	21	0
EPA 300.0	Sulfate	21	0
EPA 300.1B	Chlorate	25	9
EPA 300.1B	Chlorite	21	0
EPA 314.0	Perchlorate	25	9
EPA 351.2	Total Kjeldahl Nitrogen [TKN]	21	0
EPA 365.3	Orthophosphate (as P), Orthophosphorus as PO4, Phosphorus, Total	21	0
RSK175	Methane	21	0
SM2320B	Alkalinity as CaCO3, Bicarbonate as CaCO3, Carbonate as CaCO3, and Hydroxide as CaCO3	21	0
SM2340C	Hardness as CaCO3	21	0
SM2540C	Total Dissolved Solids [TDS]	21	0
SM4500-S2-D	Sulfide	21	0
SM5220D	Chemical Oxygen Demand	10	0
SM5310B	Total Organic Carbon	21	0
SW-6010B	Metals	25	9
SW-6020A	Metals	21	0
SW-7199	Chromium [VI]	25	9
SW-8260B	Volatile Organic Compounds	33	9
VFA-IC	Volatile Fatty Acids	21	0

udd <th>SDG</th> <th>Client Sample ID</th> <th>Lab Sample ID</th> <th>Matrix</th> <th>Туре</th> <th>Sample Date</th> <th>Validation Stage</th> <th>EPA 300.0</th> <th>EPA 300.1B</th> <th>EPA 314.0</th> <th>EPA 351.2</th> <th>EPA 365.3</th> <th>RSK175</th> <th>SM2320B</th> <th>SM2340C</th> <th>SM2540C</th> <th>SM4500-S2-D</th> <th>SM5220D</th> <th>SM5310B</th> <th>SW- 6010B</th> <th>Dissolved SW-6020A</th> <th>SW-7199</th> <th>SW- 8260B</th> <th>VFA-IC</th>	SDG	Client Sample ID	Lab Sample ID	Matrix	Туре	Sample Date	Validation Stage	EPA 300.0	EPA 300.1B	EPA 314.0	EPA 351.2	EPA 365.3	RSK175	SM2320B	SM2340C	SM2540C	SM4500-S2-D	SM5220D	SM5310B	SW- 6010B	Dissolved SW-6020A	SW-7199	SW- 8260B	VFA-IC
440-92271 CTNN-070-00-0370921 40-92272. SO NOME 2077-04 Singe 2 X X X L L L L L L X <td< th=""><th>440-192727-1</th><th>CTMW-07D-50.0-20170921</th><th>440-192727-1</th><th>WG</th><th>NORM</th><th>2017-09-21</th><th>Stage 2A</th><th></th><th>Х</th><th>Х</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>Х</th><th></th><th>Х</th><th>Х</th><th></th></td<>	440-192727-1	CTMW-07D-50.0-20170921	440-192727-1	WG	NORM	2017-09-21	Stage 2A		Х	Х										Х		Х	Х	
ald+1272-1 C1MW-07D-00-2017021-04 ald-12727-1 Si NoRe 2017-052 Signal 2017-052 Sig	440-192727-1	CTMW-07D-60.0-20170921	440-192727-2	SO	NORM	2017-09-21	Stage 2B		Х	Х										Х		Х	Х	
440-197211 CTMM-OPD-102-20170821-80 400-197271 CTMM-OPD-102-2017081-40 400-197274 C K K <	440-192727-1	CTMW-07D-70.0-20170921-GW	440-192727-3	WG	NORM	2017-09-21	Stage 2A		Х	Х										Х		Х	Х	
440-132724 Tp. Busk-Mit 2017084 440-1327254 BW TB BUR 2A Sup 2A V V BUR 2A Sup 2A V V BUR 2A Sup 2A V V V V <t< td=""><td>440-192727-1</td><td>CTMW-07D-70.0-20170921-SO</td><td>440-192727-4</td><td>SO</td><td>NORM</td><td>2017-09-21</td><td>Stage 2B</td><td></td><td>Х</td><td>Х</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Х</td><td></td><td>Х</td><td>Х</td><td></td></t<>	440-192727-1	CTMW-07D-70.0-20170921-SO	440-192727-4	SO	NORM	2017-09-21	Stage 2B		Х	Х										Х		Х	Х	
440-187274 CTMW-075-00.02071024 440-187274 S.0 NORM 207-667 Sup 26 X X X V V V X	440-192727-1	Trip_Blank-M12-20170921*	440-192727-5	BW	TB	2017-09-21	Stage 2A																Х	
440+19272-1 CTMAV 070-10-0.20170021 440+19272-7 SNO NRM 20170-201 Sing-2B X <t< td=""><td>440-192727-1</td><td>CTMW-07D-80.0-20170921</td><td>440-192727-6</td><td>SO</td><td>NORM</td><td>2017-09-21</td><td>Stage 2B</td><td></td><td>Х</td><td>Х</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Х</td><td></td><td>Х</td><td>Х</td><td></td></t<>	440-192727-1	CTMW-07D-80.0-20170921	440-192727-6	SO	NORM	2017-09-21	Stage 2B		Х	Х										Х		Х	Х	
400-10272-10 CTMM-(70)-100.0-20170921 440-10272-7 SO NORM 2017-09-21 Sugga 2 X X V V V X X X V V X <	440-192727-1	CTMW-07D-90.0-20170921	440-192727-7	SO	NORM	2017-09-21	Stage 2B		Х	Х										Х		Х	Х	
440-19227-1 CTMA-07D-400-20017082-16 440-19227-0 SO NOME 207-49-21 Shage 2 X X X V V V V X </td <td>440-192727-1</td> <td>CTMW-07D-100.0-20170921</td> <td>440-192727-8</td> <td>SO</td> <td>NORM</td> <td>2017-09-21</td> <td>Stage 2B</td> <td></td> <td>Х</td> <td>Х</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Х</td> <td></td> <td>Х</td> <td>Х</td> <td></td>	440-192727-1	CTMW-07D-100.0-20170921	440-192727-8	SO	NORM	2017-09-21	Stage 2B		Х	Х										Х		Х	Х	
440-19272-71 CTMW-07D-80.0-2017082-FB 40-19272-71 SD B07-08-71 Suge 2A X X V V V V X	440-192727-1	CTMW-07D-110.0-20170921	440-192727-9	SO	NORM	2017-09-21	Stage 2B		Х	Х										Х		Х	Х	
440 107177-1 CTMM-070-0.0.2017002+10 404 10727-1 SUM 07 1070-21 SUM 07 SUM 07 1070-21 <td< td=""><td>440-192727-1</td><td>CTMW-07.D-60.0-20170921-EB</td><td>440-192727-10</td><td>BW</td><td>EB</td><td>2017-09-21</td><td>Stage 2A</td><td></td><td>Х</td><td>Х</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Х</td><td></td><td>Х</td><td>Х</td><td></td></td<>	440-192727-1	CTMW-07.D-60.0-20170921-EB	440-192727-10	BW	EB	2017-09-21	Stage 2A		Х	Х										Х		Х	Х	
440 12817-1 CTLW 07D-120.220170322 440 -128171 SV NM M1 - 022 Suga 28 M N M N M	440-192727-1	CTMW-07D-90.0-20170921-FD	440-192727-11	SO	FD	2017-09-21	Stage 2B		Х	Х										Х		Х	Х	
4401:93817. CTMM-VOP1-30.020170922 4041:9387.8 BW TB 207.09-92.2 Single 2A V X V </td <td>440-192817-1</td> <td>CTMW-07D-120.0-20170922</td> <td>440-192817-1</td> <td>SO</td> <td>NORM</td> <td>2017-09-22</td> <td>Stage 2B</td> <td></td> <td>Х</td> <td>Х</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Х</td> <td></td> <td>Х</td> <td>Х</td> <td></td>	440-192817-1	CTMW-07D-120.0-20170922	440-192817-1	SO	NORM	2017-09-22	Stage 2B		Х	Х										Х		Х	Х	
440-182817:1 TUPBlank MI 20170822 440-182817:3 BW B 20170-92 Stage A V </td <td>440-192817-1</td> <td>CTMW-07D-130.0-20170922-EB</td> <td>440-192817-2</td> <td>BW</td> <td>EB</td> <td>2017-09-22</td> <td>Stage 2A</td> <td></td> <td>Х</td> <td>Х</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Х</td> <td></td> <td>Х</td> <td>Х</td> <td></td>	440-192817-1	CTMW-07D-130.0-20170922-EB	440-192817-2	BW	EB	2017-09-22	Stage 2A		Х	Х										Х		Х	Х	
440-19283-1 CTMW-07D-1300-20170092 440-19284-1 SO NORM 2017-00-3 Step 2A V	440-192817-1	Trip_Blank-M12-20170922*	440-192817-3	BW	TB	2017-09-22	Stage 2A																Х	
440-13988-1 Trip, Blank-M12-2017/1009 440-13988-1 BW TB 2017-10-00 Stage 2A V <t< td=""><td>440-192835-1</td><td>CTMW-07D-130.0-20170922</td><td>440-192835-1</td><td>SO</td><td>NORM</td><td>2017-09-22</td><td>Stage 4</td><td></td><td>Х</td><td>Х</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Х</td><td></td><td>Х</td><td>Х</td><td></td></t<>	440-192835-1	CTMW-07D-130.0-20170922	440-192835-1	SO	NORM	2017-09-22	Stage 4		Х	Х										Х		Х	Х	
1440-139364-1 CTNW-07D-20171009 4440-139364-2 WG NORM 2017-00-8 Stage 2A X	440-193864-1	Trip_Blank-M12-20171009*	440-193864-1	BW	TB	2017-10-09	Stage 2A																Х	
1440-204893-1 TTp. Blank-MT-20100305 440-204893-1 BW TB 2016-30-05 Stage 2A X <t< td=""><td>440-193864-1</td><td>CTMW-07D-20171009</td><td>440-193864-2</td><td>WG</td><td>NORM</td><td>l 2017-10-09</td><td>Stage 2A</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td></t<>	440-193864-1	CTMW-07D-20171009	440-193864-2	WG	NORM	l 2017-10-09	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
440-20483-1 CTMW-015-20180305 440-20483-2 WG NoRM 2016-03-05 Stage 2A X <td>440-204893-1</td> <td>Trip_Blank-M12-20180305*</td> <td>440-204893-1</td> <td>BW</td> <td>TB</td> <td>2018-03-05</td> <td>Stage 2A</td> <td></td> <td>Х</td> <td></td>	440-204893-1	Trip_Blank-M12-20180305*	440-204893-1	BW	TB	2018-03-05	Stage 2A																Х	
440-20483-1 CTMW-01D-20180305 440-20483-3 WG NORM 2018-03-05 Stage 2A X <td>440-204893-1</td> <td>CTMW-01S-20180305</td> <td>440-204893-2</td> <td>WG</td> <td>NORM</td> <td>2018-03-05</td> <td>Stage 2A</td> <td>Х</td> <td></td> <td>Х</td> <td>Х</td> <td>Х</td> <td>Х</td> <td>Х</td> <td>Х</td>	440-204893-1	CTMW-01S-20180305	440-204893-2	WG	NORM	2018-03-05	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-20483-1 CTMW-01D-20180305-FD 440-20483-4 WG FD 2018-03-05 Stage 2A X </td <td>440-204893-1</td> <td>CTMW-01D-20180305</td> <td>440-204893-3</td> <td>WG</td> <td>NORM</td> <td>2018-03-05</td> <td>Stage 2A</td> <td>Х</td> <td></td> <td>Х</td> <td>Х</td> <td>Х</td> <td>Х</td> <td>Х</td> <td>Х</td>	440-204893-1	CTMW-01D-20180305	440-204893-3	WG	NORM	2018-03-05	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-20483-1 CTMW-02D-20180305 440-20483-5 WG NORM 2018-03-05 Stage 2A X <td>440-204893-1</td> <td>CTMW-01D-20180305-FD</td> <td>440-204893-4</td> <td>WG</td> <td>FD</td> <td>2018-03-05</td> <td>Stage 2A</td> <td>Х</td> <td></td> <td>Х</td> <td>Х</td> <td>Х</td> <td>Х</td> <td>Х</td> <td>Х</td>	440-204893-1	CTMW-01D-20180305-FD	440-204893-4	WG	FD	2018-03-05	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-204893-1 Trip_Blank-M12-20180306 440-204893-6 BW TE 2016-03-06 Stage 2A X <t< td=""><td>440-204893-1</td><td>CTMW-02D-20180305</td><td>440-204893-5</td><td>WG</td><td>NORM</td><td>2018-03-05</td><td>Stage 2A</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td></td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td></t<>	440-204893-1	CTMW-02D-20180305	440-204893-5	WG	NORM	2018-03-05	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-20483-1 CTMV-025-20180306 440-20483-7 WG NORM 2018-03-06 Stage 2A X <td>440-204893-1</td> <td>Trip_Blank-M12-20180306*</td> <td>440-204893-6</td> <td>BW</td> <td>TB</td> <td>2018-03-06</td> <td>Stage 2A</td> <td></td> <td>Х</td> <td></td>	440-204893-1	Trip_Blank-M12-20180306*	440-204893-6	BW	TB	2018-03-06	Stage 2A																Х	
440-204893-1 CTMW-07D-20180306 440-204893-8 WG NORM 2018-03-06 Stage 2A X<	440-204893-1	CTMW-02S-20180306	440-204893-7	WG	NORM	2018-03-06	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-204893-1 CTMW-07S-20180306 440-204893-9 WG NORM 2018-03-06 Stage 2A X<	440-204893-1	CTMW-07D-20180306	440-204893-8	WG	NORM	2018-03-06	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-204893-1 CTMW-06S-20180306 440-204893-10 WG NORM 2018-03-06 Stage 2A X	440-204893-1	CTMW-07S-20180306	440-204893-9	WG	NORM	2018-03-06	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-205188-1 Trip_Blank-M12-20180307* 440-205188-1 BW TB 2018-03-07 Stage 2A V <	440-204893-1	CTMW-06S-20180306	440-204893-10	WG	NORM	2018-03-06	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-205188-1 CTMW-06D-20180307 440-205188-2 WG NORM 2018-03-07 Stage 2A X<	440-205188-1	Trip_Blank-M12-20180307*	440-205188-1	BW	TB	2018-03-07	Stage 2A																Х	
440-205188-1 CTMW-04S-20180307 440-205188-3 WG NORM 2018-03-07 Stage 2A X<	440-205188-1	CTMW-06D-20180307	440-205188-2	WG	NORM	2018-03-07	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-205188-2 CTMW-04D-20180307 440-205188-4 WG NORM 2018-03-07 Stage 2A X<	440-205188-1	CTMW-04S-20180307	440-205188-3	WG	NORM	2018-03-07	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-214187-1 CTMW-01S-20180621 440-214187-1 WG NORM 2018-06-21 Stage 2A X<	440-205188-2	CTMW-04D-20180307	440-205188-4	WG	NORM	2018-03-07	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Х	Х
440-214187-1 CTMW-01D-20180621 440-214187-2 WG NORM 2018-06-21 Stage 2A X<	440-214187-1	CTMW-01S-20180621	440-214187-1	WG	NORM	2018-06-21	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
440-214187-1 CTMW-01D-20180621-FD 440-214187-3 WG FD 2018-06-21 Stage 2A X	440-214187-1	CTMW-01D-20180621	440-214187-2	WG	NORM	2018-06-21	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
440-214187-1 CTMW-02D-20180621 440-214187-4 WG NORM 2018-06-21 Stage 2A X<	440-214187-1	CTMW-01D-20180621-FD	440-214187-3	WG	FD	2018-06-21	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
440-214189-1 CTMW-04S-20180621 440-214189-1 WG NORM 2018-06-21 Stage 2A X<	440-214187-1	CTMW-02D-20180621	440-214187-4	WG	NORM	2018-06-21	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
440-214189-1 CTMW-04D-20180621 440-214189-2 WG NORM 2018-06-21 Stage 2A X<	440-214189-1	CTMW-04S-20180621	440-214189-1	WG	NORM	2018-06-21	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
440-214189-1 M12-20180621-TB 440-214189-3 BW TB 2018-06-21 Stage 2A Image: Constraint of the	440-214189-1	CTMW-04D-20180621	440-214189-2	WG	NORM	1 2018-06-21	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X	Х
440-214285-1 M12-20180622-TB 440-214285-1 BW TB 2018-06-22 Stage 2A M	440-214189-1	M12-20180621-TB	440-214189-3	BW	ТВ	2018-06-21	Stage 2A						1										Х	
440-214285-1 CTMW-06S-20180622 440-214285-2 WG NORM 2018-06-22 Stage 2A X<	440-214285-1	M12-20180622-TB	440-214285-1	BW	ТВ	2018-06-22	Stage 2A																X	
440-214285-1 CTMW-07D-20180622 440-214285-4 WG NORM 2018-06-22 Stage 2A X<	440-214285-1	CTMW-06S-20180622	440-214285-2	WG	NORM	2018-06-22	Stage 2A	Х	Х	Х	Х	Х	Х	Х	Х	Х	х	Х	Х	Х	Х	Х	Х	Х
440-214285-1 CTMW-07D-20180622 440-214285-4 WG NORM 2018-06-22 Stage 2A X X X X X X X X X X X X X X X X X X	440-214285-1	CTMW-06D-20180622	440-214285-3	WG	NORM	2018-06-22	Stage 2A	Х	X	Х	Х	Х	Х	X	Х	X	х	Х	X	X	Х	X	X	X
	440-214285-1	CTMW-07D-20180622	440-214285-4	WG	NORM	2018-06-22	Stage 2A	Х	X	X	X	Х	X	X	X	X	X	Х	X	X	Х	X	X	X

* Samples designated as "Trip Blank" on chain-of-custody forms were changed to unique IDs in the database.

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.
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.

Verification and Validation Checks	Stage 2A	Stage 2B	Stage 4
Documentation identifies the laboratory receiving and conducting analyses, and includes documentation for all samples submitted by the project or requester for analyses.	х	x	Х
Requested analytical methods were performed and the analysis dates are present.	Х	Х	Х
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	x	х
Requested target analyte result units are reported (along with their associated uncertainty units if required, e.g., for radiochemical analyses).	х	х	Х
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).	х	x	х
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.	х	x	х
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.	х	x	х
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).	Х	х	Х
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.	х	x	х
Requested methods (handling, preparation, cleanup, and analytical) are performed.	Х	Х	Х
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.	х	x	x
Sample-related QC data and QC acceptance criteria (e.g., method blanks, surrogate recoveries, deuterated monitoring compounds (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).	х	x	х
Requested spike analytes or compounds (e.g., surrogate, DMCs, LCS spikes, post digestion spikes) have been added, as appropriate.	х	x	Х
Sample holding times (from sampling date to preparation and preparation to analysis) are evaluated.	х	х	Х
Frequency of QC samples is checked for appropriateness (e.g., one LCS per 20 samples in a preparation batch).	х	x	Х

Verification and Validation Checks	Stage 2A	Stage 2B	Stage 4
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.	х	x	х
Initial calibration data (e.g., initial calibration standards, initial calibration verification [ICV] standards, initial calibration blanks [ICBs]) are provided for all requested analytes and linked to field samples reported. For each initial calibration, the calibration type used is present along with the initial calibration equation used including any weighting factor(s) applied and the associated correlation coefficients, as appropriate. Recalculations of the standard concentrations using the initial calibration curve are present, along with their associated percent recoveries, as appropriate (e.g., if required by the project, method, or contract). For the ICV standard, the associated percent recovery (or percent difference, as appropriate) is present.		х	х
Appropriate number and concentration of initial calibration standards are present.		Х	Х
Continuing calibration data (e.g., continuing calibration verification [CCV] standards and continuing calibration blanks [CCBs]) are provided for all requested analytes and linked to field samples reported, as appropriate. For the CCV standard(s), the associated percent recoveries (or percent differences, as appropriate) are present.		x	х
Reported samples are bracketed by CCV standards and CCBs standards as appropriate.		Х	Х
Method specific instrument performance checks are present as appropriate (e.g., tunes for mass spectrometry methods, DDT/Endrin breakdown checks for pesticides and aroclors, instrument blanks and interference checks for ICP methods).		x	х
Frequency of instrument QC samples is checked for appropriateness (e.g., gas chromatography-mass spectroscopy [GC-MS] tunes have been run every 12 hours).		х	Х
Sample results are evaluated by comparing instrument-related QC data to the requirements and guidelines present in national or regional data validation documents, analytical method(s), or contract.		x	х
Instrument response data (e.g., GC peak areas, ICP corrected intensities) are reported for requested analytes, surrogates, internal standards, and DMCs for all requested field samples, matrix spikes, matrix spike duplicates, LCS, and method blanks, as well as calibration data and instrument QC checks (e.g., tunes, DDT/Endrin breakdowns, interelement correction factors, and Florisil cartridge checks).			х
Reported target analyte instrument responses are associated with appropriate internal standard analyte(s) for each (or selected) analyte(s) (for methods using internal standard for calibration).			Х
Fit and appropriateness of the initial calibration curve used or required (e.g., mean calibration factor, regression analysis [linear or non-linear, with or without weighting factors, with or without forcing]) is checked with recalculation of the initial calibration curve for each (or selected) analyte(s) from the instrument response.			х
Comparison of instrument response to the minimum response requirements for each (or selected) analyte(s)			х

Table 4 Validation Checks and Stages

Verification and Validation Checks	Stage 2A	Stage 2B	Stage 4
Recalculation of each (or selected) opening and closing CCV (and CCB) response from the peak data reported for each (or selected) analyte(s) from the instrument response, as appropriate			Х
Compliance check of recalculated opening and/or closing CCV (and CCB) response to recalculated initial calibration response for each (or selected) analyte(s)			Х
Recalculation of percent ratios for each (or selected) tune from the instrument response, as appropriate			Х
Compliance check of recalculated percent ratio for each (or selected) tune from the instrument response.			Х
Recalculation of each (or selected) instrument performance check (e.g., DDT/Endrin breakdown for pesticide analysis, instrument blanks, interference checks) from the instrument response			Х
Recalculation and compliance check of retention time windows (for chromatographic methods) for each (or selected) analyte(s) from the laboratory reported retention times			Х
Recalculation of reported results for each reported (or selected) target analyte(s) from the instrument response			Х
Recalculation of each (or selected) reported spike recovery (surrogate recoveries, DMC recoveries, LCS recoveries, duplicate analyses, matrix spike and matrix spike duplicate recoveries, serial dilutions, post digestion spikes, standard reference materials, etc.) from the instrument response			x
Each (or selected) sample result(s) and spike recovery(ies) are evaluated by comparing the recalculated numbers to the laboratory reported numbers according to the requirements and guidelines present in national or regional data validation documents, analytical method(s) or contract.			x
All required instrument outputs (e.g., chromatograms, mass spectra, atomic emission spectra, instrument background corrections, and interference corrections) for evaluating sample and instrument performance are present.			x
Sample results are evaluated by checking each (or selected) instrument output (e.g., chromatograms, mass spectra, atomic emission spectra data, instrument background corrections, interference corrections) for correct identification and quantitation of analytes (e.g., peak integrations, use of appropriate internal standards for quantitation, elution order of analytes, and interferences).			x
Each (or selected) instrument's output(s) is evaluated for confirmation of non-detected or tentatively identified analytes.			Х

Reason Code	Description of Qualification
а	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)
С	Qualified due to calibration problems
ср	Qualified due to insufficient ingrowth (radiochemical only)
dc	Dual column confirmation % difference exceeded
е	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)
I	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
0	Other
р	Qualified as a false positive due to contamination during shipping
pН	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

				Total or							Validator		
SDG	Sample ID	Sample Date	Method	Dissolved	Analyte	Result	Units	Lab Qualifier	SQL	PQL	Qualifier	Reason Code	Reason Code Definition
440-192727-1	CTMW-07D-50.0-20170921	9/21/2017	SW-8260B	Total	Chloroform	720	ug/L		2.5	5	J	h	Holding Time
440-192727-1	CTMW-07D-70.0-20170921-GW	9/21/2017	SW-8260B	Total	Chloroform	500	ug/L		2.5	5	J	h	Holding Time
440-192727-1	CTMW-07D-80.0-20170921	9/21/2017	EPA 314.0	N/A	Perchlorate	1.2	mg/kg	F1	0.027	0.11	J-	m	MS Recovery
440-192727-1	CTMW-07D-90.0-20170921	9/21/2017	EPA 300.1B	N/A	Chlorate	180	ug/kg	J	70	280	J	sp	Detect < PQL
440-192727-1	CTMW-07D-90.0-20170921-FD	9/21/2017	EPA 300.1B	N/A	Chlorate	180	ug/kg	J	70	280	J	sp	Detect < PQL
440-192817-1	CTMW-07D-130.0-20170922-EB	9/22/2017	SW-7199	Dissolved	Chromium [VI]	0.39	ug/L	J	0.25	2	J	sp	Detect < PQL
440-193864-1	CTMW-07D-20171009	10/9/2017	RSK175	Total	Methane	0.0005	mg/L	J	0.00025	0.00099	J	sp	Detect < PQL
440-193864-1	CTMW-07D-20171009	10/9/2017	SW-6020A	Dissolved	Antimony	1.1	ug/L	J	0.5	2	J	sp	Detect < PQL
440-193864-1	CTMW-07D-20171009	10/9/2017	SW-6020A	Dissolved	Copper	0.55	ug/L	J	0.5	2	J	sp	Detect < PQL
440-193864-1	CTMW-07D-20171009	10/9/2017	SW-6020A	Dissolved	Iron	20	ug/L		8	20	J+	bl	Lab Blank
440-193864-1	CTMW-07D-20171009	10/9/2017	SW-6020A	Dissolved	Nickel	0.68	ug/L	J	0.5	2	J	sp	Detect < PQL
440-193864-1	CTMW-07D-20171009	10/9/2017	SW-6020A	Dissolved	Zinc	2.5	ug/L	J	2.5	20	J	sp	Detect < PQL
440-193864-1	CTMW-07D-20171009	10/9/2017	SW-8260B	Total	1,1,2-Trichloroethane	0.25	ug/L	U	0.25	0.5	UJ	С	Calibration
440-204893-1	CTMW-01D-20180305	3/5/2018	EPA 365.3	Total	Orthophosphate (as P)	0.072	mg/L	F1	0.02	0.05	J	fd,m	FD, MS Recovery
440-204893-1	CTMW-01D-20180305	3/5/2018	EPA 365.3	Total	Orthophosphorus as PO4	0.22	mg/L	F1	0.06	0.15	J	fd,m	FD, MS Recovery
440-204893-1	CTMW-01D-20180305	3/5/2018	SW-6020A	Dissolved	Nickel	4.7	ug/L	J	2.5	10	J	sp	Detect < PQL
440-204893-1	CTMW-01D-20180305	3/5/2018	SW-6020A	Dissolved	Selenium	4.7	ug/L	J	2.5	10	J	sp	Detect < PQL
440-204893-1	CTMW-01D-20180305	3/5/2018	SW-6020A	Dissolved	Zinc	45	ug/L	J	13	100	J	sp	Detect < PQL
440-204893-1	CTMW-01D-20180305	3/5/2018	SW-8260B	Total	Dichloromethane [Methylene chloride]	13	ug/L	J	8.8	20	J	sp	Detect < PQL
440-204893-1	CTMW-01D-20180305-FD	3/5/2018	EPA 300.0	Total	Nitrate [as N]	5	mg/L	J	2.8	5.5	J	sp	Detect < PQL
440-204893-1	CTMW-01D-20180305-FD	3/5/2018	EPA 365.3	Total	Orthophosphate (as P)	0.17	mg/L		0.02	0.05	J	fd,m	FD, MS Recovery
440-204893-1	CTMW-01D-20180305-FD	3/5/2018	EPA 365.3	Total	Orthophosphorus as PO4	0.51	mg/L		0.06	0.15	J	fd,m	FD, MS Recovery
440-204893-1	CTMW-01D-20180305-FD	3/5/2018	SW-6020A	Dissolved	Copper	2.6	ug/L	J	2.5	10	J	sp	Detect < PQL
440-204893-1	CTMW-01D-20180305-FD	3/5/2018	SW-6020A	Dissolved	Nickel	4.6	ug/L	J	2.5	10	J	sp	Detect < PQL
440-204893-1	CTMW-01D-20180305-FD	3/5/2018	SW-6020A	Dissolved	Vanadium	9.9	ug/L	J	5	10	J	sp	Detect < PQL
440-204893-1	CTMW-01D-20180305-FD	3/5/2018	SW-6020A	Dissolved	Zinc	50	ua/L	J	13	100	J	sp	Detect < PQL
440-204893-1	CTMW-01D-20180305-FD	3/5/2018	SW-8260B	Total	Dichloromethane [Methylene chloride]	12	ug/L	J	8.8	20	J	sp	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	RSK175	Total	Methane	2.9	mg/L		0.5	1	J-	h	Holding Time
440-204893-1	CTMW-01S-20180305	3/5/2018	SM4500-S2-D	Total	Sulfide	0.031	mg/L	J	0.027	0.05	J	SD	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	SM5310B	Total	Total Organic Carbon	1200	mg/L	-	65	100	J-	h,pH	Holding Time, Preservation
440-204893-1	CTMW-01S-20180305	3/5/2018	SW-6020A	Dissolved	Copper	7.2	ua/L	J	2.5	10	J	SD	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	SW-6020A	Dissolved	Nickel	2.9	ua/L	J	2.5	10	J	sp	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	SW-6020A	Dissolved	Vanadium	6.1	ua/L	J	5	10	J	sp	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	SW-6020A	Dissolved	Zinc	13	ua/L	J	13	100	J	sp	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	SW-8260B	Total	1.2.4-Trichlorobenzene	0.49	ua/L	J	0.4	1	J	SD	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	SW-8260B	Total	1.2-Dichlorobenzene	0.45	ua/L	J	0.25	0.5	J	sp	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	SW-8260B	Total	2-Hexanone	4.5	ua/L	J	2.5	5	J	sp	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	SW-8260B	Total	Benzene	0.44	ua/L	J	0.25	0.5	J	sp	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	SW-8260B	Total	Dichloromethane [Methylene chloride]	1.4	ug/L	J	0.88	2	J	sp	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	SW-8260B	Total	MTBE [Methyl tert-butyl ether]	0.36	ua/L	J	0.25	0.5	J	sp	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	VFA	Total	Formic-acid	3.6	mg/L	J	2.6	10	J	sp	Detect < PQL
440-204893-1	CTMW-01S-20180305	3/5/2018	VFA	Total	n-Butvric Acid	8.5	mg/L	J	2.6	10	J	sp	Detect < PQL
440-204893-1	CTMW-02D-20180305	3/5/2018	SW-6020A	Dissolved	Nickel	2.8	ua/L	J	2.5	10	J	sp	Detect < PQL
440-204893-1	CTMW-02D-20180305	3/5/2018	SW-6020A	Dissolved	Selenium	4	ua/L	J	2.5	10	J	sp	Detect < PQL
440-204893-1	CTMW-02D-20180305	3/5/2018	SW-8260B	Total	1.2-Dichlorobenzene	7.5	ua/L	J	5	10	J	sp	Detect < PQL
440-204893-1	CTMW-02D-20180305	3/5/2018	VFA	Total	Formic-acid	3.6	mg/L	J	2.6	10	J	SD	Detect < PQL
440-204893-1	CTMW-02S-20180306	3/6/2018	EPA 300.0	Total	Sulfate	6.7	mg/L	J	5	10	J	SD	Detect < PQL
440-204893-1	CTMW-02S-20180306	3/6/2018	RSK175	Total	Methane	3.9	ma/L	-	0.5	1	 J-	h	Holdina Time
440-204893-1	CTMW-02S-20180306	3/6/2018	SM5310B	Total	Total Organic Carbon	35	ma/l		0.65	1	 J-	h.pH	Holding Time. Preservation
440-204893-1	CTMW-02S-20180306	3/6/2018	SW-6020A	Dissolved	Nickel	6.8	ua/L	J	2.5	10	J	SD	Detect < PQL
440-204893-1	CTMW-02S-20180306	3/6/2018	SW-6020A	Dissolved	Uranium	2.5	ua/l	J	2.5	5	J	SD	Detect < PQI
440-204893-1	CTMW-02S-20180306	3/6/2018	SW-6020A	Dissolved	Vanadium	8.2	ua/L	J	5	10	J	SD	Detect < PQL
440-204893-1	CTMW-02S-20180306	3/6/2018	SW-8260B	Total	1,2,4-Trichlorobenzene	0.43	ua/L	J	0.4	1	J	SD	Detect < PQL
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				Total or							Validator		
SDG	Sample ID	Sample Date	Method	Dissolved	Analyte	Result	Units	Lab Qualifier	SQL	PQL	Qualifier	Reason Code	Reason Code Definition
440-204893-1	CTMW-02S-20180306	3/6/2018	SW-8260B	Total	1,3-Dichlorobenzene	0.28	ug/L	J	0.25	0.5	J	sp	Detect < PQL
440-204893-1	CTMW-02S-20180306	3/6/2018	SW-8260B	Total	1,4-Dichlorobenzene	0.36	ug/L	J	0.25	0.5	J	sp	Detect < PQL
440-204893-1	CTMW-02S-20180306	3/6/2018	SW-8260B	Total	MTBE [Methyl tert-butyl ether]	0.3	ug/L	J	0.25	0.5	J	sp	Detect < PQL
440-204893-1	CTMW-02S-20180306	3/6/2018	VFA	Total	Acetic acid	4.6	mg/L	J	2.9	10	J	sp	Detect < PQL
440-204893-1	CTMW-02S-20180306	3/6/2018	VFA	Total	Formic-acid	3.6	mg/L	J	2.6	10	J	sp	Detect < PQL
440-204893-1	CTMW-06S-20180306	3/6/2018	EPA 300.0	Total	Sulfate	6.4	mg/L	J	5	10	J	sp	Detect < PQL
440-204893-1	CTMW-06S-20180306	3/6/2018	RSK175	Total	Methane	6	mg/L		0.5	1	J-	h	Holding Time
440-204893-1	CTMW-06S-20180306	3/6/2018	SW-6020A	Dissolved	Iron	89	ug/L	J	40	100	J	sp	Detect < PQL
440-204893-1	CTMW-06S-20180306	3/6/2018	SW-6020A	Dissolved	Nickel	3.3	ug/L	J	2.5	10	J	sp	Detect < PQL
440-204893-1	CTMW-06S-20180306	3/6/2018	SW-8260B	Total	1,2,3-Trichlorobenzene	0.64	ug/L	J	0.4	1	J	sp	Detect < PQL
440-204893-1	CTMW-06S-20180306	3/6/2018	SW-8260B	Total	1,2-Dichlorobenzene	0.43	ug/L	J	0.25	0.5	J	sp	Detect < PQL
440-204893-1	CTMW-06S-20180306	3/6/2018	SW-8260B	Total	Dichloromethane [Methylene chloride]	1.7	ug/L	J	0.88	2	J	sp	Detect < PQL
440-204893-1	CTMW-06S-20180306	3/6/2018	SW-8260B	Total	MTBE [Methyl tert-butyl ether]	0.3	ug/L	J	0.25	0.5	J	sp	Detect < PQL
440-204893-1	CTMW-06S-20180306	3/6/2018	VFA	Total	Acetic acid	3.1	mg/L	J	2.9	10	J	sp	Detect < PQL
440-204893-1	CTMW-06S-20180306	3/6/2018	VFA	Total	Formic-acid	3.5	mg/L	J	2.6	10	J	sp	Detect < PQL
440-204893-1	CTMW-07D-20180306	3/6/2018	EPA 300.0	Total	Nitrate [as N]	0.099	mg/L	J	0.055	0.11	J	sp	Detect < PQL
440-204893-1	CTMW-07D-20180306	3/6/2018	EPA 365.3	Total	Orthophosphate (as P)	0.031	mg/L	J	0.02	0.05	J	SD	Detect < PQL
440-204893-1	CTMW-07D-20180306	3/6/2018	EPA 365.3	Total	Orthophosphorus as PO4	0.096	mg/L	J	0.06	0.15	J	SD	Detect < PQL
440-204893-1	CTMW-07D-20180306	3/6/2018	EPA 365.3	Total	Phosphorus, Total	0.045	mg/L	J	0.025	0.05	J	sp	Detect < PQI
440-204893-1	CTMW-07D-20180306	3/6/2018	SW-6010B	Total	Iron	0.35	mg/L	B	0.05	0.1	- +ل	bl	l ab Blank
440-204893-1	CTMW-07D-20180306	3/6/2018	SW-6020A	Dissolved	Copper	52	ua/l		2.5	10		sp	Detect < PQI
440-204893-1	CTMW-07D-20180306	3/6/2018	VFA	Total	Formic-acid	3.8	mg/L	J	2.6	10	J.	sp	Detect < PQI
440-204893-1	CTMW-07S-20180306	3/6/2018	FPA 314 0	Total	Perchlorate	510000	ua/l	F1	5000	10000		m	MS Becovery
440-204893-1	CTMW-078-20180306	3/6/2018	EPA 351 2	Total	Total Kieldahl Nitrogen [TKN]	0.1	mg/L	LIF1	0.1	0.2	B B	m	MS Recovery
440-204893-1	CTMW-07S-20180306	3/6/2018	EPA 365 3	Total	Orthonhosnhate (as P)	0.1	mg/L	IF1	0.1	0.2		msn	MS Recovery Detect < POI
440-204093-1	CTMW-07S-20180306	3/6/2018	EPA 365 3	Total	Orthophosphorus as PO4	0.15	mg/L	51 F1	0.02	0.05	 	m,sp	MS Recovery
440-204033-1	CTMW-07S-20180306	3/6/2018	EPA 365 3	Total	Phosphorus Total	0.15	mg/L		0.00	0.15		m	MS Recovery
440 204055 1	CTMW-078-20180306	3/6/2018	SM4500-S2-D	Total	Sulfide	0.023	mg/L	LIF1	0.020	0.05	R	m	MS Recovery
440-204093-1	CTMW-07S-20180306	3/6/2018	SW/-6010B	Total	Iron	0.027	mg/L	B	0.027	0.00		hl m	Lab Blank MS Recovery
440-204893-1	CTMW-07S-20180306	3/6/2018	SW-6010B	Total	Manganoso	0.41	mg/L		0.03	0.1	J	DI,III	
440-204893-1	CTMW-07S-20180300	3/6/2018	SW-6010B	Dissolved	Copper	3.6	ing/L	J	2.5	10	J	နာ	
440-204093-1	CTMW-075-20180300	3/0/2018	SW/ 6020A	Dissolved	Solonium	5.0	ug/L	J	2.5	10	J	sp	
440-204093-1	CTMW-075-20180306	3/0/2018	SW 6020A	Dissolved	Selenium	20	ug/L	J E1	2.0	5	J 1	sp	
440-204093-1	CTMW-075-20180306	3/0/2018	SW-6020A	Dissolved	Zino	30	ug/L		2.0	100	J-	mon	MS Recovery
440-204093-1	CTMW-075-20180306	3/0/2018	307-0020A	Total		40	ug/L	JEI	13	100	J	ni,sp	
440-204893-1	CTMW-075-20180306	3/0/2018		Total	Formic-acid	3.0	mg/L		2.0	10	J	sp	Delect < PQL
440-204093-1	CTMW-075-20180308	3/0/2010		Total	Pyluvic Aciu	3.7	mg/∟	UFI	0.025	10	00		
440-205100-1	CTMW-04S-20180307	3/7/2010	EPA 303.3	Dissolved		0.026	mg/∟	J	0.025	0.05	J	sp Ы	Delect < PQL
440-205188-1	CTMW-04S-20180307	3/7/2018	SW-6020A	Dissolved	Antimony	20	ug/L	В	5 0.5	10	J+		
440-205188-1	CTMW-048-20180307	3/7/2018	SW-6020A	Dissolved	Anumony	0.93	ug/L	J	0.5	2	J	sp	
440-205188-1	CTMW-04S-20180307	3/7/2018	SW-6020A	Dissolved	Copper	0.5	ug/L	JF1	0.5	2	J	m,sp	MS Recovery, Detect < PQL
440-205188-1	CTMW-04S-20180307	3/7/2018	SW-6020A	Dissolved	Lead	0.5	ug/L	UF1	0.5	1	UJ	m	MS Recovery
440-205188-1	CTMW-04S-20180307	3/7/2018	SW-6020A	Dissolved		6.2	ug/L	F1	0.5	2	J-	m	MS Recovery
440-205188-1	CTMW-04S-20180307	3/7/2018	SW-6020A	Dissolved		0.99	ug/L	J	0.5	1	J	sp	Detect < PQL
440-205188-1	CTMW-04S-20180307	3/7/2018	SW-6020A	Dissolved		7.4	ug/L	JF1	2.5	20	J	m,sp	MS Recovery, Detect < PQL
440-205188-1	CTMW-04S-20180307	3/7/2018	SW-7199	Iotal		2500	ug/L	J	500	4000	J	sp	Detect < PQL
440-205188-1	CTMW-06D-20180307	3/7/2018	EPA 365.3	Total	Phosphorus, Total	0.032	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-205188-1	CTMW-06D-20180307	3/7/2018	SW-6020A	Dissolved	Aluminum	23	ug/L	В	5	10	J+	bl	Lab Blank
440-205188-1	CTMW-06D-20180307	3/7/2018	SW-6020A	Dissolved	Cobalt	0.55	ug/L	J	0.5	1	J	sp	Detect < PQL
440-205188-1	CTMW-06D-20180307	3/7/2018	SW-6020A	Dissolved	Zinc	5	ug/L	J	2.5	20	J	sp	Detect < PQL
440-205188-1	CTMW-06D-20180307	3/7/2018	SW-8260B	Total	Acetone	69	ug/L	J	50	100	J	sp	Detect < PQL
440-205188-1	CTMW-06D-20180307	3/7/2018	SW-8260B	Total	Chloroform	440	ug/L	F1	1.3	2.5	J	m	MS Recovery
440-205188-1	CTMW-06D-20180307	3/7/2018	VFA	Total	Acetic acid	32	mg/L	J	15	50	J	sp	Detect < PQL
440-205188-2	CTMW-04D-20180307	3/7/2018	EPA 365.3	Total	Orthophosphate (as P)	0.042	mg/L	JF1	0.02	0.05	J	m,sp	MS Recovery, Detect < PQL

				Total or							Validator		
SDG	Sample ID	Sample Date	Method	Dissolved	Analyte	Result	Units	Lab Qualifier	SQL	PQL	Qualifier	Reason Code	Reason Code Definition
440-205188-2	CTMW-04D-20180307	3/7/2018	EPA 365.3	Total	Orthophosphorus as PO4	0.13	mg/L	JF1	0.06	0.15	J	m,sp	MS Recovery, Detect < PQL
440-205188-2	CTMW-04D-20180307	3/7/2018	SW-6020A	Dissolved	Aluminum	30	ug/L	JB	25	50	J	bl,sp	Lab Blank, Detect < PQL
440-205188-2	CTMW-04D-20180307	3/7/2018	SW-6020A	Dissolved	Selenium	4.3	ug/L	J	2.5	10	J	sp	Detect < PQL
440-214187-1	CTMW-01D-20180621	6/21/2018	EPA 300.0	Total	Nitrate [as N]	5.2	mg/L	J	2.8	5.5	J	sp	Detect < PQL
440-214187-1	CTMW-01D-20180621	6/21/2018	EPA 365.3	Total	Orthophosphorus as PO4	0.65	mg/L		0.06	0.15	J	fd	FD
440-214187-1	CTMW-01D-20180621	6/21/2018	EPA 365.3	Total	Phosphorus, Total	0.17	mg/L	J	0.13	0.25	J	sp	Detect < PQL
440-214187-1	CTMW-01D-20180621	6/21/2018	SM5220D	Total	Chemical Oxygen Demand	870	mg/L		100	200	J	fd	FD
440-214187-1	CTMW-01D-20180621	6/21/2018	SW-6010B	Total	Iron	0.12	mg/L	J	0.1	0.2	J	sp	Detect < PQL
440-214187-1	CTMW-01D-20180621	6/21/2018	SW-6020A	Dissolved	Nickel	4.4	ug/L	J	2.5	10	J	sp	Detect < PQL
440-214187-1	CTMW-01D-20180621	6/21/2018	SW-6020A	Dissolved	Selenium	4.1	ug/L	J	2.5	10	J	sp	Detect < PQL
440-214187-1	CTMW-01D-20180621	6/21/2018	SW-6020A	Dissolved	Vanadium	9.5	ug/L	J	5	10	J	sp	Detect < PQL
440-214187-1	CTMW-01D-20180621	6/21/2018	SW-8260B	Total	Dichloromethane [Methylene chloride]	27	ug/L	J	18	40	J	sp	Detect < PQL
440-214187-1	CTMW-01D-20180621	6/21/2018	SW-8260B	Total	Methyl ethyl ketone [2-Butanone]	940	ua/L	-	50	100	J	fd	FD
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	EPA 300.0	Total	Nitrate [as N]	5	mg/L	J	2.8	5.5	J	SD	Detect < PQL
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	EPA 365.3	Total	Orthophosphorus as PO4	0.48	mg/L	-	0.06	0.15	J	fd	FD
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SM5220D	Total	Chemical Oxygen Demand	650	mg/L		50	100	J	fd	FD
440-214187-1	CTMW-01D-20180621-ED	6/21/2018	SW-6010B	Total	Iron	0.1	mg/l	J	0.1	0.2	J	SD	Detect < PQI
440-214187-1	CTMW-01D-20180621-ED	6/21/2018	SW-6020A	Dissolved	Nickel	4.5	ua/l		2.5	10		sp	Detect < PQI
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-6020A	Dissolved	Vanadium	9.8	ug/L	 .l	5	10	<u>ل</u>	sp	Detect < PQI
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1 1 1 2-Tetrachloroethane	5	ug/L	<u> </u>	5	10	U.I	b b	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1 1 1-Trichloroethane	5	ug/L	U	5	10		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1 1 2 2-Tetrachloroethane	5	ug/L	<u> </u>	5	10		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1 1 2-Trichloroethane	5	ug/L	U	5	10		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1 1-Dichloroethane	5	ug/L	<u> </u>	5	10		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1,1-Dichloroethene	5	ug/L	<u> </u>	5	10	03	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1 1-Dichloropropene	5	ug/L	<u> </u>	5	10		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1 2 3-Trichlorobenzene	8	ug/L	<u> </u>	8	20		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1 2 3-Trichloropropane	8	ug/L	<u> </u>	8	20		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1 2 4-Trichlorobenzene	8	ug/L	<u> </u>	8	20		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1.2.4-Trimethylbenzene	5	ug/L	<u> </u>	5	10	111	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1.2-Dichlorobenzene	5	ug/L	<u> </u>	5	10		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1.2-Dichloroethane	5	ug/L	<u> </u>	5	10		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1.2-Dichloropropane	5	ug/L	<u> </u>	5	10	03	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1 3 5-Trimethylbenzene	5	ug/L	<u> </u>	5	10		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1.3-Dichlorobenzene	5	ug/L	<u> </u>	5	10	03	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	1.3-Dichloropropane	5	ug/L	<u> </u>	5	10	03	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total		5	ug/L	<u> </u>	5	10		h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total		8	ug/L	<u> </u>	8	20	03	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	2-Chlorotoluene	5	ug/L	<u> </u>	5	10	03	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	2-Hevanone	50	ug/L	<u> </u>	50	100	03	h	Holding Time
440-214107-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	2-Methovy-2-methyl-butane	5	ug/L	<u> </u>	5	100	03	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total		5	ug/L	<u> </u>	5	10	03	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	4-Motbyl-2-pontanono [MIBK]	50	ug/L	<u> </u>	50	100	03	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total		510	ug/L	0	200	400	03	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Bonzono	5	ug/L		5	10	<u>J</u>	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Bromobonzono	5	ug/L	<u> </u>	5	10		h	Holding Time
440-21/187-1	CTMW_01D_20180621-FD	6/21/2018	SW-8260B	Total	Bromodichloromethane	5	ug/L	<u>U</u>	5	10		h	Holding Time
1410-214107-1	CTMW_01D_20180621 ED	6/21/2010	SW-0200D	Total	Bromoform	Q	ug/L		Q Q	20	111	н Б	Holding Time
140-214107-1	CTMW-01D-20190621-FD	6/21/2010	SW-0200D	Total	Bromomothana	5	ug/L		0 F	10		n n	
14107-1 1107-1		6/21/2010	SW-0200D	Total		5	ug/L		5	10	111	н Б	
140-214107-1	CTMW_01D_20180621 ED	6/21/2010	SW-0200D	Total		5	ug/L		5	10	111	н Б	
1410-2114107-1		6/21/2010	SW-020UD	Total	Chlorobromomothana	5	ug/L		5	10	0.0	н Б	
440-214107-1		6/21/2010		Total	Chlorosthana	0 0	ug/∟		0	20	0.0		
440-214101-1		0/21/2010	311-020UD	rotai	Chloroethane	0	uy/L	U	0	20	00	11	

				Total or							Validator		
SDG	Sample ID	Sample Date	Method	Dissolved	Analyte	Result	Units	Lab Qualifier	SQL	PQL	Qualifier	Reason Code	Reason Code Definition
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Chloroform	1500	ug/L		5	10	J	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Chloromethane	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	cis-1,2-Dichloroethene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	cis-1,3-Dichloropropene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Cymene [Isopropyltoluene]	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Dibromochloromethane	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Dibromochloropropane	10	ug/L	U	10	20	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Dibromomethane	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Dichloromethane [Methylene chloride]	36	ug/L	J	18	40	J	h,sp	Holding Time, Detect < PQL
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Diisopropyl ether	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Ethane, 1,2-dibromo-	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Ethyl tert-butyl ether	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Ethylbenzene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Freon-11 [Trichlorofluoromethane]	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Freon-12 [Dichlorodifluoromethane]	8	ug/L	U	8	20	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Hexachlorobutadiene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Isopropylbenzene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	m,p-Xylene	10	ug/L	U	10	20	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Methyl ethyl ketone [2-Butanone]	1300	ug/L		50	100	J	fd,h	FD, Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	MTBE [Methyl tert-butyl ether]	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Naphthalene	8	ug/L	U	8	20	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	n-Butyl benzene	8	ug/L	U	8	20	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	n-Propylbenzene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	o-Xylene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	sec-Butylbenzene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Styrene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	tert-Butyl alcohol	100	ug/L	U	100	200	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	tert-Butyl benzene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Tetrachloroethene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Toluene	5	ua/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	trans-1.2-Dichloroethene	5	ua/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	trans-1.3-Dichloropropene	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Trichloroethene	5	ua/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Vinvl chloride	5	ug/L	U	5	10	UJ	h	Holding Time
440-214187-1	CTMW-01D-20180621-FD	6/21/2018	SW-8260B	Total	Xvlenes [total]	10	ug/L	U	10	20	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	RSK175	Total	Methane	0.87	ma/L		0.00025	0.00099	J	vh	Head Space
440-214187-1	CTMW-01S-20180621	6/21/2018	SM4500-S2-D	Total	Sulfide	0.041	mg/L	J	0.027	0.05	J	SD	Detect < PQL
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-6020A	Dissolved	Antimony	2.7	ua/L	J	2.5	10	J	SD	Detect < PQL
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-6020A	Dissolved	Nickel	9	ua/L	J	2.5	10	J	sp	Detect < PQL
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-6020A	Dissolved	Selenium	2.7	ug/l	J	2.5	10	J	sp	Detect < PQI
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-6020A	Dissolved	Uranium	4.5	ug/L	J	2.5	5	J	sp	Detect < PQL
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1.1.1.2-Tetrachloroethane	0.25	ug/l	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1.1.1-Trichloroethane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1.1.2.2-Tetrachloroethane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1 1 2-Trichloroethane	0.25	ug/L	U	0.25	0.5		h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1 1-Dichloroethane	0.25	ug/L	U	0.25	0.5		h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1 1-Dichloroethene	0.25	ug/L	U	0.25	0.5		h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1 1-Dichloropropene	0.25	ug/L		0.25	0.5	[].]	h ii	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1 2 3-Trichlorohenzene	0.20	ug/L		0.20	1	11.1	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1 2 3-Trichloropropane	0.4	ug/L		0.4	1	[].]	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1.2.4-Trichlorobenzene	0.4	ug/L		0.4	1	11.1	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1 2 4-Trimethylbenzene	0.7	ua/l		0.7	0.5	11.1	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1 2-Dichlorohenzene	0.25	ug/L		0.25	0.5	11.1	h	Holding Time
. 15 21 4107 1	011111 010 20100021	0,21,2010	011 02000	10101		0.20	~9/ -	5	0.20	0.0			

				Total or							Validator		
SDG	Sample ID	Sample Date	Method	Dissolved	Analyte	Result	Units	Lab Qualifier	SQL	PQL	Qualifier	Reason Code	Reason Code Definition
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1,2-Dichloroethane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1,2-Dichloropropane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1,3,5-Trimethylbenzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1,3-Dichlorobenzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1,3-Dichloropropane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	1,4-Dichlorobenzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	2,2-Dichloropropane	0.4	ug/L	U	0.4	1	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	2-Chlorotoluene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	2-Hexanone	2.5	ug/L	U	2.5	5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	2-Methoxy-2-methyl-butane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	4-Chlorotoluene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	4-Methyl-2-pentanone [MIBK]	2.5	ug/L	U	2.5	5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Acetone	54	ug/L		10	20	J	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Benzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Bromobenzene	0.25	ua/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Bromodichloromethane	0.25	ua/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Bromoform	0.4	ua/L	U	0.4	1	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Bromomethane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Carbon tetrachloride	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Chlorobenzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Chlorobromomethane	0.25	ug/L	U	0.25	0.5		h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Chloroethane	0.4	ug/L	U	0.4	1		h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Chloroform	0.25	ug/L	U	0.25	0.5		h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Chloromethane	0.25	ug/L	<u> </u>	0.25	0.5	111	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	cis-1 2-Dichloroethene	0.25	ug/L	U	0.25	0.5	03	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	cis-1 3-Dichloropropene	0.25	ug/L	<u> </u>	0.25	0.5	111	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total		0.25	ug/L	<u> </u>	0.25	0.5		h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Dibromochloromethane	0.25	ug/L	<u> </u>	0.25	0.5	05	h	Holding Time
440-214187-1	CTMW-015-20180621	6/21/2018	SW-8260B	Total	Dibromochloropropapa	0.25	ug/L	<u> </u>	0.25	1	05	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Dibromomethane	0.5	ug/L	U	0.5	0.5		h	Holding Time
440-214187-1	CTMW-015-20180621	6/21/2018	SW-8260B	Total	Dichloromethane [Methylene chloride]	0.25	ug/L	<u> </u>	0.23	0.0	05	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-0200B	Total		0.88	ug/L	0	0.00	2	03	h	
440-214107-1	CTMW-015-20180621	6/21/2018	SW-0200B	Total	Ethana, 1.2 dibromo	0.25	ug/L	U	0.25	0.5	03	n b	Holding Time
440-214107-1		6/21/2018	SW-0200B	Total	Ethalie, 1,2-dibioinio-	0.25	ug/L	U	0.25	0.5	03	h	Holding Time
440-214187-1		6/21/2018	SW-0200B	Total	Ethyl tert-butyr ether	0.25	ug/L	0	0.25	0.5	03	n h	Holding Time
440-214107-1	CTMW-01S-20180621	6/21/2010	SW-0200D	Total	Ethyibenzene Froop 11 [Trichlorofluoromothono]	0.25	ug/L	U	0.25	0.5	03	n b	
440-214187-1		6/21/2018	SW-0200B	Total	Freen 12 [Dichlorediffueremethane]	0.25	ug/L	0	0.25	0.5	03	n h	Holding Time
440-214107-1	CTMW-01S-20180621	6/21/2010	SW-0200D	Total	Freon-12 [Dichlorodinuoromethane]	0.4	ug/L	0	0.4	0.5	03	n b	
440-214107-1	CTMW 015-20180621	6/21/2010	SW-0200D	Total		0.25	ug/L	U	0.25	0.5	03	n b	Holding Time
440-214107-1	CTMW-01S-20180621	6/21/2010	SW-0200D	Total	m p Yulopo	0.25	ug/L	0	0.25	0.5	03	n b	
440-214187-1		6/21/2018	SW-8260B	Total	m,p-Aylene	0.5	ug/L	0	0.5	I	UJ	n	Holding Time
440-214187-1		6/21/2018	SW-8260B	Total	MTDE [Mathed text but d ath an]	2.5	ug/L	0	2.5	C O C	UJ	n	Holding Time
440-214187-1		6/21/2018	SW-8260B	Total	MIBE [Methyl tert-butyl ether]	0.25	ug/L	U	0.25	0.5	UJ	n	
440-214187-1	CTMW-015-20180621	6/21/2018	SW-8260B	Total		0.4	ug/L	U	0.4	1	UJ	n	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	n-Butyl benzene	0.4	ug/L	U	0.4	1	UJ	n	
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B		n-Propyibenzene	0.25	ug/L	U	0.25	0.5	UJ	n	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	I otal	o-Xylene	0.25	ug/L	U	0.25	0.5	UJ	n	
440-214187-1	CTMW-01S-20180621	6/21/2018	SVV-8260B		sec-Butylbenzene	0.25	ug/L	U	0.25	0.5	UJ	n .	
440-214187-1	OTMW-01S-20180621	6/21/2018	SVV-8260B	I otal	Styrene	0.25	ug/L	U	0.25	0.5	UJ	n	
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	I otal	tert-Butyl alcohol	5	ug/L	U	5	10	UJ	n	
440-214187-1	OTMW-01S-20180621	6/21/2018	SVV-8260B	I otal	tert-Butyl benzene	0.25	ug/L	U	0.25	0.5	UJ	n	
440-214187-1	OTMW-01S-20180621	6/21/2018	SW-8260B		I etrachloroethene	0.25	ug/L	U	0.25	0.5	UJ	n .	
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	I otal	I oluene	0.25	ug/L	U	0.25	0.5	UJ	h ,	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	l otal	trans-1,2-Dichloroethene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time

				Total or							Validator		
SDG	Sample ID	Sample Date	Method	Dissolved	Analyte	Result	Units	Lab Qualifier	SQL	PQL	Qualifier	Reason Code	Reason Code Definition
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	trans-1,3-Dichloropropene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Trichloroethene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Vinyl chloride	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	SW-8260B	Total	Xylenes [total]	0.5	ug/L	U	0.5	1	UJ	h	Holding Time
440-214187-1	CTMW-01S-20180621	6/21/2018	VFA	Total	Pyruvic Acid	3.7	mg/L	UF1	3.7	15	UJ	m	MS Recovery
440-214187-1	CTMW-02D-20180621	6/21/2018	EPA 365.3	Total	Phosphorus, Total	0.036	mg/L	J	0.025	0.05	J	sp	Detect < PQL
440-214187-1	CTMW-02D-20180621	6/21/2018	SW-6010B	Total	Iron	0.81	mg/L	J	0.5	1	J	sp	Detect < PQL
440-214187-1	CTMW-02D-20180621	6/21/2018	SW-6010B	Total	Manganese	0.54	mg/L	F1	0.15	0.2	J+	m	MS Recovery
440-214187-1	CTMW-02D-20180621	6/21/2018	SW-6020A	Dissolved	Beryllium	1.4	ug/L	J	1.3	2.5	J	sp	Detect < PQL
440-214187-1	CTMW-02D-20180621	6/21/2018	SW-6020A	Dissolved	Nickel	3.9	ug/L	J	2.5	10	J	sp	Detect < PQL
440-214187-1	CTMW-02D-20180621	6/21/2018	SW-6020A	Dissolved	Selenium	6	ug/L	J	2.5	10	J	sp	Detect < PQL
440-214189-1	CTMW-04D-20180621	6/21/2018	EPA 351.2	Total	Total Kjeldahl Nitrogen [TKN]	0.1	mg/L	UF1	0.1	0.2	R	m	MS Recovery
440-214189-1	CTMW-04D-20180621	6/21/2018	EPA 365.3	Total	Orthophosphate (as P)	0.051	mg/L	F1	0.02	0.05	J-	m	MS Recovery
440-214189-1	CTMW-04D-20180621	6/21/2018	EPA 365.3	Total	Orthophosphorus as PO4	0.16	mg/L	F1	0.06	0.15	J-	m	MS Recovery
440-214189-1	CTMW-04D-20180621	6/21/2018	EPA 365.3	Total	Phosphorus, Total	0.025	mg/L	UF1	0.025	0.05	R	m	MS Recovery
440-214189-1	CTMW-04D-20180621	6/21/2018	RSK175	Total	Methane	0.071	mg/L		0.00025	0.00099	J	vh	Head Space
440-214189-1	CTMW-04D-20180621	6/21/2018	SM4500-S2-D	Total	Sulfide	0.027	mg/L	UF1	0.027	0.05	R	m	MS Recovery
440-214189-1	CTMW-04D-20180621	6/21/2018	SM5220D	Total	Chemical Oxygen Demand	20	mg/L	UF1	20	40	R	m	MS Recovery
440-214189-1	CTMW-04D-20180621	6/21/2018	SW-6010B	Total	Iron	0.59	mg/L	F1	0.25	0.5	J-	m	MS Recovery
440-214189-1	CTMW-04D-20180621	6/21/2018	SW-6020A	Dissolved	Copper	2.5	ug/L	J	2.5	10	J	sp	Detect < PQL
440-214189-1	CTMW-04D-20180621	6/21/2018	SW-6020A	Dissolved	Iron	65	ug/L	JB	40	100	J	bl,sp	Lab Blank, Detect < PQL
440-214189-1	CTMW-04D-20180621	6/21/2018	SW-6020A	Dissolved	Nickel	2.6	ug/L	J	2.5	10	J	sp	Detect < PQL
440-214189-1	CTMW-04D-20180621	6/21/2018	SW-6020A	Dissolved	Selenium	5.1	ug/L	J	2.5	10	J	sp	Detect < PQL
440-214189-1	CTMW-04D-20180621	6/21/2018	SW-6020A	Dissolved	Zinc	40	ug/L	JB	13	100	J	bl,sp	Lab Blank, Detect < PQL
440-214189-1	CTMW-04D-20180621	6/21/2018	VFA	Total	Pyruvic Acid	3.7	mg/L	UF1	3.7	15	UJ	m	MS Recovery
440-214189-1	CTMW-04S-20180621	6/21/2018	SW-6010B	Total	Iron	0.087	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-214189-1	CTMW-04S-20180621	6/21/2018	SW-6020A	Dissolved	Aluminum	37	ug/L	JB	25	50	J	bl,sp	Lab Blank, Detect < PQL
440-214189-1	CTMW-04S-20180621	6/21/2018	SW-6020A	Dissolved	Antimony	3	ug/L	J	2.5	10	J	sp	Detect < PQL
440-214189-1	CTMW-04S-20180621	6/21/2018	SW-6020A	Dissolved	Cobalt	3.5	ua/L	J	2.5	5	J	sp	Detect < PQL
440-214189-1	CTMW-04S-20180621	6/21/2018	SW-6020A	Dissolved	Nickel	5.5	ug/L	J	2.5	10	J	sp	Detect < PQL
440-214189-1	CTMW-04S-20180621	6/21/2018	SW-6020A	Dissolved	Selenium	8.1	ua/L	J	2.5	10	J	sp	Detect < PQL
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-6010B	Total	Chromium	3.3	ma/L	В	0.0025	0.005	J+	bl	Lab Blank
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-6020A	Dissolved	Aluminum	46	ua/L	В	5	10	J+	bl	Lab Blank
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-6020A	Dissolved	Cobalt	0.74	ug/L	J	0.5	1	J	SD	Detect < PQL
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-6020A	Dissolved	Copper	0.63	ua/L	J	0.5	2	J	SD	Detect < PQL
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.1.1.2-Tetrachloroethane	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.1.1-Trichloroethane	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.1.2.2-Tetrachloroethane	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.1.2-Trichloroethane	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.1-Dichloroethane	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.1-Dichloroethene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.1-Dichloropropene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.2.3-Trichlorobenzene	2	ua/L	U	2	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.2.3-Trichloropropane	2	ug/L	U	2	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.2.4-Trichlorobenzene	2	ua/L	U	2	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.2.4-Trimethylbenzene	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.2-Dichlorobenzene	1.3	ua/l	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.2-Dichloroethane	1.3	ua/l	U	1.3	2.5	U.I	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.2-Dichloropropane	1.3	ua/l	U	1.3	2.5	U.I	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.3.5-Trimethylbenzene	1.3	ua/l	U	1.3	2.5	U.I	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.3-Dichlorobenzene	1.3	ua/l	U	1.3	2.5	U.I	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.3-Dichloropropane	1.3	ug/L	U	1.3	2.5	().1	h ii	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	1.4-Dichlorobenzene	1.3	ua/l	U	1.3	2.5	U.I	h	Holding Time
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Table 6 Results Qualified During Validation

				Total or							Validator		
SDG	Sample ID	Sample Date	Method	Dissolved	Analyte	Result	Units	Lab Qualifier	SQL	PQL	Qualifier	Reason Code	Reason Code Definition
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	2,2-Dichloropropane	2	ug/L	U	2	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	2-Chlorotoluene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	2-Hexanone	13	ug/L	U	13	25	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	2-Methoxy-2-methyl-butane	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	4-Chlorotoluene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	4-Methyl-2-pentanone [MIBK]	13	ug/L	U	13	25	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Acetone	50	ug/L	U	50	100	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Benzene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Bromobenzene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Bromodichloromethane	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Bromoform	2	ug/L	U	2	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Bromomethane	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Carbon tetrachloride	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Chlorobenzene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Chlorobromomethane	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Chloroethane	2	ug/L	U	2	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Chloroform	270	ug/L		1.3	2.5	J	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Chloromethane	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	cis-1,2-Dichloroethene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	cis-1,3-Dichloropropene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Cymene [Isopropyltoluene]	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Dibromochloromethane	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Dibromochloropropane	2.5	ug/L	U	2.5	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Dibromomethane	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Dichloromethane [Methylene chloride]	19	ug/L	-	4.4	10	J	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Diisopropyl ether	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Ethane, 1,2-dibromo-	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Ethyl tert-butyl ether	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Ethylbenzene	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Freon-11 [Trichlorofluoromethane]	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Freon-12 [Dichlorodifluoromethane]	2	ua/L	U	2	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Hexachlorobutadiene	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Isopropylbenzene	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	m.p-Xvlene	2.5	ua/L	U	2.5	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Methyl ethyl ketone [2-Butanone]	13	ua/L	U	13	25	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	MTBE [Methyl tert-butyl ether]	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Naphthalene	2	ua/L	U	2	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	n-Butvl benzene	2	ua/L	U	2	5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	n-Propylbenzene	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	o-Xvlene	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	sec-Butylbenzene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Styrene	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	tert-Butyl alcohol	25	ua/L	U	25	50	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	tert-Butyl benzene	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Tetrachloroethene	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Toluene	1.3	ua/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	trans-1.2-Dichloroethene	1.3	ug/L	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	trans-1.3-Dichloropropene	1.3	ua/L	U	1.3	2,5	IJ	h	Holdina Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Trichloroethene	1.3	ug/l	U	1.3	2.5	UJ	h	Holding Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Vinyl chloride	1.3	ua/L	U	1.3	2,5	IJ	h	Holdina Time
440-214285-1	CTMW-06D-20180622	6/22/2018	SW-8260B	Total	Xvlenes [total]	2.5	ua/L	U	2.5	5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-6010B	Total	Chromium	0.042	ma/L	B	0.0025	0.005	 +L	bl	Lab Blank
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-6020A	Dissolved	Aluminum	27	ua/L	B	5	10	J+	bl	Lab Blank
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Table 6 Results Qualified During Validation

				Total or							Validator		
SDG	Sample ID	Sample Date	Method	Dissolved	Analyte	Result	Units	Lab Qualifier	SQL	PQL	Qualifier	Reason Code	Reason Code Definition
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-6020A	Dissolved	Antimony	1.3	ug/L	J	0.5	2	J	sp	Detect < PQL
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-6020A	Dissolved	Cadmium	0.25	ug/L	J	0.25	1	J	sp	Detect < PQL
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-6020A	Dissolved	Copper	0.75	ug/L	J	0.5	2	J	sp	Detect < PQL
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-6020A	Dissolved	Selenium	0.59	ug/L	JF1	0.5	2	J	m,sp	MS Recovery, Detect < PQL
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,1,1,2-Tetrachloroethane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,1,1-Trichloroethane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,1,2,2-Tetrachloroethane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,1,2-Trichloroethane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,1-Dichloroethane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,1-Dichloroethene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,1-Dichloropropene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,2,3-Trichlorobenzene	0.49	ug/L	J	0.4	1	J	h,sp	Holding Time, Detect < PQL
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,2,3-Trichloropropane	0.4	ug/L	U	0.4	1	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,2,4-Trichlorobenzene	0.4	ug/L	U	0.4	1	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,2,4-Trimethylbenzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,2-Dichlorobenzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,2-Dichloroethane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,2-Dichloropropane	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,3,5-Trimethylbenzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1,3-Dichlorobenzene	0.33	ug/L	J	0.25	0.5	J	h,sp	Holding Time, Detect < PQL
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1.3-Dichloropropane	0.25	ua/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	1.4-Dichlorobenzene	0.25	ua/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	2.2-Dichloropropane	0.4	ua/L	U	0.4	1	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	2-Chlorotoluene	0.25	ug/l	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	2-Hexanone	2.5	ua/L	U	2.5	5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	2-Methoxy-2-methyl-butane	0.25	ug/l	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	4-Chlorotoluene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	4-Methyl-2-pentanone [MIBK]	2.5	ug/L	U	2.5	5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Acetone	12	ug/L		10	20		h sp	Holding Time Detect < PQI
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Benzene	0.25	ug/L	Ŭ	0.25	0.5	U.J	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Bromobenzene	0.25	ug/L	U	0.25	0.5		n h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Bromodichloromethane	0.25	ug/L	U	0.25	0.5		h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Bromoform	0.4	ug/L	U	0.20	1		h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Bromomethane	0.25	ug/L	U	0.25	0.5		n h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Carbon tetrachloride	0.25	ug/L	U	0.20	0.5		h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Chlorobenzene	0.25	ug/L	U	0.25	0.5		h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Chlorobromomethane	0.25	ug/L	U	0.20	0.5		h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Chloroethane	0.4	ug/L	U	0.20	1		h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Chloroform	4 9	ug/L	0	0.4	0.5		h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Chloromethane	0.25	ug/L		0.25	0.5	<u>_</u>	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	cis-1 2-Dichloroethene	0.25	ug/L	<u> </u>	0.25	0.5		h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	cis-1 3-Dichloropropene	0.25	ug/L	U	0.20	0.5		h	Holding Time
440 214205 1	CTMW/-06S-20180622	6/22/2018	SW-8260B	Total		0.25	ug/L	<u> </u>	0.25	0.5	00	h	Holding Time
440-214205-1	CTMW-065-20180622	6/22/2018	SW-8260B	Total	Dibromochloromethane	0.25	ug/L	<u> </u>	0.25	0.5		h	Holding Time
440-214205-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Dibromochloropropape	0.25	ug/L	<u> </u>	0.20	0.0		h	Holding Time
440-214285-1	CTMW-065-20180622	6/22/2018	SW-8260B	Total	Dibromomethane	0.5	ug/L	<u> </u>	0.5	0.5	03	h	Holding Time
140-214200-1 1/0-21/295-1	CTMW-065-20180622	6/22/2018	SW-8260B	Total	Dichloromethane [Mothylona chlorida]	1 /	ug/L		0.20	0.0	1	ii hen	Holding Time Detect < POI
110-21/295 1	CTMW_068_20190622	6/22/2010	SW/_8260P	Total		0.25	ug/L	J 	0.00	<u>ک</u> ٥.۶	J	п,әр ь	
140-214200-1	CTMW-065-20180622	6/22/2010	SW-8260P	Total	Ethano 1.2 dibromo	0.25	ug/L		0.20	0.5	111	ii b	
140-214200-1	CTMW/_068_20190622	6/22/2010	SW-0200D	Total	Ethyl tort-butyl other	0.20	ug/L	11	0.20	0.5	111	ll h	
140-214200-1	CTMW-065-20180622	6/22/2010	SW-8260P	Total	Ethylopzopo	0.25	ug/L		0.20	0.5	111	ii b	
440-214200-1		6/22/2010	SW OZOUD	Total		0.20	ug/L	0	0.25	0.5		11 k	
440-214200-1		6/22/2018	SW BOCOD	Total	Freen 12 [Dieblored:flueremethers]	0.20	ug/L	0	0.25	0.5	UJ		
440-214280-1	011000-20180022	0/22/2010	3VV-020UB	rotar		0.4	ug/L	U	0.4		UJ	11	

Table 6 Results Qualified During Validation

				Total or							Validator		
SDG	Sample ID	Sample Date	Method	Dissolved	Analyte	Result	Units	Lab Qualifier	SQL	PQL	Qualifier	Reason Code	Reason Code Definition
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Hexachlorobutadiene	0.3	ug/L	J	0.25	0.5	J	h,sp	Holding Time, Detect < PQL
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Isopropylbenzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	m,p-Xylene	0.5	ug/L	U	0.5	1	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Methyl ethyl ketone [2-Butanone]	2.5	ug/L	U	2.5	5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	MTBE [Methyl tert-butyl ether]	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Naphthalene	0.4	ug/L	U	0.4	1	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	n-Butyl benzene	0.4	ug/L	U	0.4	1	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	n-Propylbenzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	o-Xylene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	sec-Butylbenzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Styrene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	tert-Butyl alcohol	5	ug/L	U	5	10	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	tert-Butyl benzene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Tetrachloroethene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Toluene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	trans-1,2-Dichloroethene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	trans-1,3-Dichloropropene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Trichloroethene	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Vinyl chloride	0.25	ug/L	U	0.25	0.5	UJ	h	Holding Time
440-214285-1	CTMW-06S-20180622	6/22/2018	SW-8260B	Total	Xylenes [total]	0.5	ug/L	U	0.5	1	UJ	h	Holding Time
440-214285-1	CTMW-07D-20180622	6/22/2018	SW-6010B	Total	Chromium	0.018	mg/L	В	0.0025	0.005	J+	bl	Lab Blank
440-214285-1	CTMW-07D-20180622	6/22/2018	SW-6010B	Total	Iron	0.075	mg/L	J	0.05	0.1	J	sp	Detect < PQL
440-214285-1	CTMW-07D-20180622	6/22/2018	SW-6010B	Total	Manganese	0.015	mg/L	J	0.015	0.02	J	sp	Detect < PQL
440-214285-1	CTMW-07D-20180622	6/22/2018	SW-6020A	Dissolved	Aluminum	62	ug/L	В	5	10	J+	bl	Lab Blank
440-214285-1	CTMW-07D-20180622	6/22/2018	SW-6020A	Dissolved	Selenium	1.3	ug/L	J	0.5	2	J	sp	Detect < PQL
440-214285-1	CTMW-07D-20180622	6/22/2018	SW-8260B	Total	2,2-Dichloropropane	0.4	ug/L	U	0.4	1	UJ	С	Calibration
440-214285-1	CTMW-07D-20180622	6/22/2018	SW-8260B	Total	Chloroform	0.41	ug/L	J	0.25	0.5	J	sp	Detect < PQL
440-214285-1	CTMW-07D-20180622	6/22/2018	SW-8260B	Total	Dichloromethane [Methylene chloride]	0.97	ug/L	J	0.88	2	J	sp	Detect < PQL
440-214285-1	M12-20180622-TB	6/22/2018	SW-8260B	Total	2,2-Dichloropropane	0.4	ug/L	U	0.4	1	UJ	С	Calibration
440-214285-1	M12-20180622-TB	6/22/2018	SW-8260B	Total	Dichloromethane [Methylene chloride]	1	ug/L	J	0.88	2	J	sp	Detect < PQL
440-214285-1	M12-20180622-TB	6/22/2018	SW-8260B	Total	Tetrachloroethene	0.38	ug/L	J	0.25	0.5	J	sp	Detect < PQL

SDG	Method	Parameter	Filtered	Units	Parent Sample ID	Result	FD Result	RPD (%)	Allowed RPD (%)	Difference >PQL
440-204893-1	EPA 365.3	Orthophosphate (as P)	Total	mg/L	CTMW-01D-20180305	0.072	0.17		N/A	0.098
440-204893-1	EPA 365.3	Orthophosphorus as PO4	Total	mg/L	CTMW-01D-20180305	0.22	0.51		N/A	0.29
440-214187-1	EPA 365.3	Orthophosphorus as PO4	Total	mg/L	CTMW-01D-20180621	0.65	0.48		N/A	0.17
440-214187-1	SM5220D	Chemical Oxygen Demand	Total	mg/L	CTMW-01D-20180621	870	650		N/A	220
440-214187-1	SW-8260B	Methyl ethyl ketone [2-Butanone]	Total	ug/L	CTMW-01D-20180621	940	1300	32	30	

SDG	Spiked Sample	Lab Sample ID	Method	Filtered	Parameter	MS Recovery (%)	MSD Recovery (%)	Acceptance Range (%)
440-192727-1	CTMW-07D-80.0-20170921	440-192727-6	EPA 314.0	Ν	Perchlorate	86	67	80 - 120
440-204893-1	CTMW-01D-20180305	440-204893-3	EPA 365.3	Ν	Orthophosphate (as P)	33	30	75 - 125
440-204893-1	CTMW-01D-20180305	440-204893-3	EPA 365.3	Ν	Orthophosphorus as PO4	33	30	75 - 125
440-204893-1	CTMW-07S-20180306	440-204893-9	EPA 314.0	Ν	Perchlorate	57	59	80 - 120
440-204893-1	CTMW-07S-20180306	440-204893-9	EPA 351.2	Ν	Total Kjeldahl Nitrogen [TKN]	0	0	90 - 110
440-204893-1	CTMW-07S-20180306	440-204893-9	EPA 365.3	Ν	Orthophosphate (as P)	24	25	75 - 125
440-204893-1	CTMW-07S-20180306	440-204893-9	EPA 365.3	Ν	Orthophosphorus as PO4	24	25	75 - 125
440-204893-1	CTMW-07S-20180306	440-204893-9	EPA 365.3	Ν	Phosphorus, Total	24	20	75 - 125
440-204893-1	CTMW-07S-20180306	440-204893-9	SM4500-S2-D	Ν	Sulfide	14	14	70 - 130
440-204893-1	CTMW-07S-20180306	440-204893-9	SW-6010B	Ν	Iron	155	148	75 - 125
440-204893-1	CTMW-07S-20180306	440-204893-9	SW-6020A	Y	Silver	59	53	75 - 125
440-204893-1	CTMW-07S-20180306	440-204893-9	SW-6020A	Y	Zinc	62	62	75 - 125
440-204893-1	CTMW-07S-20180306	440-204893-9	VFA-IC	Ν	Pyruvic Acid	73	67	80 - 120
440-205188-1	CTMW-04S-20180307	440-205188-3	SW-6020A	Y	Copper	70	77	75 - 125
440-205188-1	CTMW-04S-20180307	440-205188-3	SW-6020A	Y	Lead	69	69	75 - 125
440-205188-1	CTMW-04S-20180307	440-205188-3	SW-6020A	Y	Nickel	72	77	75 - 125
440-205188-1	CTMW-04S-20180307	440-205188-3	SW-6020A	Y	Zinc	73	76	75 - 125
440-205188-1	CTMW-06D-20180307	440-205188-2	SW-8260B	Ν	Chloroform	92	54	70 - 130
440-205188-2	CTMW-04D-20180307	440-205188-4	EPA 365.3	Ν	Orthophosphate (as P)	29	28	75 - 125
440-205188-2	CTMW-04D-20180307	440-205188-4	EPA 365.3	Ν	Orthophosphorus as PO4	29	28	75 - 125
440-214187-1	CTMW-01S-20180621	440-214187-1	VFA-IC	Ν	Pyruvic Acid	76	Not analyzed	80 - 120
440-214187-1	CTMW-02D-20180621	440-214187-4	SW-6010B	Ν	Manganese	112	128	75 - 125
440-214189-1	CTMW-04D-20180621	440-214189-2	EPA 351.2	Ν	Total Kjeldahl Nitrogen [TKN]	0	0	90 - 110
440-214189-1	CTMW-04D-20180621	440-214189-2	EPA 365.3	Ν	Orthophosphate (as P)	24	21	75 - 125
440-214189-1	CTMW-04D-20180621	440-214189-2	EPA 365.3	Ν	Orthophosphorus as PO4	24	21	75 - 125
440-214189-1	CTMW-04D-20180621	440-214189-2	EPA 365.3	Ν	Phosphorus, Total	18	20	75 - 125
440-214189-1	CTMW-04D-20180621	440-214189-2	SM4500-S2-D	Ν	Sulfide	28	28	70 - 130
440-214189-1	CTMW-04D-20180621	440-214189-2	SM5220D	Ν	Chemical Oxygen Demand	0	0	70 - 120
440-214189-1	CTMW-04D-20180621	440-214189-2	SW-6010B	Ν	Iron	61	70	75 - 125
440-214189-1	CTMW-04D-20180621	440-214189-2	VFA-IC	Ν	Pyruvic Acid	63	63	80 - 120
440-214285-1	CTMW-06S-20180622	440-214285-2	SW-6020A	Y	Selenium	75	74	75 - 125

SDG	Sample ID	Method	Parameter	Outlier	Limit
440-204893-1	CTMW-01S-20180305	SM5310B	Total Organic Carbon	pH > 2	pH < 2
440-204893-1	CTMW-02S-20180306	SM5310B	Total Organic Carbon	pH > 2	pH < 2
440-214187-1	CTMW-01S-20180621	RSK175	Methane	Headspace	No Headspace
440-214189-1	CTMW-04D-20180621	RSK175	Methane	Headspace	No Headspace

SDG	Sample ID	Method	Filtered	Parameter	Time Limit	Time Elapsed
440-192727-1	CTMW-07D-50.0-20170921	SW-8260B	Total	Chloroform	7 days	11.2 days
440-192727-1	CTMW-07D-70.0-20170921-GW	SW-8260B	Total	Chloroform	7 days	11.2 days
440-204893-1	CTMW-01S-20180305	RSK175	Total	Methane	7 days	10.1 days
440-204893-1	CTMW-01S-20180305	SM5310B	Total	Total Organic Carbon	4 hours	355.2 hours
440-204893-1	CTMW-02S-20180306	RSK175	Total	Methane	7 days	8.9 days
440-204893-1	CTMW-02S-20180306	SM5310B	Total	Total Organic Carbon	4 hours	314.4 hours
440-204893-1	CTMW-06S-20180306	RSK175	Total	Methane	7 days	9.1 days
440-214187-1	CTMW-01D-20180621-FD	SW-8260B	Total	VOCs	7 days	10.3 days
440-214187-1	CTMW-01S-20180621	SW-8260B	Total	VOCs	7 days	10.2 days
440-214285-1	CTMW-06D-20180622	SW-8260B	Total	VOCs	7 days	11.4 days
440-214285-1	CTMW-06S-20180622	SW-8260B	Total	VOCs	7 days	11.5 days

SDG	Sample ID	Method	Parameter	Result	Units	Associated Samples with Qualification
440-193864-1	CCB 440-435352/16	SW-6020A	Iron	8.29	ug/L	CTMW-07D-20171009
440-204893-1	MB 440-463023/1-A	SW-6010B	Iron	0.0574	mg/L	CTMW-07D-20180306, CTMW-07S-20180306
440-205188-1	MB 440-463327/1-G	SW-6020A	Aluminum	7.31	ug/L	CTMW-04S-20180307, CTMW-06D-20180307
440-205188-2	MB 440-463327/1-G	SW-6020A	Aluminum	7.31	ug/L	CTMW-04D-20180307
440-214189-1	MB 440-484150/1-B	SW-6020A	Iron	9.08	ug/L	CTMW-04D-20180621
440-214189-1	MB 440-484150/1-F	SW-6020A	Zinc	3.61	ug/L	CTMW-04D-20180621
440-214189-1	MB 440-484625/1-F	SW-6020A	Aluminum	7.84	ug/L	CTMW-04S-20180621
440-214285-1	MB 440-484831/1-E	SW-6020A	Aluminum	7.2	ug/L	CTMW-06D-20180622, CTMW-06S-20180622, CTMW- 07D-20180622
440-214285-1	MB 440-485831/1-A	SW-6010B	Chromium	0.0044	mg/L	CTMW-06D-20180622, CTMW-06S-20180622, CTMW- 07D-20180622

Method	Total Number of Validated Results	Number of Rejected Results	Percent Completeness
EPA 300.0	63	0	100.0%
EPA 300.1B	55	0	100.0%
EPA 314.0	34	0	100.0%
EPA 351.2	21	2	90.5%
EPA 365.3	63	2	96.8%
RSK175	21	0	100.0%
SM2320B	84	0	100.0%
SM2340C	21	0	100.0%
SM2540C	21	0	100.0%
SM4500-S2-D	21	2	90.5%
SM5220D	10	1	90.0%
SM5310B	21	0	100.0%
SW-6010B	76	0	100.0%
SW-6020A	399	0	100.0%
SW-7199	34	0	100.0%
SW-8260B	1878	0	100.0%
VFA-IC	126	0	100.0%

Appendix E.1 Validation Checklists

Project Name:In-Situ Chromium MonitoringTask No.:M12No. of Samples:11

SDG/Report No.: 440-192727-1 Lab ID: Test America Matrix: Soil/Water

Area Reviewed	Anon	nalies	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	CTMW-07D-50.0-20170921 and CTMW- 07D-70.0-20170921: Qualify chloroform "J".
4. Instrument Performance		X	No	None
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds	X		No	None
9. Matrix Spike/Matrix Spike Duplicate/MSI	X		Yes	CTMW-07D-80.0-20170921: Qualify perchlorate "J-".
10. Serial Dilution		X	No	None
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards		X	No	None
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".
16. Data Package/EDD comparison (10%)		X	No	None

Verification and Validation Label	Soil: Stage_2B_Validation_Manual Water: Stage_2A_Validation_Manual
Verification and Validation Label Code	Soil: S2BVM Water: S2AVM

Overall Assessment: Results are acceptable as qualified.

Usability: Qualified sample results (J, J-) are considered useable for limited purposes. Other sample results are considered valid and useable for all purposes.

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)	Validation Stage
CTMW-07D-50.0-20170921	440-192727-1	9/21/2017	1.5 °C/4.0 °C	Stage 2A
CTMW-07D-60.0-20170921	440-192727-2	9/21/2017	1.5 °C/4.0 °C	Stage 2B
CTMW-07D-70.0-20170921-GW	440-192727-3	9/21/2017	1.5 °C/4.0 °C	Stage 2A
CTMW-07D-70.0-20170921-SO	440-192727-4	9/21/2017	1.5 °C/4.0 °C	Stage 2B
Trip Blank	440-192727-5	9/21/2017	1.5 °C/4.0 °C	Stage 2A
CTMW-07D-80.0-20170921	440-192727-6	9/21/2017	1.5 °C/4.0 °C	Stage 2B
CTMW-07D-90.0-20170921	440-192727-7	9/21/2017	1.5 °C/4.0 °C	Stage 2B
CTMW-07D-100.0-20170921	440-192727-8	9/21/2017	1.5 °C/4.0 °C	Stage 2B
CTMW-07D-110.0-20170921	440-192727-9	9/21/2017	1.5 °C/4.0 °C	Stage 2B
CTMW-07.D-60.0-20170921-EB	440-192727-10	9/21/2017	1.5 °C/4.0 °C	Stage 2A
CTMW-07D-90.0-20170921-FD	440-192727-11	9/21/2017	1.5 °C/4.0 °C	Stage 2B

Sample Information:

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 $4^{\circ}C$ (+ or $-2^{\circ}C$)? Were
samples received in proper condition?No/No/Yes**8260B:** The following samples were collected in bottles with preservative added but were not preserved to pH<2:</td>

CTMW-07D-50.0-20170921 and CTMW-07D-70.0-20170921-GW. The method allows unpreserved samples.

2. Chain-of-Custody (COC)

Were samples recorded on the COCs?	Were correct analyses performed on the samples?	Yes/Yes
	i e e e e e e e e e e e e e e e e e e e	100/100

3. Holding Times	
Were samples analyzed within acceptable holding times?	No
8260B: The following samples were analyzed after the 7-day turn-around-time for unpreserved samples: CTM	4W-07D-
50.0-20170921 and CTMW-07D-70.0-20170921-GW.	

4. Instrument Performance Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met? Yes/Yes/Yes

5. Initial Calibration (ICAL)Were the correct number of standards analyzed to establish the calibration curve for each analyte?
Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) \leq method or
national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of
Determination \geq method or NFG requirements? Were Relative Response Factors (RRFs) and average
RRFs \geq method or NFG requirements?Yes/Yes/Yes

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were	
calibrations compared to the correct initial calibrations? Were Percent Differences (%D) \leq method	Yes/Yes/Yes/Yes
or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	
	1

7. Blanks

Does data package include a summary of blank results? Was a method blank extracted and/or	
analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes	Yes/Yes/Yes/No
detected in any blanks?	

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	Yes/Yes/No
8260B: 4-Bromofluorobenzene recovery was high in CTMW-07D-90.0-20170921-FD. Chloroform was not detected,	
so there can be no high blas.	

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs	Vac/Vac/No
reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	1 es/ 1 es/100
Qualifiers, if applicable, were applied to parent samples and their FDs only.	
314.0: Perchlorate recovery was low in the MSD of CTMW-07D-80.0-20170921.	
6010B: Total chromium recoveries were outside limits in the MS/MSD of CTMW-07D-50.0-20170921. The	

6010B: Total chromium recoveries were outside limits in the MS/MSD of CTMW-07D-50.0-20170921. concentrations in the parent sample were > 4x the amount spiked. No qualification is needed.

10. Serial Dilution

Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within	
acceptable limits of the true value?	Yes/N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data	Vac/Vac/Vac
forms? Were LCS recoveries within laboratory established limits?	165/165/165

12. Interference Check Sample (ICS)	
Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within	Vac/Vac/Vac
acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	105/105/105

13. Internal Standards (IS)

Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention	
Time of the IS within ±30 seconds from the RT of the IS in the associated CCV or mid-point standard	res/res/res
from ICAL?	

1

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent	
sample and duplicates \leq lab limits or \leq 30% (water) or 50% (soil) for field duplicates? For REG/FD	Yes/Yes/Yes
results $< 5x$ the RL, were differences between the two values $< RL$.	

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable,	Vec/Vec
were reporting limit check recoveries within acceptable limits?	105/105

16. 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 10/15/2018

Project Name: In-Situ Chromium Monitoring Task No.: M12

No. of Samples: 3

SDG/Report No.:440-192817-1Lab ID:Test AmericaMatrix:Soil/Water

Area Reviewed	Anomalies Qu		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. Instrument Performance		X	No	None		
5. Initial Calibration		X	No	None		
6. Continuing Calibration Verification		Х	No	None		
7. Blanks	X		No	None		
8. Surrogates/Monitoring Compounds		X	No	None		
9. Matrix Spike/Matrix Spike Duplicate/MSI		Х	No	None		
10. Serial Dilution		Х	No	None		
11. Laboratory Control Samples		Х	No	None		
12. Interference Check Samples		Х	No	None		
13. Internal Standards		X	No	None		
14. Duplicates		Х	No	None		
15. Compound Quantitation and Reporting Limits		X	Yes	Qualify all results detected between the MDL and RL "J".		
16. Data Package/EDD comparison (10%)		Х	No	None		
Verification and Validation Label	Soil: Stage_2B_Validation_Manual Water: Stage_2A_Validation_Manual					
Verification and Validation Label Code	Soil: S2BVM Water: S2AVM					
Overall Assessment : Results are acceptable as qualified.						

Usability: Qualified sample results (J) are considered useable for limited purposes. Other sample results are considered valid and useable for all purposes.

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)	Validation Stage
CTMW-07D-120.0-20170922	440-192817-1	9/22/2017	1.9 °C/4.1 °C	Stage 2B
СТМѠ-07D-130.0-20170922-ЕВ	440-192817-2	9/22/2017	1.9 °C/4.1 °C	Stage 2A
Trip Blank	440-192817-3	9/22/2017	1.9 °C/4.1 °C	Stage 2A

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at $4^{\circ}C$ (+ or $-2^{\circ}C$)? Were samples received in proper condition?	Yes/No/Yes

2. Chain-of-Custody (COC)

Were samples recorded on the COCs? Were correct analyses performed on the samples?Yes/YesCTMW-07D-130.0-20170922-EB did not have a sample time on the COC. Sample time was on the labelsYes/Yes

Yes

3. Holding Times

Were samples analyzed within acceptable holding times?

4. Instrument Performance Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct and normalized to m/z 95? Were ion abundance criteria met? Yes/Yes

5. Initial Calibration (ICAL)	
Were the correct number of standards analyzed to establish the calibration curve for each analyte?	
Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or	
national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of	Yes/Yes/Yes
Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average	
RRFs \geq method or NFG requirements?	

6. Continuing Calibration Verification (CCV)	
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were	Vac/Vac/Vac/Vac
or NFG requirements? Did RRFs and average RRFs meet method or NFG requirements?	res/res/res/res
of the orequirements. Did KKr s and average KKr s meet method of the orequirements.	

7. Blanks	
Does data package include a summary of blank results? Was a method blank extracted and/or	
analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes	Yes/Yes/Yes/Yes
detected in any blanks?	
314.0: Perchlorate was detected in CTMW-07D-130.0-20170922-EB. It was not detected in the sample.	

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on data forms? Were recoveries within laboratory limits?	Yes/Yes/Yes

9. Matrix Spike/Matrix Spike Duplicate/MSI	
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs within laboratory established limits?	Yes/Yes/N/A

10. Serial Dilution

Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within	
acceptable limits of the true value?	Yes/N/A

11. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data	Yes/Yes/Yes
forms? Were LCS recoveries within laboratory established limits?	

12. Interference Check Sample (ICS)

Were interference check samples (ICS) analyzed at appropriate intervals? Were ICS recoveries within	Vas/Vas/Vas
acceptable limits of the true value? Were ICSA samples non-detect for analytes not in the solution?	103/103/103

13. Internal Standards (IS)

Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area	
counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention	Voc/Voc/Voc
Time of the IS within ±30 seconds from the RT of the IS in the associated CCV or mid-point standard	105/105/105
from ICAL?	

14. Duplicates	
Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent	
sample and duplicates \leq lab limits or \leq 30% (water) or 50% (soil) for field duplicates? For REG/FD	Yes/Yes/N/A
results $< 5x$ the RL, were differences between the two values $< RL$.	

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable,	Vec/Vec
were reporting limit check recoveries within acceptable limits?	105/105

16. 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 10/15/2018

Project Name: In-Situ Chromium Monitoring Task No.: M12

No. of Samples: 1

SDG/Report No.:440-192835-1Lab ID:Test AmericaMatrix:Soil

Area Reviewed	Anon	nalies	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. Instrument Performance		X	No	None
5. Initial Calibration		X	No	None
6. Continuing Calibration Verification		X	No	None
7. Blanks		X	No	None
8. Surrogates/Monitoring Compounds		X	No	None
9. Matrix Spike/Matrix Spike Duplicate/MSI		X	No	None
10. Serial Dilution		X	No	None
11. Laboratory Control Samples		X	No	None
12. Interference Check Samples		X	No	None
13. Internal Standards		X	No	None
14. Duplicates		X	No	None
15. Compound Quantitation and Reporting Limits		X	No	None
16. Calculations and Raw Data		X	No	None
17. Data Package/EDD comparison (10%)		X	No	None
Verification and Validation Label	Stage_	4_Valio	dation_Manual	
Verification and Validation Label Code	S4VM			
Overall Assessment : Acceptable as reported. Usability: Sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
CTMW-07D-120.0-20170922	440-192835-1	9/22/2017	1.9 °C/4.1 °C

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at $4^{\circ}C$ (+ or – $2^{\circ}C$)? Were	Vac/No/Vac
samples received in proper condition?	165/100/165

2. Chain-of-Custody (COC)

Were samples recorded on the COCs? Were correct analyses performed on the samples?Yes/YesThe client requested that Manganese be added to all samples.Yes/Yes

Yes

es

3. Holding Times

Were samples analyzed within acceptable holding times?

4. Instrument Performance	
Was BFB analyzed before and within 12 hours of sample analysis? Were mass assignments correct	Vac/Vac/V
and normalized to m/z 95? Were ion abundance criteria met?	I es/ I es/ I

5.	Initial Calibration (ICAL)
We	ere the correct number of standards analyzed to establ

Were the correct number of standards analyzed to establish the calibration curve for each analyte?	
Were Percent Relative Standard Deviations (%RSDs) of the Response Factors (RFs) ≤ method or	
national functional guideline (NFG) requirements or Coefficient of Correlation or Coefficient of	Yes/Yes/Yes
Determination ≥ method or NFG requirements? Were Relative Response Factors (RRFs) and average	
RRFs \geq method or NFG requirements?	

6. Continuing Calibration Verification (CCV)			
Were CCVs analyzed at the beginning and end of sample analysis, if applicable? Were calibrations			
compared to the correct initial calibrations? Were Percent Differences (%D) \leq method or NFG	Yes/Yes/Yes/Yes		
requirements? Did RRFs and average RRFs meet method or NFG requirements?			

 7. Blanks

 Does data package include a summary of blank results? Was a method blank extracted and/or analyzed for each batch? Were calibration blanks analyzed at appropriate intervals? Were analytes detected in any blanks?

 Yes/Yes/No

8. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported on	Yes/Yes/Yes
data forms? Were recoveries within laboratory limits?	105/105/105

9. Matrix Spike/Matrix Spike Duplicate/MSI				
Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs reported correctly on data forms? Were recoveries/RPDs of project samples within laboratory	Ves/Ves/No			
established limits?	103/103/100			
Outlier was from a sample in another data package.				

10. Serial Dilution	
Were serial dilutions analyzed at appropriate intervals? For results > 50x the MDL, were %Ds within	Vec/NI/A
acceptable limits of the true value?	I es/IN/A

11. 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
Torms: were Les recoveries within faboratory established finits:	<u> </u>

Yes/Yes/Yes
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13. Internal Standards (IS)	
Were ISs added to each sample in the run including calibrations, samples, and QC samples? Were area counts of the ISs for all samples within 50% and 200% of its response in the CCV? Was the Retention Time of the IS within ±30 seconds from the RT of the IS in the associated CCV or mid-point standard from ICAL?	Yes/Yes/Yes

14. Duplicates

Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent	
sample and duplicates \leq lab limits or \leq 30% for field duplicates? For REG/FD results $<$ 5x the RL, were	Yes/No/N/A
differences between the two values < RL.	1
differences between the two values < RL.	

15. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable,	Vaa/Vaa
were reporting limit check recoveries within acceptable limits?	res/res

16. Calculations and Raw Data Did calculated results and raw data match the reported data? Yes Slight differences due to rounding.

17. 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 10/15/18

Project Name:In-Situ Chromium MonitoringProject No.:M12

No. of Samples: 2

SDG/Report No.: <u>440-193864-1</u> Lab ID: <u>Test America – Irvine/Buffalo</u> Matrix: Water

Area Reviewed	Anon	nalies	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		Х	No	None
4. Blanks	X		Yes	CTMW-07D-20171009: Qualify dissolved iron "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	Qualify all results detected between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		X	No	None
11. Other - Calibration	X		Yes	CTMW-07D-20171009: Qualify 1,1,2- Trichloroethane "UJ".
Verification and Validation Label	Stage_	2A_Va	lidation_ Manual	
Verification and Validation Label Code	S2AVI	М		
Overall Assessment: Acceptable as qualified. Usability: Sample results qualified as estimated are useable for limited purposes only. All other results are considered valid and useable for all purposes.				

CCBs and calibrations are not reviewed in 2A, but items were noticed by validator.

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperature(s)
Trip Blank	440-193864-1	10/9/2017	2.3 °C, 2.3 °C, 2.9 °C
CTMW-07D-20171009	440-193864-2	10/9/2017	2.3 °C, 2.3 °C, 2.9 °C

1. Sample Preservation, Handling, and Transport	
Were all samples preserved correctly? Were sample temperatures kept at $4^{\circ}C$ (+ or – $2^{\circ}C$)? Were	Yes/Yes/Yes
samples received in proper condition?	

2. Chain-of-Custody (COC)

Were samples recorded on the COCs? Were correct analyses performed on the samples?

3. Holding Times

Were samples analyzed within acceptable holding times?

4. Blanks

Does data package include a summary of blank results? Was a method blank extracted and/or Yes/Yes/Yes analyzed for each batch? Were analytes detected in any blanks? 6020: Iron was detected in calibration blank CCB 440-435352/16 (8.29 ug/L).

5. Surrogates/Monitoring Compounds

Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported Yes/Yes/Yes correctly on data forms? Were recoveries within laboratory limits?

6. Matrix Spike/Matrix Spike Duplicate/MSI

Was a MS/MSD pair or MSI extracted and/or analyzed with each batch? Were recoveries/RPDs No/Yes/No reported correctly on data forms? Were recoveries/RPDs within laboratory established limits? 6010B: Iron recoveries were high in the MS/MSD of CTMW-07D-2017100. 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 Yes/Yes/No forms? Were LCS recoveries within laboratory established limits?

8. Duplicates Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% for field duplicates? For REG/FD results < 5x the RL, were Yes/Yes/N/A differences between the two values < RL.

Notes: Lab analyzed duplicates from other work orders for general chemistry parameters.

9. Compound Quantitation and Reporting Limits

Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable,	
were reporting limit check recoveries within acceptable limits?	105/105

10. Data Package/EDD comparison (10%)

Were 10% of the data package results compared to the electronic data? Did results match?

Yes/Yes

11. Other - Calibration

8260B: ICAL 17676: 1,1,2-Trichloroethane RRF = 0.1809. NFG requires ≥ 0.200. CCVIS 440-435536/2: 1,1,2-Trichloroethane RRF = 0.1899. NFG requires ≥ 0.200

Validated by: Maureen McMyler 10/23/17

Yes/Yes

Yes

Project Name:In-Situ Chromium MonitoringTask No.:M12No. of Samples:10

SDG/Report No.:440-204893-1Lab ID:Test AmericaMatrix:Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	CTMW-01S-20180305 and CTMW-02S-20180306: Qualify TOC "J-".
2. Chain-of-Custody		Х	No	None
3. Holding Times	x		Yes	CTMW-01S-20180305, CTMW- 02S-20180306, and CTMW-06S- 20180306: Qualify methane "J-". CTMW-01S-20180305 and CTMW-02S-20180306: Qualify TOC "J-".
4. Blanks	X		Yes	CTMW-07S-20180306 and CTMW-07D-20180306: Qualify iron "J", and "J+", respectively.
5. Surrogates/Monitoring Compounds		Х	No	None
6. Matrix Spike/Matrix Spike Duplicate	XYesCTMW-07S-20180306: Qualify perchlorate, orthophosphorus as PO4, and dissolved silver "J-"; orthophosphate as P, total iron, and dissolved zinc "J"; sulfide, total phosphorus, and TKN "R"; and pyruvic acid "UJ". CTMW-01D-20180305, CTMW- 01D-20180305-FD: Qualify orthophosphate as P and orthophosphorus as PO4 "J".			
7. Laboratory Control Samples	X No None			None
8. Duplicates	X		Yes	CTMW-01D-20180305, CTMW- 01D-20180305-FD: Qualify orthophosphate as P and orthophosphorus as PO4 "J".
9. Compound Quantitation and Reporting Limits		Х	Yes	All: Qualify results between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		Х	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and Validation Label Code	S2AVM			
Overall Assessment : Results are acceptable as qualified, except for rejected results. Usability: Rejected results are not useable. Qualified sample results (UJ, J-, J, J+) are considered useable for limited purposes. Other sample results are considered valid and useable for all purposes.				

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
Trip Blank	440-204893-1	3/5/2018	2.3 °C/4.0 °C/4.5 °C
CTMW-01S-20180305	440-204893-2	3/5/2018	2.3 °C/4.0 °C/4.5 °C
CTMW-01D-20180305	440-204893-3	3/5/2018	2.3 °C/4.0 °C/4.5 °C
CTMW-01D-20180305-FD	440-204893-4	3/5/2018	2.3 °C/4.0 °C/4.5 °C
CTMW-02D-20180305	440-204893-5	3/5/2018	2.3 °C/4.0 °C/4.5 °C
Trip Blank	440-204893-6	3/6/2018	2.3 °C/4.0 °C/4.5 °C
CTMW-02S-20180306	440-204893-7	3/6/2018	2.3 °C/4.0 °C/4.5 °C
CTMW-07D-20180306	440-204893-8	3/6/2018	2.3 °C/4.0 °C/4.5 °C
CTMW-07S-20180306	440-204893-9	3/6/2018	2.3 °C/4.0 °C/4.5 °C
CTMW-06S-20180306	440-204893-10	3/6/2018	2.3 °C/4.0 °C/4.5 °C

1. Sample Preservation, Handling, and Transport

Were all samples preserved correctly? Were sample temperatures kept at $4^{\circ}C$ (+ or $-2^{\circ}C$)? Were No/Yes/Yes samples received in proper condition?

8260B, RSK-175: The following samples were collected in bottles with preservative added, but were not preserved to pH<2: CTMW-01S-20180305, CTMW-02S-20180306, and CTMW-06S-20180306. Both methods allow unpreserved samples.

SM5310B: The following samples were not preserved to pH<2: CTMW-01S-20180305, CTMW-02S-20180306. They were adjusted prior to analysis.

	2. (Chain-of-	Custody	(COC)
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Were samples recorded on the COCs? Were correct analyses performed on the samples?

Yes/Yes

No

3. Holding Times

Were samples analyzed within acceptable holding times?

RSK-175: The following samples were analyzed after the 7-day turn-around-time for unpreserved samples: CTMW-01S-20180305, CTMW-02S-20180306, and CTMW-06S-20180306.

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?	
6010B: Iron was detected in MB 440-463023/1-A.	

SM2320B: Alkalinity and bicarbonate alkalinity were detected in MB 440-463386/2. The concentrations in the associated samples were >10x the amount in the blank or ND. No qualification needed.

5. Surrogates/Monitoring Compounds

Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported	Voc/Voc/Voc
correctly on data forms? Were recoveries within laboratory limits?	105/105/105

6. Matrix Spike/Matrix Spike Duplicate	
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on	Vos/Vos/No
data forms? Were recoveries/RPDs of project samples within laboratory established limits?	105/105/100
300.0: Chloride recoveries were high in the MS/MSD of CTMW-01S-20180305. The concentration in the	parent
sample was $> 4x$ the amount spiked. No qualification is needed.	
300.1B: Chlorate recoveries were high in the MS/MSD of CTMW-07S-20180306. The concentration in the	ne parent
sample was > 4x the amount spiked. Chlorite was not recovered in the MS/MSD of CTMW-07S-2018030	6 because of
dilution. No qualification is needed for either.	
314.0: Perchlorate recoveries were low in the MS/MSD of CTMW-07S-20180306.	
351.2: Total Kjeldahl Nitrogen was not recovered in the MS/MSD of CTMW-07S-20180306. Per inorgan	ic NFG, the
data point is rejected.	
365.3: Orthophosphate as P and Orthophosphorus as PO4 were low in the MS/MSDs of CTMW-01D-201	180305 and
CTMW-07S-20180306. Total phosphorus was low in the MS/MSD of CTMW-07S-20180306.	
SM4500-D: Sulfide recoveries were low in the MS/MSD of CTMW-07S-20180306.	
6010B: CTMW-07S-20180306: Total and dissolved chromium recoveries were high in the MS/MSD. The	e
concentrations in the parent sample were $> 4x$ the amount spiked. No qualification is needed. Total iron r	ecoveries
were high. Dissolved silver and zinc were low in the MS/MSD. Dissolved aluminum was high in the MSI), but was ND
in the parent.	
SW7199: Hexavalent chromium recovery was high in the MS of CTMW-07S-20180306. The concentration	on in the
parent sample was $> 4x$ the amount spiked. No qualification is needed.	
VFA-IC: Pyruvic acid recoveries were low in the MS/MSD of CTMW-07S-20180306. Propionic recover	y was high in
the MS, but it was ND in the parent.	-

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, were RPDs between parent		
sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD Yes/Y		
results $< 5x$ the RL, were differences between the two values $< RL$.		
365.3: Orthophosphate as P and Orthophosphorus as PO4 were detected in CTMW-01D-20180305 and CTMW-01D-		
20180305-FD at concentrations <5X the RL. The differences between the parent and FD were > the RL.		

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable,	Vac/Vac
were reporting limit check recoveries within acceptable limits?	res/res

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 05/14/18

Project Name: In-Situ Chromium Monitoring Task No.: M12 _____ No. of Samples: 4

SDG/Report No.: 440-205188-1/2 Lab ID: Test America Matrix: Water

Area Reviewed	Anomalies		Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport		Х	No	None
2. Chain-of-Custody		Х	No	None
3. Holding Times		Х	No	None
4. Blanks	X		Yes	CTMW-06D-20180307 and CTMW-04S-20180307: Qualify aluminum "J+". CTMW-04D-20180307: Qualify aluminum "J".
5. Surrogates/Monitoring Compounds		Х	No	None
6. Matrix Spike/Matrix Spike Duplicate	X Yes CTMW-06D-20180307: Qualify chloroform "J". CTMW-04S-20180307: Qualify the following dissolved metals: copper and zinc "J"; lead "UJ", nickel "J-". CTMW-04D-20180307: Qualify orthophosphate as P and orthophosphorus as PO4 "J".			
7. Laboratory Control Samples		Х	No	None
8. Duplicates		Х	No	None
9. Compound Quantitation and Reporting Limits		Х	Yes	All: Qualify results between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		Х	No	None
Verification and Validation Label	Stage_2A_Validation_Manual			
Verification and validation Label Code S2AVM Overall Assessment: Results are acceptable as qualified				
Usability: Qualified sample results are considered useable for limited purposes. Other sample results are considered valid and useable for all purposes				

and useable for all purposes.

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
Trip Blank	440-205188-1	3/7/2018	2.6 °C/3.9 °C/4.1 °C
CTMW-06D-20180307	440-205188-2	3/7/2018	2.6 °C/3.9 °C/4.1 °C
CTMW-04S-20180307	440-205188-3	3/7/2018	2.6 °C/3.9 °C/4.1 °C
CTMW-04D-20180307	440-205188-4	3/7/2018	2.6 °C/3.9 °C/4.1 °C

Sample Preservation, Handling, and Transport	
ere all samples preserved correctly? Were sample temperatures kept at $4^{\circ}C$ (+ or – $2^{\circ}C$)? Were	Yes/Yes/Yes
mples received in proper condition?	
ere all samples preserved correctly? Were sample temperatures kept at $4^{\circ}C$ (+ or – $2^{\circ}C$)? Were mples received in proper condition?	Y

2. Chain-of-Custody (COC)

Were samples recorded on the COCs? Were correct analyses performed on the samples? Yes/Yes

Yes

3. Holding Times

Were samples analyzed within acceptable holding times?

4. Blanks			
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed	Vac/Vac/Vac		
for each batch? Were analytes detected in any blanks?			
6020: Aluminum was detected in MB 440-463327/1-G.			

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?

6. Matrix Spike/Matrix Spike Duplicate			
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on	Vac/Vac/No		
data forms? Were recoveries/RPDs of project samples within laboratory established limits?	1 es/ 1 es/100		
365.3: Orthophosphate as P and Orthophosphorus as PO4 were low in the MS/MSD of CTMW-04D-20180307.			
6010B: CTMW-04S-20180307: Total and dissolved chromium recoveries were outside limits in the MS and/or MSD.			
The concentrations in the parent sample were $> 4x$ the amount spiked. No qualification is needed. Dissolved copper,			
lead, nickel, and zinc were low in the MS and/or MSD.			
6020: Dissolved copper, lead, nickel, and zinc were low in the MS and/or MSD of CTMW-04S-2018030)7.		
8260B: Chloroform recovery was low in the MSD of CTMW-06D-20180307			

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, were RPDs between parent	
sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD	Yes/Yes/N/A
results $< 5x$ the RL, were differences between the two values $< RL$.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable,	Vac/Vac
were reporting limit check recoveries within acceptable limits?	res/res

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 05/15/18

Project Name:In-Situ Chromium MonitoringTask No.:M12No. of Samples:4

SDG/Report No.: 440-214187-1 Lab ID: Test America Matrix: Water

Area Reviewed		malies	Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	Х		Yes	CTMW-01S-20180621: Qualify methane "J".
2. Chain-of-Custody		Х	No	None
3. Holding Times	X		Yes	CTMW-01S-20180621 and CTMW-01D-20180621-FD: Qualify VOC detects "J" and non- detects "UJ".
4. Blanks	Х		No	None
5. Surrogates/Monitoring Compounds		Х	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	CTMW-02D-20180621: Qualify total manganese "J+". CTMW-01S-20180621: Qualify pyruvic acid "UJ".
7. Laboratory Control Samples		Х	No	None
8. Duplicates	X		Yes	CTMW-01D-20180621, CTMW- 01D-20180621-FD: Qualify 2- butanone, chemical oxygen demand, and orthophosphorus as PO4 "J".
9. Compound Quantitation and Reporting Limits		Х	Yes	All: Qualify results between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		Х	No	None
Verification and Validation Label	Stage_2	2A_Valic	lation_Manual	
Verification and Validation Label Code S2AVM				
Overall Assessment : Results are acceptable as qual Usability: Qualified sample results (UJ, J, J+) are considered valid and useable for all purposes.	ified. onsidere	d useable	for limited purpos	es. Other sample results are

Sample Information:

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
CTMW-01S-20180621	440-214187-1	6/21/2018	1.7 °C/1.9 °C/4.2 °C
CTMW-01D-20180621	440-214187-2	6/21/2018	1.7 °C/1.9 °C/4.2 °C
CTMW-01D-20180621-FD	440-214187-3	6/21/2018	1.7 °C/1.9 °C/4.2 °C
CTMW-02D20180621	440-214187-4	6/21/2018	1.7 °C/1.9 °C/4.2 °C

1. Sample Preservation, Handling, and Transport		
Were all samples preserved correctly? Were sample temperatures kept at $4^{\circ}C$ (+ or $-2^{\circ}C$)? Were	No/No/No	
samples received in proper condition?		
8260B: The following samples were collected in bottles with preservative added, but were not preserved to pH<2:		
CTMW-01S-20180621 and CTMW-01D-20180621-FD. The method allows unpreserved samples.		
RSK-175: The following samples were collected in bottles with preservative added, but were not preserved to pH<2:		
CTMW-01S-20180621, CTMW-01D-20180621, and CTMW-01D-20180621-FD. CTMW-01S-20180621 was		

received and analyzed with headspace.

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?

8260B: The following samples were analyzed after the 7-day turn-around-time for unpreserved samples: CTMW-01S-20180621 and CTMW-01D-20180621-FD.

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

6010B: Total chromium was detected in MB 440-485027/1-A and MB 440-485208/1-A. The concentrations in the associated samples were >10x the amount in the blank. No qualification needed.

6020: Aluminum was detected in MB 440-484391/1-D and MB 440-484625/1-E. It was not detected in the samples.

SM2320B: Alkalinity and bicarbonate alkalinity were detected in MB 440-484918/2. The concentrations in the associated samples were >10x the amount in the blank. No qualification needed.

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

No

6. Matrix Spike/Matrix Spike Duplicate		
Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on	Vac/Vac/Na	
data forms? Were recoveries/RPDs of project samples within laboratory established limits?	I es/ I es/INO	
6010B: Total chromium and manganese recoveries were high in the MSD of CTMW-02D-20180621. The	e chromium	
concentration in the parent sample was $> 4x$ the amount spiked, so recovery criteria do not apply.		
6020: Dissolved aluminum, chromium, and manganese recoveries were outside limits in the MS and/or M	ISD of	
CTMW-01D-20180621-FD. The concentrations in the parent sample were $> 4x$ the amount spiked for chromium and		
manganese. Aluminum recovery was high but the sample was ND, so there can be no high bias.		
Dissolved barium, chromium, and manganese recoveries were outside limits in the MS and/or MSD of CTMW-01D-		
20180621. The concentrations in the parent sample were $> 4x$ the amount spiked. No qualification is need	led.	
VFA-IC: Pyruvic acid recovery was low in the MS of CTMW-01S-2018062. The MSD was not analyzed	1.	

7. Laboratory Control Samples (LCS)	
Was a LCS analyzed with each analytical batch? Were LCS recoveries reported correctly on data	Vac/Vac/Vac
forms? Were LCS recoveries within laboratory established limits?	105/105/105

8. Duplicates

Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD Yes/No/No results < 5x the RL, were differences between the two values < RL.

CTMW-01D-20180621 and CTMW-01D-20180621-FD: Orthophosphorus as PO4 was detected in CTMW-01D-20180621 and CTMW-01D-20180621-FD at concentrations <5X the RL. The difference between the parent and FD was > the RL. Chemical oxygen demand result was <5X the RL in CTMW-01D-20180621 and >5x the RL in CTMW-01D-20180621-FD. The difference between the parent and FD was > the RL. The RPD between 2-butanone results was 32%.

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable,	V /V
were reporting limit check recoveries within acceptable limits?	res/res

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 07/09/18

Project Name:In-Situ Chromium MonitoringTask No.:M12No. of Samples:5 with MS/MSD

SDG/Report No.:440-214189-1Lab ID:Test AmericaMatrix:Water

Area Reviewed	Anor	nalies	Qualification Required	Action Required
	Yes	No	Yes or No	
1. Sample Preservation, Handling, and Transport	X		Yes	CTMW-04D-20180621: Qualify methane "J".
2. Chain-of-Custody		Х	No	None
3. Holding Times		Х	No	None
4. Blanks	X		Yes	CTMW-04S-20180621: Qualify dissolved aluminum "J". CTMW-04D-20180621: Qualify dissolved iron and zinc "J".
5. Surrogates/Monitoring Compounds		Х	No	None
6. Matrix Spike/Matrix Spike Duplicate	x		Yes	CTMW-04D-20180621: Qualify orthophosphate as P, and orthophosphorus as PO4, total iron "J-", pyruvic acid "UJ", chemical oxygen demand, phosphorus, sulfide, and total kjeldahl nitrogen "R".
7. Laboratory Control Samples		Х	No	None
8. Duplicates		Х	No	None
9. Compound Quantitation and Reporting Limits		Х	Yes	All: Qualify results between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		Х	No	None
Verification and Validation Label Stage_2A_Validation_Manual				
Verification and Validation Label Code	S2AVM			
Overall Assessment : Results are acceptable as qualified, except for rejected results. Usability: Rejected results are not useable. Qualified sample results (UJ, J-, J) are considered useable for limited purposes. Other sample results are considered valid and useable for all purposes.				

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
CTMW-04S-20180621	440-214189-1	6/21/2018	1.4 °C/1.9 °C/3.1 °C
CTMW-04D-20180621	440-214189-2	6/21/2018	1.4 °C/1.9 °C/3.1 °C
CTMW-04D-20180621-MS	440-214189-2 MS	6/21/2018	1.4 °C/1.9 °C/3.1 °C
CTMW-04D-20180621-MSD	440-214189-2 MSD	6/21/2018	1.7 °C/1.9 °C/4.2 °C
M12-20180621-TB	440-214189-3	6/21/2018	1.7 °C/1.9 °C/4.2 °C

Sample Information:

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 $4^{\circ}C$ (+ or $-2^{\circ}C$)? Were samples received in proper condition?	Yes/No/No
RSK-175: CTMW-04D-20180621 was received and analyzed with headspace.	

2. Chain-of-Custody (COC)

Were samples recorded on the COCs? Were correct analyses performed on the samples?	Yes/Yes

Yes

3. Holding Times

Were samples analyzed within acceptable holding times?

4. Blanks		
Does data package include a summary of blank results? Was a method blank extracted and/or analyzed	Vac/Vac/Vac	
for each batch? Were analytes detected in any blanks?	168/168/168	
6020: Aluminum was detected in MB 440-484625/1-F. Barium and iron were detected in MB 440-484150/1-B. Zinc		
was detected in MB 440-484150/1-F. In most cases, zinc and barium concentrations in the samples were > 10x the		
amount in the blanks or ND.		

5. Surrogates/Monitoring Compounds	
Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported	Yes/Yes/Yes
correctly on data forms? Were recoveries within laboratory limits?	105/105/105

Was a MS/MSD pair extracted and/or analyzed with each batch? Were recoveries/RPDs reported on	Vac/Vac/No	
data forms? Were recoveries/RPDs of project samples within laboratory established limits?	165/165/100	
300.1B: Chlorate recoveries were outside limits in the MS/MSD of CTMW-04D-20180621. The concentration in the		
parent sample was $> 4x$ the amount spiked, so recovery criteria do not apply.		
314.0: Perchlorate recoveries were outside limits in the MS/MSD of CTMW-04D-20180621. The concer	tration in the	
parent sample was $> 4x$ the amount spiked, so recovery criteria do not apply.		
351.2: Total Kjeldahl Nitrogen was not recovered in the MS/MSD of CTMW-04D-20180621. Per inorga	nic NFG	
guidance, the data point is rejected.		
365.3: Orthophosphate as P, Orthophosphorus as PO4, and Phosphorus, Total recoveries were below 30%	6 in the	
MS/MSD of CTMW-04D-20180621. Orthophosphate as P and Orthophosphorus as PO4 will be qualified	l. Phosphorus,	
Total will be rejected.		
6010B: Total iron recoveries were low in the MS/MSD of CTMW-04D-20180621		
6020: Dissolved chromium, and dissolved chromium and manganese recoveries were outside limits in the MS/MSD of		
CTMW-04D-20180621 and MS/MSD of CTMW-04S-20180621, respectively. The concentrations in the parent		
samples were $> 4x$ the amount spiked, so recovery criteria do not apply.		
7199: Hexavalent chromium recoveries were outside limits in the MS/MSD of CTMW-04D-20180621. 7	The	
concentration in the parent sample was $> 4x$ the amount spiked, so recovery criteria do not apply.		
SM4500-S2-D: Sulfide recoveries were below 30% in the MS/MSD of CTMW-04D-20180621. Per inorganic NFG		
guidance, the data point is rejected.		
SM5220D: Chemical oxygen demand was not recovered in the MS/MSD of CTMW-04D-20180621. Per inorganic		
NFG guidance, the data point is rejected.		

VFA-IC: Pyruvic acid recoveries were low in the MS/MSD of CTMW-04D-20180621.

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, were RPDs between parent	
sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD	Yes/No/N/A
results < 5x the RL, were differences between the two values < RL.	
Lab duplicate RPDs were within limits.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable,	Vac/Vac
were reporting limit check recoveries within acceptable limits?	ies/ies

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 07/09/18

6. Matrix Spike/Matrix Spike Duplicate

Project Name:In-Situ Chromium MonitoringTask No.:M12No. of Samples:4

SDG/Report No.:440-214285-1Lab ID:Test AmericaMatrix:Water

Area Reviewed	Anor	malies	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	CTMW-06D-20180622, CTMW- 06S-20180622: Qualify VOCs "J" for detects and "UJ" for non- detects.
4. Blanks	x		Yes	CTMW-06D-20180622, CTMW- 06S-20180622, CTMW-07D- 20180622: Qualify dissolved aluminum "J+". CTMW-06S-20180622, CTMW- 07D-20180622: Qualify total chromium "J+".
5. Surrogates/Monitoring Compounds		Х	No	None
6. Matrix Spike/Matrix Spike Duplicate	X		Yes	CTMW-06S-20180622: Qualify selenium "J".
7. Laboratory Control Samples		X	No	None
8. Duplicates		Х	No	None
9. Compound Quantitation and Reporting Limits		X	Yes	All: Qualify results between the MDL and RL "J".
10. Data Package/EDD comparison (10%)		Х	No	None
11. Other – Continuing Calibration	X		Yes	M12-20180622-TB and CTMW- 07D-20180622: Qualify 2,2- dichloropropane "UJ".
Verification and Validation Label	Stage	24 Valie	lation Manual	
Verification and Validation Label Code	S2AVM			
Overall Assessment : Results are acceptable as qualified.				

Usability: Qualified sample results (UJ, J, J+) are considered useable for limited purposes. Other sample results are considered valid and useable for all purposes.

Field Sample Number	Lab Sample ID	Date Collected	Cooler Temperatures
M12-20180622-TB	440-214285-1	6/22/2018	2.4 °C/3.3 °C/3.9 °C
CTMW-06S-20180622	440-214285-2	6/22/2018	2.4 °C/3.3 °C/3.9 °C
CTMW-06D-20180622	440-214285-3	6/22/2018	2.4 °C/3.3 °C/3.9 °C
CTMW-07D-20180622	440-214285-4	6/22/2018	2.4 °C/3.3 °C/3.9 °C

Sample Information:

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 $4^{\circ}C$ (+ or – $2^{\circ}C$)? Were	Vas/Vas/No	
samples received in proper condition?	105/105/100	
RSK-175: Two of three vials of CTMW-06S-20180622 were received with headspace. The lab analyzed the bottle		
with no headspace.		
8260B: CTMW-06S-20180622 and CTMW-06D-20180622 were received at pH > 2. Unpreserved samples are		
allowed by the method.		

2. Chain-of-Custody (COC)

Were samples recorded on the COCs? Were correct analyses performed on the samples? Yes/Y	Yes
--	-----

3. Holding Times

Were samples analyzed within acceptable holding times?	No
8260B: CTMW-06S-20180622 and CTMW-06D-20180622 were not analyzed within 7 days for unpreserved	samples.

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: Total chromium was detected in MB 440-485831/1-A.	
6020: Aluminum was detected in MB 440-484831/1-E.	

5. Surrogates/Monitoring Compounds

Were samples spiked with the correct surrogate compounds? Were surrogate recoveries reported	X7 /X7 /X7
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

6020: Dissolved selenium recovery was low in the MSD of CTMW-06S-20180622. Dissolved manganese recovery was low in the MS of CTMW-06S-20180622. The concentration of dissolved manganese 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	Vac/Vac/Vac
forms? Were LCS recoveries within laboratory established limits?	105/105/105

8. Duplicates

Were any duplicate pairs analyzed in this SDG? For results > 5x the RL, were RPDs between parent	
sample and duplicates \leq lab limits or \leq 30% (water)/50% (soil) for field duplicates? For REG/FD	Yes/No/N/A
results $< 5x$ the RL, were differences between the two values $< RL$.	
Lab duplicate RPDs were within limits.	

9. Compound Quantitation and Reporting Limits	
Were quantitation limits (RLs) adjusted to reflect dilutions, cleanup, and other factors? If applicable,	Vaa/Vaa
were reporting limit check recoveries within acceptable limits?	res/res

10. Data Package/EDD comparison (10%)	
Were 10% of the data package results compared to the electronic data? Did results match?	Yes/Yes

11. Other - Calibration
This was mentioned in the case narrative and verified by the validator.
8260B: In CCVIS 440-485540/2, 2,2-dichloropropane %D was high, 35.3%. SOP limit is 30%.

Validated by: Maureen McMyler 07/10/18

Appendix E.2 Laboratory Data Packages

Due to the quantity and size of the files, the laboratory data packages have been provided in a separate file.

Appendix E.3 DVSR Database Per the requirements provided by NDEP for Unified Chemical Electronic Data Deliverable Format, databases are provided in Microsoft Access format and include location, analytical and groundwater gauging data supporting the DVSR and for upload of the Companies' electronic data into the regional database maintained by NDEP. These databases have been provided in separate files.

Appendix F Microbial Results

Table F-1 - Summary of Microbial Testing Results-Biological Field Test Central Retention Basin

Well Location	Sample ID Sarr	Somple Date	Date Week	Functional Genes (cells/bead)		Total Biomass	Physiological Status (Proteobacteria Only)		Community Structure (% total PLFA)					
				Sulfate Reducing Bacteria	Perchlorate Reductase	(cells/mL)	Slowed Growth	Decreased Permeability	Firmicutes (TerBrSats)	Proteobacteria (Monos)	Anaerobic metal Reducers (BrMonos)	SRB/Actinomycetes (MidBrSats)	General (Nsats)	Eukaryotes (polyenoics)
CTIW-01S	CTIW-01S-20170405	04/05/17	Baseline	<2.50E+02	6.09E+04	3.92E+04	1.40	0.00	0.00	76.73	2.86	2.17	18.23	0.00
CTIW-01D	CTIW-01D-20170405	04/05/17	Baseline	1.11E+04	2.80E+05	1.43E+05	1.96	0.10	0.51	77.33	6.55	0.60	13.59	1.40
	CTMW-01S-20170717	07/17/17	PME5	1.43E+03	9.09E+03	8.22E+05	1.14	0.64	12.09	49.47	1.75	0.62	32.50	3.55
CTWW-013	CTMW-01S-20180621	06/21/18	PM10	2.21E+04	<2.50E+02	2.72E+06	0.87	0.05	12.50	58.97	0.70	0.93	25.61	1.30
	CTMW-01D-20170717	07/17/17	PME5	<2.50E+02	3.51E+04	2.70E+05	0.81	0.24	6.06	70.94	3.72	0.00	17.84	1.43
	CTMW-01D-20180621	06/21/18	PM10	<2.50E+02	<2.50E+02	6.00E+04	1.12	0.00	32.56	46.17	6.41	0.00	14.86	0.00
	CTMW-03S-20170405	04/05/17	Baseline	<2.50E+02	2.39E+04	7.40E+04	2.42	0.00	0.00	82.94	2.03	0.00	15.02	0.00
CTMW-03S	CTMW-03S-20170717	07/17/17	PME5	<2.50E+02	3.51E+04	2.47E+06	1.43	0.31	2.24	74.21	0.46	0.37	21.31	1.42
	CTMW-03S-20180621	06/21/18	PM10	7.88E+02	<2.50E+02	7.75E+04	0.61	0.00	0.00	93.11	1.52	0.00	5.37	0.00
	CTMW-03D-20170405	04/05/17	Baseline	1.82E+03	4.05E+05	1.19E+05	1.18	0.05	1.26	72.35	2.95	4.18	18.63	0.65
CTMW-03D	CTMW-03D-20170717	07/17/17	PME5	1.30E+04	1.35E+04	5.68E+05	1.18	0.49	0.00	74.65	2.10	3.30	17.55	2.39
	CTMW-03D-20180621	06/21/18	PM10	2.99E+01 (J)	<2.50E+02	2.33E+05	4.43	0.82	0.80	79.63	3.15	0.00	15.90	0.52

Notes:

PLFA	Phospholipid fatty acids
------	--------------------------

< Denotes result not detected mL Milliliter

mL J

J Denotes that the estimated gene copies is below the practical quantitation limit (PQL) but above the LQL.



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133

Client:	Maureer Tetra Te 1093 Co Suite 10	n McMyler ch , Inc. mmerce Par 0	k Drive		Phone:	(865) 53	35-2030	
	Oak Ridge, TN 37830			Fax:				
Identifier:	100PF		Date Rec:	06/22/2018		Report Date:	06/29/2018	
Client Proj	ect #:	194-87600N	/12-18	Client Project	Name:	NERT-Ta	ske M12	
Purchase Order #: M12-CWP-07-WA2								
Analysis Requested:			NSUS, PLF	A, Standard Bio-	Trap			

Reviewed By:

Jown Spen

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10515 Research Dr., Knoxville, TN 37932 Tel. (865) 573-8188 Fax. (865) 573-8133

Client:Tetra Tech , Inc.Project:NERT-Taske M12				MI Project Numbe Date Received:	r: 100PF 06/22/2018		
Sample Infor	mation						
Client Sa	mple ID:		CTMW-01S-201 80621	CTMW-01D-201 80621	CTMW-03S-201 80621	CTMW-03D-201 80621	
Sample D)ate:		06/21/2018	06/21/2018	06/21/2018	06/21/2018	
Units:			cells/bead	cells/bead	cells/bead	cells/bead	
Analyst/R	leviewer:		JS	JS	JS	JS	
Functional G	enes						
Sulfate Rec	lucing Bacteria	APS	2.21E+04	<2.50E+02	7.88E+02	2.99E+01 (J)	
Perchlorate	Reductase	pcrA	<2.50E+02	<2.50E+02	<2.50E+02	<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	6/22/2018						
Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control	
pcrA	06/22/2018	06/29/2018	0°C	105%	non-detect	non-detect	
APS	06/22/2018	06/29/2018	0 °C	97%	non-detect	non-detect	



10515 Research Drive Knoxville, TN 37932 Phone: (865) 573-8188 Fax: (865) 573-8133

Client:	Maureer Tetra Te 1093 Co Suite 10	n McMyler cch , Inc. ommerce Park 0	Drive		Phone:	(865) 53	35-2030
	Oak Ridge, TN 37830						
Identifier:	100PF		Date Rec:	06/22/2018		Report Date:	07/06/2018
Client Proj	ect #:	194-87600M	12-18	Client Project	Name:	NERT-Ta	iske M12
Purchase Order #: M12-CWP-07-WA2							
Analysis Requested:			NSUS, PLF	A, Standard Bio-	Trap		

Reviewed By:

Jown Spen

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Client: Tetra Tech , Inc.

Project: NERT-Taske M12

Sample Name:	CTMW-01S-201	CTMW-01D-201	CTMW-03S-	CTMW-03D-20	
Sample Date:	80621 06/21/2018	80621 06/21/2018	20180621 06/21/2018	180621 06/21/2018	
Sample Matrix:	Std. Bio-Trap	Std. Bio-Trap	Std. Bio-Trap	Std. Bio-Trap	
Analyst/Reviewer:	KH	KH	KH	KH	
Biomass Concentrations					
Total Biomass (cells/bead)	2.72E+06	6.00E+04	7.75E+04	2.33E+05	
Community Structure (% total PLFA)					
Firmicutes (TerBrSats)	12.50	32.56	0.00	0.80	
Proteobacteria (Monos)	58.97	46.17	93.11	79.63	
Anaerobic metal reducers (BrMonos)	0.70	6.41	1.52	3.15	
SRB/Actinomycetes (MidBrSats)	0.93	0.00	0.00	0.00	
General (Nsats)	25.61	14.86	5.37	15.90	
Eukaryotes (polyenoics)	1.30	0.00	0.00	0.52	
Physiological Status (Proteobacteria o	nly)				
Slowed Growth	0.87	1.12	0.61	4.43	
Decreased Permeability	0.05	0.00	0.00	0.82	

MI Project Number:

Date Received:

100PF

06/22/2018

Legend:

NA = Not Analyzed NS = Not Sampled

10515 Research Dr., Knoxville, TN 37932 Tel. (865) 573-8188 Fax. (865) 573-8133

Client: Tetra Tech , Inc.

Project:

NERT-Taske M12



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.

100PF

MI Project Number:

Quality Assurance/Quality Control Data

Samples Received	6/22/2018						
Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control	
PLFA	06/22/2018	07/06/2018	0 °C	77%	non-detect	non-detect	

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3	CTMW-035-20180621		0502	W	1	X											X														X			
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Failure to provide sufficient and/or correct information regarding reporting mybicing & analyses requested information may result in delays for which MI will not be liable.

* additional cost and sample preservation are associated with RNA samples.