City of Kalamazoo, Michigan
Corrosion Coupon Rack Testing

PRESENTED TO

City of Kalamazoo, MI
415 Stockbridge Avenue
Kalamazoo, MI 49001

PRESENTED BY

Tetra Tech
1136 Oak Valley Drive
Suite 100
Ann Arbor, MI 48108

P (734) 213-4063
tetratech.com

TETRA TECH

#200-19743-19004

January 25, 2023

TABLE OF CONTENTS

List of Tables iii
List of Figures iii
1.0 INTRODUCTION 1
1.1 Background 1
1.2 Purpose 2
2.0 CORROSION INHIBITOR BENCH-SCALE EVALUATION 2
2.1 Coupon Rack Test Overview 2
2.2 Coupon Rack Operation 4
2.3 Sample Collection 7
2.4 Sample Analysis 8
3.0 RESULTS 10
3.1 Station 1 (Central) 10
3.1.1 Raw Water Quality 10
3.1.2 Metals Concentrations 13
3.2 Station 24 16
3.2.1 Raw Water Quality 16
3.2.2 Metals Concentrations 18
3.3 Station 25 21
3.3.1 Raw Water Quality 21
3.3.2 Metals Concentrations 23
3.4 Station 39 26
3.4.1 Raw Water Quality 26
3.4.2 Metals Concentrations 28
3.5 Coupon Corrosion Rates 31
3.5.1 Lead 32
3.5.2 Copper Corrosion Rate 44
3.5.3 Ductile Iron Corrosion Rate 50
3.6 Iron Solubility Testing 56
4.0 DISCUSSION AND CONCLUSION 63
4.1 Discussion of Results 63
4.2 Conclusion 66

LIST OF TABLES

Table 2-1 Corrosion Coupon Testing Matrix 4
Table 2- 2 Coupon Test Rack Data Collection Schedule....7
Table 2-3 Sample Analysis Instrumentation and Methods....9
Table 3-1 Station 1 Raw Water Quality 10
Table 3-2 Station 1 Coupon Rack Water Quality Data 11
Table 3-3 Central Station Lead Concentration Versus Exposure Period.... 14
Table 3-4 Station 24 Raw Water Quality.... 17
Table 3-5 Station 24 Coupon Rack Water Quality Data 18
Table 3-6 Station 25 Raw Water Quality.... 22
Table 3-7 Station 25 Coupon Rack Water Quality Data 23
Table 3-8 Station 25 Lead Concentration Versus Exposure Period 24
Table 3-9 Station 39 Raw Water Quality.... 26
Table 3-10 Station 39 Coupon Rack Water Quality Data 28
Table 3-11 Lead Coupon Corrosion Rates 32
Table 3-12 Copper Coupon Corrosion Rates 44
Table 3-13 Ductile Iron Coupon Corrosion Rates 50
Table 3-14 Solubility Test Ductile Iron Coupon Corrosion Rates 59
Table 4-1 Average Raw Water Quality By Station 63

LIST OF FIGURES

Figure 2-1 Coupon Rack Test Layout.... 3
Figure 3-1 Central Station Lead Concentration Versus Exposure Period 13
Figure 3-2 Central Station Copper Concentration Versus Exposure Period 15
Figure 3-3 Central Station Dissolved Iron Concentration Versus Exposure Period 16
Figure 3-4 Station 24 Lead Concentration Versus Exposure Period.... 19
Figure 3-5 Station 24 Copper Concentration Versus Exposure Period.... 20
Figure 3-6 Station 24 Dissolved Iron Concentration Versus Exposure Period.... 21
Figure 3-7 Station 25 Lead Concentration Versus Exposure Period.... 24
Figure 3-8 Station 25 Copper Concentration Versus Exposure Period.... 25
Figure 3-9 Station 25 Dissolved Iron Concentration Versus Exposure Period.... 26
Figure 3-10 Station 39 Lead Concentration Versus Exposure Period.... 29
Figure 3-11 Station 39 Copper Concentration Versus Exposure Period.... 30

Figure 3-12 Station 39 Dissolved Iron Concentration Versus Exposure Period 31
Figure 3-13 Lead Effluent Concentration Versus Corrosion Rate 33
Figure 3-14 Lead Coupons Prior to Installation 34
Figure 3-15 Central Station Color Versus Exposure Period 56
Figure 3-16 Central Station Turbidity Versus Exposure Period 56
Figure 3-17 Station 24 Color Versus Exposure Period *57*
Figure 3-18 Station 24Turbidity Versus Exposure Period 57
Figure 3-19 Central Station Total Iron Concentration Versus Exposure Period 58
Figure 3-20 Station 24 Total Iron Concentration Versus Exposure Period 58

APPENDICES

Appendix A – Test Operation and Sampling Plan 67
Appendix B – Routine Semiweekly Water Quality Measurements 68
Appendix C – Flow and Chemical Feed Pump Adjustments 69
Appendix D – Solubility Color and Turbidity Measurements 70
Appendix E– Coupon Weight Loss Report 71
Appendix F – Laboratory Analysis Report 72

1.0 INTRODUCTION

1.1 BACKGROUND

Historically, the City has used hexametaphosphate for sequestering iron and as a corrosion inhibitor at all their pumping stations throughout the service area. The City of Kalamazoo (City) requested Tetra Tech perform a desk top corrosion control study to evaluate the use of a liquid blended phosphate corrosion inhibitor instead of continuing to feed sodium hexametaphosphate at each of their pumping stations. Tetra Tech was also engaged to perform the design services to implement the conversion to the commercial phosphate inhibitor at each of their stations and other improvements. In March 2017, Tetra Tech recommended the City could switch to a liquid inhibitor product that contained a blend of ortho- and polyphosphate to provide an orthophosphate dose similar to what was measured in the existing system and supplying sufficient polyphosphate to sequester iron and calcium. The City switched to the use of the Carus 8400, which consists of a blend of 60% polyphosphate and 40% orthophosphate at several of their stations. Four of the stations were initially converted to the new feed system and began feeding the Carus 8400 blended phosphate corrosion inhibitor product. Some initial lead sampling results obtained after the change order indicated that the product may not be providing the improved lead corrosion benefit that was anticipated.

Therefore, Tetra Tech was requested to provide a testing program for implementation of a coupon test set up at each of the stations to evaluate the performance of the corrosion inhibitor product. The lead solubility test was intended to study the current product versus other competing products to assess their corrosion control effectiveness. The Michigan Department of Environment, Great Lakes, and Energy (EGLE) reviewed the proposed test plan and recommended that the City perform bench-scale lead solubility tests with different corrosion inhibitors to determine the effectiveness of various blends and different concentrations of orthophosphate before completing a field corrosion inhibitor coupon study. To this end, Tetra Tech completed an initial bench-scale test to evaluate the effect of various corrosion inhibitor products with varying orthophosphate-polyphosphate ratios in the untreated water from Pump Station 14, as a screening level study to guide decision making for final selection of a product to be used system wide. The first round of testing compared the performance of sodium hexametaphosphate at the historical dose, Carus 8400, 8600 and 8700 (blended phosphates) at doses of 1.5 and 3.0 mg/L as PO4, Carus 3900 (zinc polyphosphate) against the chlorinated raw water with no corrosion inhibitor added. The results of the testing showed that the lower dose of the Carus 8400 and the higher dose of the Carus 8700 were most effective. However, the products were not able to reduce the lead release rates to below those of the untreated water after 30 days of exposure when the lead release rates leveled off.

The results of the testing were presented to the City and to EGLE for review and comment. The initial report noted that at higher levels of alkalinity and DIC exhibited by the raw water that lead carbonate would tend to be the dominant corrosion product formed and might not offer the same level of protection that a lead phosphate complex could provide. It was agreed that a second round of solubility testing would be performed in which higher concentrations of orthophosphate would be used and two products containing a higher percentage of orthophosphate would be tested to evaluate their effectiveness.

A second round of lead solubility testing was performed in May 2021 through July 2021 which tested blended phosphate corrosion inhibitor products with higher percentages of orthophosphate (70 to 90%), Carus 8600, Carus 8700, WSU 178 and WSU 110, at doses of 3, 4.5 and 6 mg/L as orthophosphate. The second solubility test included 13 jars which were exposed to fresh treated water twice per week over a period of 12 weeks and the contents of the jars were analyzed at the end of each exposure. The testing showed that the Carus 8700 product dosed at an orthophosphate concentration of 4.5 mg/L consistently provided the lowest lead release rate over the test period. The 3.0 mg/L dose of the Carus 8700 product also provided the best performance of the four products tested, but the overall release rate was not as low as the 4.5 mg/L dose. The higher dose rate of 6.0 mg/L as orthophosphate did not perform as well for the products tested.

1.2 PURPOSE

The purpose of this report is to present the results of the corrosion coupon rack testing and that was performed using the Carus 8700 blended phosphate corrosion inhibitor product on raw water at the Central (1) Station, Station 24, Station 25 and Station 39. The coupon rack test was performed based upon the *City of Kalamazoo, Michigan Corrosion Inhibitor Testing Plan*, Revised March 8, 2022 which was reviewed by the City and Michigan EGLE. The test was designed to demonstrate the effectiveness of the Carus 8700 product which provided the best performance at a dose of 4.5 mg/L of orthophosphate in the second round of solubility testing. The testing was also intended to determine if a lower dose of 4.0 mg/L would provide an equivalent or higher level of lead solubility control. The test also included copper and ductile iron coupons to provide data on the impact of the use of the Carus 8700 product on the corrosion of those metals.

2.0 CORROSION INHIBITOR BENCH-SCALE EVALUATION

2.1 COUPON RACK TEST OVERVIEW

Test racks with metal coupon holders were installed by the City staff at Stations 1 (Central), 24, 25 and 39 to be able to perform flow through testing of the selected corrosion inhibitor product using the actual raw water at each station. The test was conducted over a period of weeks using bare metal coupons and lead pipe segments to be able to observe the metal concentration in the coupon rack effluent over a period to time. The rack effluent was measured regularly for routine water quality parameters and total metal concentrations of lead, copper, and iron. Each test rack was dosed with a chlorine solution to produce chlorine residual concentrations historically recorded at those stations to mimic normal operation of the stations. The racks were controlled by timers to provide a daily 8-hour stagnation period. The stagnation periods were timed so that samples for metals analysis could be collected from the racks at the end of the stagnation period.

Two coupon racks were installed by the City staff at Stations 24, 25 and 39 and three coupon racks were installed at the Central Station (1). Each coupon rack contained a ductile iron coupon, two lead coupons, a copper coupon and a segment of lead pipe. The order of the metal coupons intended to simulate the order in which they might be encountered in the distribution and plumbing systems. Separate chemical feed pumps were provided to dose the raw water being fed to each rack with the corrosion inhibitor followed by a sodium hypochlorite solution. The general layout of the coupon racks is shown in **Figure 2-1.**

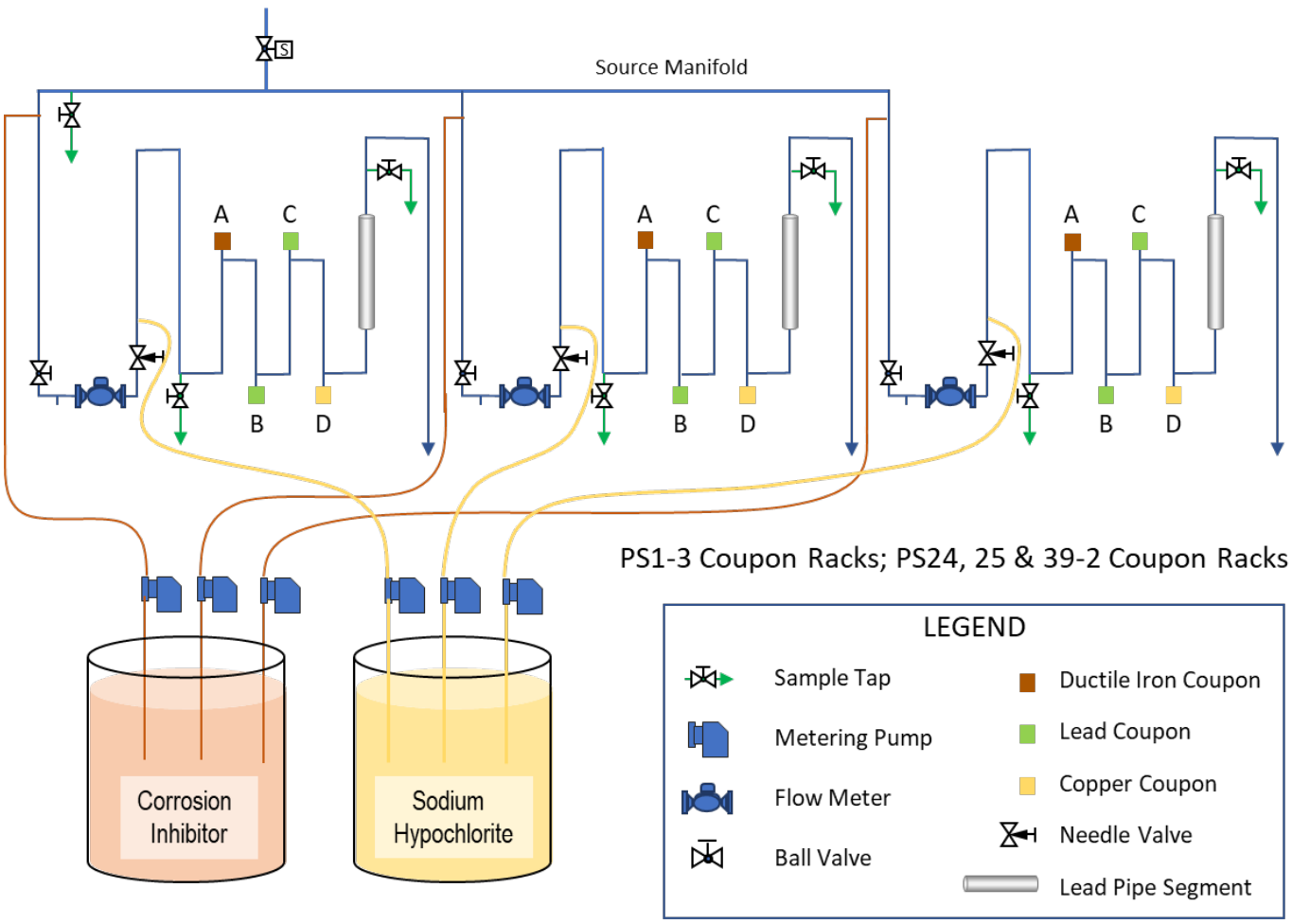


Figure 2-1 Coupon Rack Test Layout

The sodium hypochlorite solution was dosed to obtain a residual of +/-0.3 mg/L as Cl_2 of the target residual to simulate residuals in the distribution system. The corrosion inhibitor solution was dosed to obtain a residual of +/-0.2 mg/L of the target residual. The corrosion inhibitor solution was dosed to provide a target dose of 4.5 mg/L as orthophosphate and a lower dose of 4.0 mg/L at each station. A third coupon rack was installed at the Central Station to test a higher orthophosphate dose of 5.0 mg/L. The proposed chemical doses of the corrosion inhibitor are summarized in **Table2 1.**

Two lead, one copper and one ductile iron coupon were loaded into the coupon racks at each station on August 15, 2022. The sodium hypochlorite and corrosion inhibitor tanks were filled with the dilute chemical solution and flow was introduced to the coupon racks on August 15, 2022. The sites were visited twice per week to collect and analyze samples, check the flow rates and adjust the chemical feed rates. The coupon racks were exposed to the treated water through October 20, 2022 when the last samples were collected, flow was discontinued and the racks were allowed to drain. The coupons were collected from the racks and photographed on October 24, 2022 and placed into the envelopes they were delivered in. The coupons were returned to Metal Samples Company for weighing and photography before and after cleaning.

Table 2-1 Corrosion Coupon Testing Matrix

Pump Station	Corrosion Test Rack No.	Inhibitor Type (%Poly:%Ortho)	Product Dose (mg/L)	OrthoP Dose (mg/L PO_4)	Target Chlorine Residual (mg/L)
Central	1	Carus 8700 (15:85)	4.7	4.0	1.5
Central	2	Carus 8700 (15:85)	5.3	4.5	1.5
Central	3	Carus 8700 (15:85)	5.9	5.0	1.5
24	1	Carus 8700 (15:85)	4.7	4.0	2.3
24	2	Carus 8700 (15:85)	5.3	4.5	2.3
25	1	Carus 8700 (15:85)	4.7	4.0	2.3
25	2	Carus 8700 (15:85)	5.3	4.5	2.3
39	1	Carus 8700 (15:85)	4.7	4.0	1.5
39	2	Carus 8700 (15:85)	5.3	4.5	1.5

2.2 COUPON RACK OPERATION

Log of Sampling Events

August 15, 2022	Orthophosphate out of range and feed pumps adjusted on all racks except 1-2, chlorine residual out of range and feed pumps adjusted on all racks except 1-2 and 1-3.
August 18, 2022	Rack flow off by >10% at 39-1,39-2, 25-2; Orthophosphate out of range and feed pumps adjusted on all racks except 25-1 and 1-2, chlorine residual out of range and feed pumps adjusted on all racks except 39-1, 25-1, 24-1 and 24-2; Station 25 racks running on arrival; Station 1 chemical tanks refilled; stagnation samples collected
August 22,2022	Rack flow off by >10% all racks; Orthophosphate out of range and feed pumps adjusted on all racks; chlorine residual out of range and feed pumps adjusted on all racks.
August 25,2022	Rack flow off by >10% at all racks except 1-3; Orthophosphate out of range and feed pumps adjusted on all racks, chlorine residual out of range and feed pumps adjusted on all racks; stagnation samples collected
August 29, 2022	Rack flow off by >10% at all racks except 1-2 and 25-1; Orthophosphate out of range and feed pumps adjusted on all racks, chlorine residual out of range and feed pumps adjusted on all racks.
September 1, 2022	Rack flow off by >10% at 39-1, 39-2,1-2; Orthophosphate out of range, except 1-1, 1-3, 24-1, 24-2 and feed pumps adjusted on all racks except 1-1, 1-3 and 24-2, chlorine residual out of range, except 39-2 and 25-1 and feed pumps adjusted on all racks except 25-1; stagnation samples collected

September 5, 2022	Rack flow off by >10% at 39-1, 39-2 and 1-2; Orthophosphate out of range, except 1-1, and feed pumps adjusted on all racks; chlorine residual out of range on 1-1, 1-2, 24-1 and 24-2 and feed pumps adjusted on 1-2, chlorine line disconnected on 1-1; Air in orthophosphate feed line 39-2.
September 8, 2022	Rack flow off by >10% at 25-1, 1-1, 1-2 and 1-3; Orthophosphate out of range, except 24-1 and 24-2, and feed pumps adjusted on all racks except 24-1 and 24-2, chlorine residual out of range on all racks, except 39-1, and feed pumps adjusted on all racks except 39-1 and 39-2; Chemical feed malfunctioning chlorine 39-2, 25-1 and 25-2; Station 25 racks running on arrival-timer not working; air in chlorine solution feed lines may not be pumping; Stagnation samples collected
September 12, 2022	Rack flow off by >10% at 25-1, 1-1, 1-2, 24-1 and 24-2; Orthophosphate out of range, except 39-2, 1-3, 24-1 and 24-2 and feed pumps adjusted on all racks except 39-2, 1-3, 24-1 and 24-2, chlorine residual out of range and feed pumps adjusted on racks 39-1, 1-1, 1-2, 1-3, 24-1 and 24-2; Station 25 racks running on arrival; zero chlorine residual and chemical feed pumps not working 39-2, 25-1 and 25-2. Timer at Station 25 is not functional and therefore regular stagnation periods are not occurring.
September 13, 2022	Flow control valves installed on the racks at Station 39.
September 14, 2022	Maintenance performed at station 25 and 39. Pump tubes and injector duck bill checks replaced on the chlorine pumps. One pump at Station 39 rebuilt. Flow control valves installed on Station 1 and 24 coupon racks.
September 15, 2022	Rack flow off by >10% at 24-2, 1-1, 1-2 and 1-3; Orthophosphate out of range, except 24-1 and 24-2 and feed pumps adjusted on all racks except 24-1 and 24-2, chlorine residual out of range and feed pumps adjusted on all racks except 24-1 and 24-2; Chemical feed malfunctioning orthophosphate Station 39-1 and 39-2 and chlorine 39-2; Chlorine solutions replaced at all stations with solutions made up with distilled water. Stagnation samples collected except Station 25; no data collected for Station 25 because the power was down. Refilled Station 1 orthophosphate solution.
September 19, 2022	Rack flow off by >10% at 25-1, 1-1, 1-2, 1-3 and 24-1; Orthophosphate out of range, except 24-2 and 1-3 and feed pumps adjusted on all racks except 24-2, chlorine residual out of range and feed pumps adjusted on racks 39-1, 25-1, 25-2, 1-1, 1-2, and 1-3; Chemical feed pump malfunction/tube clog on Station 39-1 and 39-2 orthophosphate and 1-1, 39-2 and 24-2 chlorine.
September 22, 2022	Rack flow off by >10% at 25-1, 1-1, 1-2, 1-3 and 24-1; Orthophosphate out of range, except 1-1 and 1-3 and feed pumps adjusted on all racks except 1-1 and 1-3, chlorine residual out of range and feed pumps adjusted on all racks except 39-1, 39-2, 1-2, 24-1 and 24-2; chemical feed pump malfunctioning/tube clog chlorine 39-1, 39-2, 25-1 and 25-2 and orthophosphate 39-1, 39-2 and 25-1; stagnation samples collected.
September 26, 2022	Rack flow off by >10% at 25-1, 25-2, 24-1, 1-1, 1-2 and 1-3; Orthophosphate out of range and feed pumps adjusted on all racks except 39-2 and 25-1 where the lines were clogged, chlorine residual out of range and feed pumps adjusted on racks 25-1, 25-2, 1-2, 24-1 and 24-2;

	Chemical feed pump malfunctioning/tube clog orthophosphate Station 39-2 and 25-1.
September 29, 2022	Rack flow off by >10% at 25-2, 24-1, 1-1, 1-2 and 1-3, flow not recorded 39-1, 39-2 and 24-2; Orthophosphate out of range and feed pumps adjusted on all racks except 39-1; chlorine residual out of range and feed pumps adjusted on racks 39-2, 25-2, 1-1, 1-2, 24-1 and 24-2; Chemical feed pump malfunctioning/tube clog orthophosphate 25-1 and 39-2; stagnation samples collected, Station 1 orthophosphate and chlorine solutions refilled; HCl was added to all of the chlorine solution tanks. The phosphate corrosion inhibitor solution at Station 25 with solution made up with distilled water.
October 3, 2022	Rack flow off by >10% at 25-1, 25-2, 1-1, 1-2 and 1-3; Orthophosphate out of range, except 25-2, 1-2 and 24-2, and feed pumps adjusted on all racks except 39-1 and 39-2 where the lines were clogged, chlorine residual out of range on all racks; Chemical feed pump malfunctioning/tube clog orthophosphate Station 39-1 and 39-2. Chemical feed pump malfunctioning/tube clog chlorine all racks and orthophosphate 39-1, 39-2
October 6, 2022	Rack flow off by >10% at 25-1 and 25-2; Orthophosphate out of range on all racks, except 39-2, and feed pumps adjusted racks 1-1 and 1-2; chlorine residual out of range and feed pumps adjusted on racks 39-1, 25-2; Chemical feed pump malfunctioning/tube clog chlorine 39-2, 1-2, 1-3, 24-1 and 24-2 and orthophosphate 39-2, 25-1 and 24-1. Stagnation samples collected except Station 24 which was running on arrival; additional HCL added to the chlorine solution tanks.
October 10, 2022	Rack flow off by >10% at 25-1 and 25-2-not recorded Stations 1 and 24; Orthophosphate out of range and feed pumps adjusted on all racks except 39-2 and 25-1 where the lines were clogged, chlorine residual out of range on all racks; Chemical feed pump malfunctioning/tube clogged orthophosphate 39-1, 39-2 and 25-1 chlorine 39-1, 39-2, 25-1, 25-2, 1-1, 1-3, 24-1 and 24-2. Both chemical tanks refilled at Stations 1 and 24; HCl was added to the chlorine tanks.
October 13, 2022	Rack flow off by >10% 25-1 and 25-2; Orthophosphate out of range on all racks except 25-2; chlorine out of range on all racks; The orthophosphate pumps were not functional at Station 39 and 25-1.
October 17, 2022	Rack flow off by >10% at 25-1 and 25-2- not recorded at the other stations; Orthophosphate out of range, except 1-1 and 1-2, and feed pumps adjusted on racks 25-2, 1-3, 24-1 and 24-2; pumps malfunctioning or the lines were clogged 39-1, 39-2, 25-1; chlorine residual out of range on all racks most chem feed lines clogged; Stagnation samples collected; timer on Station 1 not reset, samples for flowing condition.
October 20, 2022	Rack flows not recorded. Orthophosphate out of range 1-1 and 1-3; orthophosphate pumps not functional 39-1, 39-2 and 25-1; chlorine out of range all stations except 1-1. Stagnation samples collected; coupon racks shut down and drained.
October 24, 2022	Coupons removed and placed in original envelopes.

The flow rates through the coupon racks were controlled by adjusting the needle valves on the rotameters on each rack in the initial portion of the testing period. Flows were checked and adjusted, if necessary, to be within 10% of the target flow of 1 gpm during each site visit. There were numerous instances which are documented above where the flows were out of range when staff returned to the stations for the next visit. Flows were sometimes significantly less than the target flow which then caused the orthophosphate and chlorine residuals to be significantly greater than intended. Flow control valves were installed on most of the racks later in the test which did help to reduce the variations in flow.

The chemical feed pumps experienced issues during the test with air entering the feed lines and the pumps not consistently delivering the required amount of chemical. The only method for adjusting the chemical feed rates was by adjusting the pump speed. The speed controls for the pumps made it difficult to fine tune the chemical doses because the pump speed was graduated in 5% increments. In the later portion of the test a number of the chemical feed systems, especially the sodium hypochlorite solution feed pumps, were unable to deliver the required dose of chemical either due to pump failure or clogging of the chemical feed lines.

2.3 SAMPLE COLLECTION

The general testing and sampling procedure that was followed by the field staff responsible for sample collection, stocking the chemical solutions and adjusting the chemical feed pumps is contained in **Appendix A**. Each station was visited two times per week to collect operational data for each coupon rack, sample collection and analysis. Each station was equipped with a timer to produce a stagnation period of 8 hours each day. Field personnel timed their arrival at each station to correspond to the end of the stagnation period. Weekly stagnation samples were collected for lead, iron, copper and phosphorus and sent to a commercial laboratory for analysis. To collect the stagnation samples the station was turned on and the valve to provide flow to each coupon rack was closed. The sample valve on the rack was slowly opened and a 0.9 L sample was collected which was approximately equal to the volume within the coupon rack piping. Laboratory samples were then poured off from that initial sample volume. The valve was fully opened to allow normal flow through the rack for approximately 10 minutes before the routine water quality samples were collected and analyzed. Routine water quality samples of the raw water and effluent from each coupon rack were collected and measured semiweekly for parameters that are listed in **Table 2-2**.

Table 2- 2 Coupon Test Rack Data Collection Schedule

Parameter	Sampling Frequency*	
	Source Water	Individual Rack Effluent
Routine Water Quality Measurements		
Alkalinity	Semiweekly	Semiweekly
Total Ammonia	Semiweekly	Semiweekly
Calcium	Weekly	Weekly
Chloride	Weekly	Weekly

Table 2-2 Coupon Test Rack Data Collection Schedule (cont'd)

Parameter	Sampling Frequency*	
	Source Water	Individual Rack Effluent
Routine Water Quality Measurements		
Color	Biweekly	Biweekly
Conductivity	Semiweekly	Semiweekly
Dissolved Copper	Weekly	Weekly
Dissolved Oxygen	Semiweekly	Semiweekly
Dissolved Iron	Weekly	Weekly
Orthophosphate	Semiweekly	Semiweekly
pH	Semiweekly	Semiweekly
Sulfate	Biweekly	Biweekly
Total Chlorine	Semiweekly	Semiweekly
Temperature	Semiweekly	Semiweekly
Turbidity	Biweekly	Biweekly
Stagnation Samples		
Copper[1]	Weekly	Weekly
Lead[1]	Weekly	Weekly
Orthophosphate	Weekly	Weekly
Total Phosphate	Weekly	Weekly
Coupon Weight Loss	N/A	End of Testing Phase

[1]Some semiweekly samples were collected near the end of the testing.

Semiweekly-two times each week, Biweekly-once every other week.

2.4 SAMPLE ANALYSIS

Samples collected of the raw water at each station and the effluent from each coupon rack were measured for the parameters that are listed above in **Table 2-2.** Most of the routine weekly water quality measurements were performed in the field at each Pump Station with portable instruments. Stagnation samples collected for metals analysis were performed off-site by Eurofins South Bend Laboratory as well as samples that were analyzed for total phosphorus and orthophosphate. The methods of analysis for each of the parameters is summarized in **Table 2-3**

below. The measurements for certain parameters including alkalinity and chloride were above the limits for the method and are reported as > value. The laboratory measurement of total phosphorus and orthophosphate may not be reliable indicators of the concentrations seen by the coupons in many cases. These samples were collected at a lower flow rate to obtain a good representative sample of the contents of the racks after stagnation. However, the chemical feed pumps could have been in operation during this time and with a lower flow rate created a higher concentration in the sample volume. The routine orthophosphate measurements taken while the isolation valves were fully open and the racks were allowed to operate for a period of time are considered to be more representative of conditions experienced by the coupons. The graphs presented later in this report show the orthophosphate concentration measured before any adjustments to the coupon rack flow or chemical feed rates were performed and a final concentration after all adjustments had been made.

Table 2-3 Sample Analysis Instrumentation and Methods

Parameter	Equipment	Type	Methods
Alkalinity	Hach SL1000	Chemkey	Hach Method LR 10280 & HR 10283, 200 to 700 mg/L, 20 to 200 mg/L
Total Ammonia	Hach SL1000	Chemkey	Hach Method 10268, 0.05 to 1.5 mg/L
Calcium	ICP Spectroscopy		200.7 Rev 4.4
Chloride	Hach DR 1900		Hach Method 8113, 0.1-25 mg/L
Color	Hach DR 1900		
Conductivity	Hach SL1000	Probe	Hach Method 8160
Dissolved Copper	Hach SL1000	Chemkey	Hach Method 10272, 0.06 to 5.0 mg/L
Dissolved Iron	Hach SL1000	Chemkey	Hach Method 10281, 0.05 to 3.0 mg/L
Dissolved Oxygen	Hach SL1000	Probe	Hach Method 10360
Orthophosphate	Hach SL1000	Chemkey	Hach Method LR 10279, 0.2 to 4.0 mg/L
Orthophosphate	Hach SL1000	Chemkey	Hach Method HR 10282, 2.0 to 30.0 mg/L
Orthophosphate	Spectrophotometer	Colorimetric	SM 4500-P E.
pH	Hach SL1000	Probe	Hach Method 8156
Sulfate	Hach DR 1900		
Temperature	Hach SL1000	Probe	Included with probes
Total Chlorine	Hach SL1000	Chemkey	Hach Method 10260, 0.04 to 10.0 mg/L
Total Copper	ICP/MS Spectroscopy		200.8

Table 2-3 Sample Analysis Instrumentation and Methods (cont'd)

Parameter	Equipment	Type	Methods
Total Iron	ICP Spectroscopy		200.7 Rev 4.4
Total Lead	ICP/MS Spectroscopy		200.8
Total Phosphorus	Spectrophotometer	Colorimetric	SM 4500-P E.
Turbidity	Hach 2100Q		EPA Method 180.1, 0-1000 NTU

3.0 RESULTS

3.1 STATION 1 (CENTRAL)

3.1.1 Raw Water Quality

The raw water was sampled from the influent to the coupon racks before any chemicals were added. Samples were collected two times per week on Monday and Thursday of each week. The results of the routine sampling of the raw water are summarized in ***Table3-1***.

Table 3-1 Station 1 Raw Water Quality

Parameter*	Average	Minimum	Maximum	N
pH	8.10	7.61	8.89	20
Temperature, °C	14.11	10.2	20.7	20
Total Chlorine, mg/L	0.01	0	0.05	20
Conductivity, µS/cm	1029.35	724	1081	20
Turbidity, NTU	13.71	0.38	62.5	5
Alkalinity, mg/L as $CaCO_3$	275	256	294	20
Dissolved Inorganic Carbon, mg/L	58.97	57.4	67.96	20
Calcium, mg/L as $CaCO_3$	99.3	97	100	12
Free Ammonia, mg/L	0.07	0	0.12	20
Iron, mg/L	0.29	0.16	0.61	10
Chloride, mg/L	20.3	0.8	21.5	10
Sulfate, mg/L	29.8	8	42	5
Color, Pt-Co	76.5	0	294	5

Table 3-1 Station 1 Raw Water Quality (cont'd)

Parameter*	Average	Minimum	Maximum	N
Orthophosphate, mg/L as PO_4^{3-}	0.27	0	1.4	20
LSI	1.10	0.85	1.70	5
Ryznar	6.10	5.49	6.37	5
Aggressiveness In.	13.09	12.84	13.76	5
Larson-Skold Index	0.26	0.16	0.30	5
CSMR	1.11	0.60	2.69	5

*Results are presented as the average +/1 two standard deviations

The raw water is hard, with a slightly alkaline pH, high in dissolved inorganic carbonate (DIC), is colored, had variable iron and turbidity and was low in chlorides and sulfates. The water would be considered nonaggressive and slightly scale forming based upon the positive Langelier Index, Ryznar and aggressiveness index values. The low Larson-Skold Index number due to the high concentration of bicarbonate ion and low concentrations of sulfate and chloride indicate that the water should only be slightly corrosive towards iron and steel. However, review of the raw data indicated that the higher value resulted from a single pair of measurements in which the sulfate concentration was much lower than the average. If that data point was thrown out the average CSMR would be closer to 0.6.

Table 3-2 Station 1 Coupon Rack Water Quality Data

Parameter	Coupon Rack #1				Coupon Rack #2			
	Average	Tenth Percentile	Ninetieth Percentile	N	Average	Tenth Percentile	Ninetieth Percentile	N
pH	7.95	7.69	8.11	20	7.89	7.66	8.08	20
Temperature, °C	13.55	12.55	14.3	20	13.45	12.48	14.23	20
Total Chlorine, mg/L	1.22	0.25	2.52	20	2.10	0.35	4.74	20
Conductivity, µS/cm	1055.10	1045.7	1099.9	20	1059.25	1050.3	1107.8	20
Turbidity, NTU	1.36	0.7	1.91	5	0.84	0.56	1.29	5
Alkalinity, mg/L as $CaCO_3$	300.50	273.7	327.3	20	286	280.4	291.6	20
Calcium, mg/L	103.83	99	110	12	104.92	100	110	12
Free Ammonia, mg/L	0.08	0.04	0.11	20	0.08	0.043	0.132	20
Iron, mg/L	0.23	0.12	0.31	10	0.24	0.107	0.418	10
Chloride, mg/L	>25	>25	>25	10	19.10	17.26	20.94	10
Sulfate, mg/L	27.40	13.4	38	5	30	22	35.6	5
Color, Pt-Co	74.40	4	198.4	5	9.50	1.8	19.2	5

Table 3-2 Station 1 Coupon Rack Water Quality Data (cont'd)

Parameter	Coupon Rack #1				Coupon Rack #2			
	Average	Tenth Percentile	Ninetieth Percentile	N	Average	Tenth Percentile	Ninetieth Percentile	N
Orthophosphate, mg/L as PO_4^{3-}	4.47	3.3	5.98	20	7.89	4.05	9.63	20
LSI	1	0.69	1.4	5	0.9	0.54	1.42	5
Larson Index	0.26	0.17	0.31	5	0.26	0.19	0.3	5

Parameter	Coupon Rack #3			
	Average	Tenth Percentile	Ninetieth Percentile	N
pH	7.79	7.54	7.98	20
Temperature, °C	13.57	12.39	15.32	20
Total Chlorine, mg/L	1.43	0.37	2.1	20
Conductivity, µS/cm	1061.26	1048.8	1112.6	20
Turbidity, NTU	1.28	0.69	2.1	6
Alkalinity, mg/L as $CaCO_3$	287.50	270.3	304.7	20
Calcium, mg/L	103.67	99	110	12
Free Ammonia, mg/L	0.09	0.03	0.17	20
Iron, mg/L	0.23	0.17	0.25	11
Chloride, mg/L	23.4	23.4	23.4	11
Sulfate, mg/L	28.50	14.5	37	6
Color, Pt-Co	51	21.6	94.4	6
Orthophosphate, mg/L as PO_4^{3-}	5.06	3.54	6.5	20
LSI	0.89	0.54	1.33	4
Larson Index	0.25	0.17	0.3	4

The water quality after chemical addition was very similar for most of the parameters to the raw water quality as would be expected. The pH of the water in racks 2 and 3 was slightly lower than the raw water and the Langelier Index was a little lower indicating a slightly lesser tendency to precipitate calcium carbonate. The average turbidity of the water from the coupon racks was less than 10% of the turbidity measured in the raw water and the average color was significantly lower in racks 2 and 3. The total chlorine concentration was targeted to be 1.5 +/- 0.3 mg/L but averaged 1.22, 2.10 and 1.43 for racks 1 to 3, respectively and varied over a much wider range. The orthophosphate concentration goal was 4.0, 4.5 and 5.0 +/- 0.2 mg/L for racks 1 to 3, respectively but varied over a much wider range as depicted in the lead concentration graphs that follow.

3.1.2 Metals Concentrations

The metals concentrations of the stagnation samples collected weekly over the course of the coupon test are depicted in the graphs that follow. The lead concentration graphs also show the initial orthophosphate concentration after the stagnation samples were collected and the rack was returned to normal operation and the final orthophosphate concentration after the coupon rack flow rates and chemical feed rates had been adjusted before the field personnel left the station.

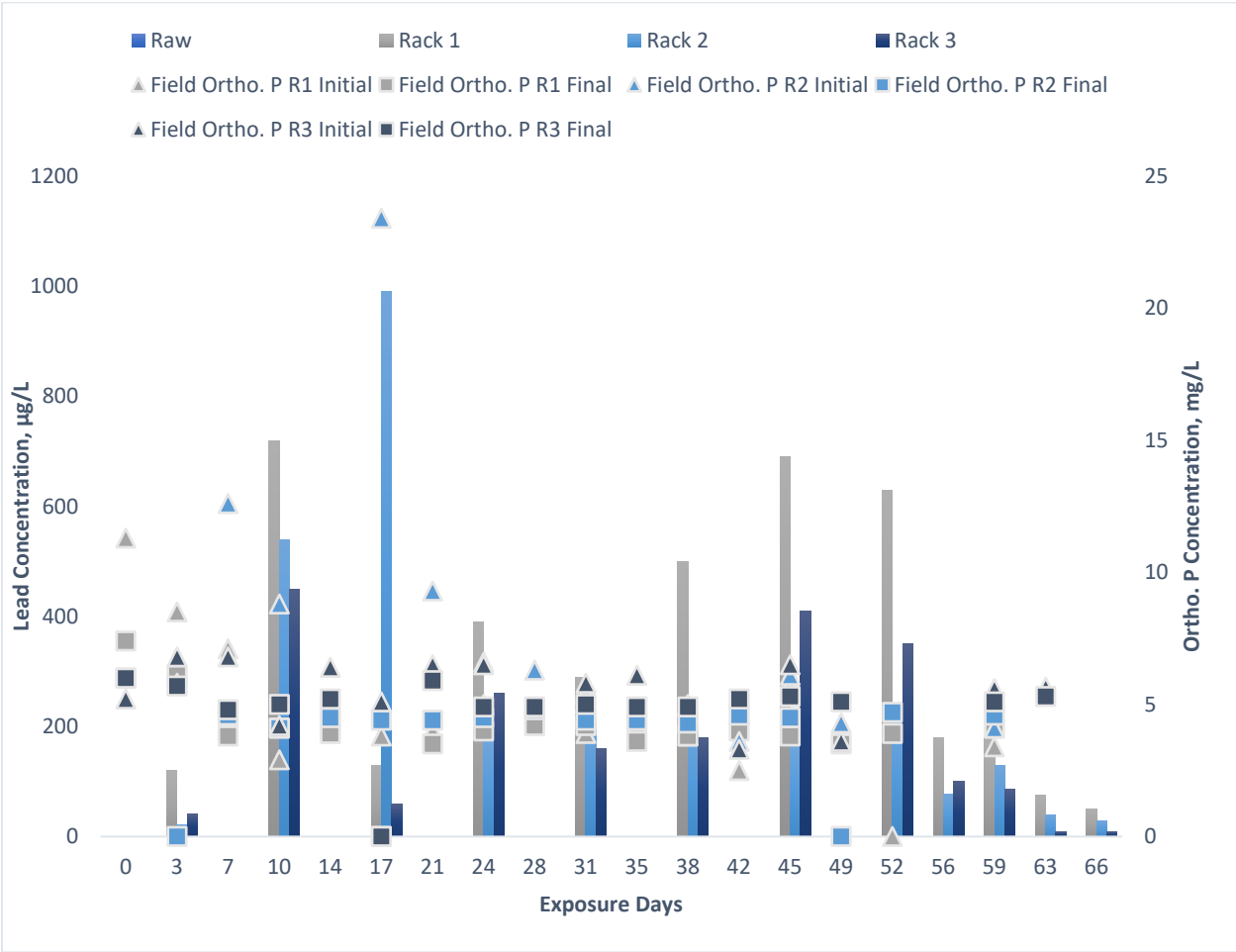


Figure 3-1 Central Station Lead Concentration Versus Exposure Period

The orthophosphate concentrations for each stagnation period should be assumed to lie between the final value at the end of the prior sampling visit and the initial value on the day the metals samples were collected. For example, for the lead stagnation sample collected on day 45 for rack 3 the final value on day 41 was 5.2 and the initial concentration was 6.5 on day 45 after the sample was collected. It is assumed that the coupons in that rack experienced orthophosphate concentrations between 5.2 and 6.5 mg/L in the four-day period prior to the sample being collected. The orthophosphate concentrations generally show the intended increase in concentration from rack 1 to rack 3 as intended. However, the initial values measured when field staff returned to the station don't strictly follow that pattern nor do they consistently fall with the target range.

Table 3-3 Central Station Lead Concentration Versus Exposure Period

Sample Location	Exp. days	3	10	17	24	31	38	45	52	56	59	63	66
Raw Water	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Rack 1	µg/L	120	720	130	390	290	500	690	630	180	180	76	50
Rack 2	µg/L	22	540	990	180	210	200	170	220	77	130	40	29
Rack 3	µg/L	41	450	59	260	160	180	410	350	100	87	9.3	9.5

The lead concentrations are shown in **Figure 3-1** and **Table 3-3**. They do not follow a consistent pattern of a decrease in concentration with exposure duration and do not show a consistent relationship between lead concentration and orthophosphate dose. Only the last two samples show a consistent decrease in lead concentration across the racks which is proportional to the target orthophosphate dose. Except for the last two sample concentrations for rack 3 the concentrations were above the trigger level of 10 µg/L.

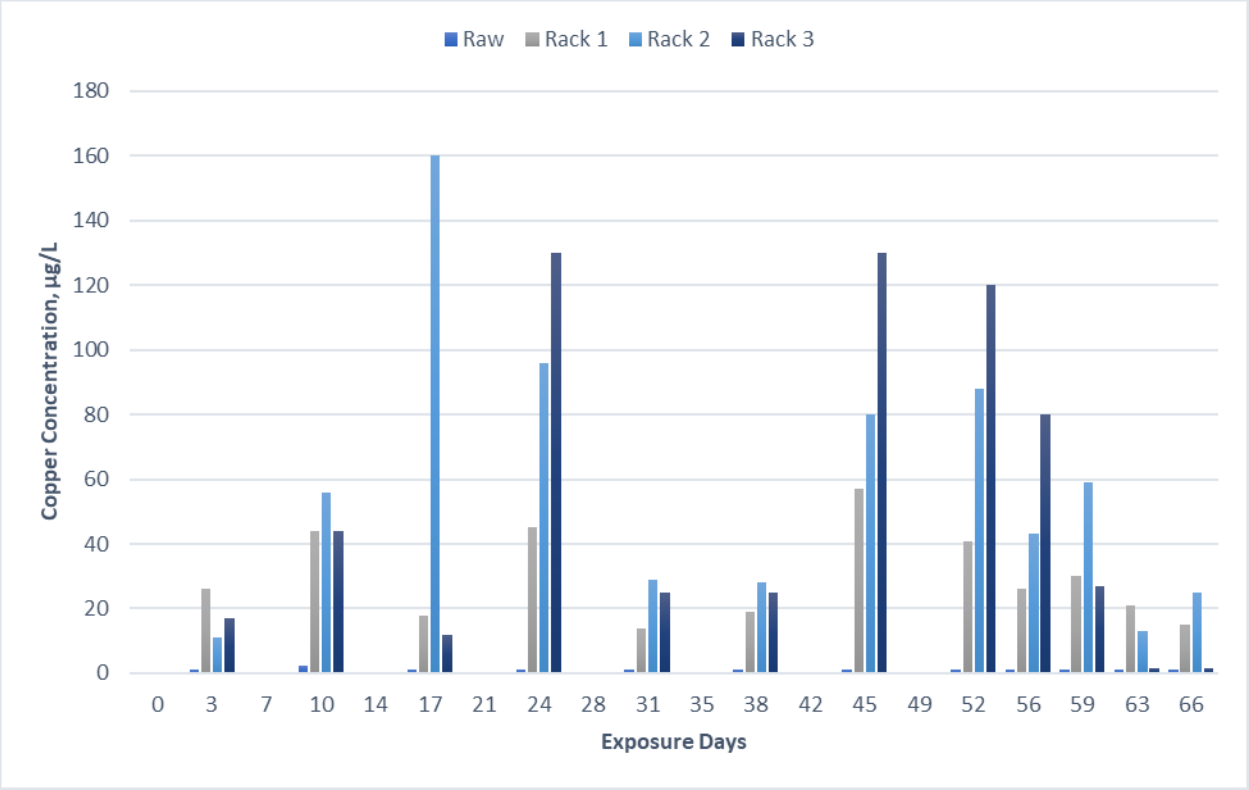


Figure 3-2 Central Station Copper Concentration Versus Exposure Period

The copper concentrations, except for day 3 and day 63, consistently show higher concentrations for rack 2 as compared to rack 1. A similar trend to lead can be observed in which the values hit a peak in the first month, then decline in the middle of the test only to peak again at the at the end of the second month and finally decline at the end of the test. Although the copper concentrations did hit a one-time peak of 160 µg/L all the concentrations are well below the action level of 1300 µg/L and well below the secondary standard of 1,000 µg/L. A station blank using the finished water produced by this station was not tested, so it cannot be determined whether the addition of this new corrosion inhibitor product reduced the rate of copper corrosion.

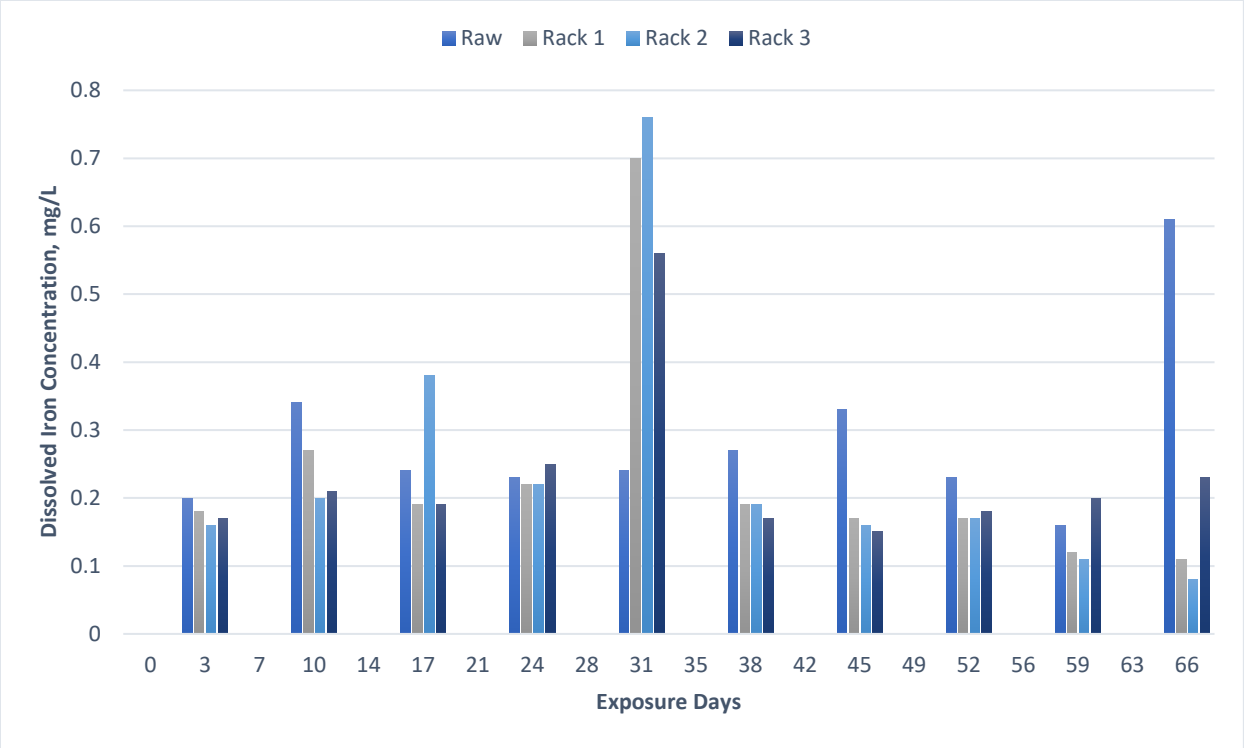


Figure 3-3 Central Station Dissolved Iron Concentration Versus Exposure Period

The dissolved iron concentrations remained close to or less than the raw water concentration over most of the study period although they did spike in the day 31 sample. Although the corrosion inhibitor concentration targets were not strictly maintained, it appears that with increasing exposure time the lower concentration for racks 1 and 2 did not effectively sequester the dissolved iron in the raw water. All dissolved iron concentrations from the coupon racks were less than the secondary maximum contaminant level of 0.3 mg/L except for on day 31. A station blank using the finished water produced by this station was not tested and total iron concentrations from the coupon racks were not measured weekly, so it cannot be determined whether the addition of this new corrosion inhibitor product would reduce the rate of iron corrosion.

3.2 STATION 24

3.2.1 Raw Water Quality

The raw water was sampled from the influent to the coupon racks before any chemicals were added. Samples were collected two times per week on Monday and Thursday of each week. The results of the routine sampling of the raw water are summarized in **Table 3-4.**

Table 3-4 Station 24 Raw Water Quality

Parameter*	Average	Minimum	Maximum	N
pH	8.24	7.8	9.17	20
Temperature, °C	16.76	10.9	25	20
Total Chlorine, mg/L	0.03	0	0.07	20
Conductivity, µS/cm	441.65	315	488	20
Turbidity, NTU	5.18	0.56	11.7	5
Alkalinity, mg/L as $CaCO_3$	191.80	169	205	20
Dissolved Inorganic Carbon, mg/L	46.11	39.98	49.61	20
Calcium, mg/L	57	52	59	12
Free Ammonia, mg/L	0.25	0.12	0.5	20
Iron, mg/L	1.26	0.88	2.2	10
Chloride, mg/L	6.34	0.7	21.9	10
Sulfate, mg/L	9.2	2.00	12.00	5
Color, Pt-Co	78.75	38	147	5
Orthophosphate, mg/L as PO_4^{3-}	0.43	0.01	3.08	20
LSI	0.81	0.48	1.06	5
Ryznar	6.58	6.25	7.00	5
Aggressiveness In.	12.64	12.83	12.35	5
Larson-Skold Index	0.10	0.23	0.05	5
CSMR	1.07	2.80	0.06	5

The raw water is moderately hard, with an alkaline pH, high in dissolved inorganic carbonate (DIC), is colored, had variable iron and turbidity and was low in chlorides and sulfates. The water would be considered nonaggressive and slightly scale forming based upon the positive Langelier Index, Ryznar and aggressiveness index values. The low Larson-Skold Index number due to the high concentration of bicarbonate ion and low concentrations of sulfate and chloride indicate that the water should not be corrosive towards iron and steel. The CSMR ratio indicates a moderate potential of galvanic corrosion of lead solder in copper piping.

The water from each rack after chemical addition was analyzed for the water quality parameters described in ***Table 2-2*** which is summarized in **Table 3-5**.

Table 3-5 Station 24 Coupon Rack Water Quality Data

Parameter	Coupon Rack #1				Coupon Rack #2			
	Average	Tenth Percentile	Ninetieth Percentile	N	Average	Tenth Percentile	Ninetieth Percentile	N
pH	8.19	7.99	8.35	20	8.11	7.94	8.24	20
Temperature, °C	14.39	11.9	17.23	20	14.13	11.99	16.73	20
Total Chlorine, mg/L	1.11	0.03	2.21	20	1.35	0.27	2.28	20
Conductivity, µS/cm	447.8	426.5	473.5	20	457.15	439.4	483.2	20
Turbidity, NTU	1.85	1.13	2.6	5	1.61	0.9	2.88	6
Alkalinity, mg/L as $CaCO_3$	191.90	187	201.2	20	191.5	186.9	203	20
Calcium, mg/L as $CaCO_3$	56.92	53.3	59	12	57.83	56.1	59	12
Free Ammonia, mg/L	0.25	0.118	0.34	20	0.24	0.07	0.37	20
Iron, mg/L	0.99	0.95	1.05	10	1.08	0.8	1.07	11
Chloride, mg/L	1.11	3.68	12.52	10	5.95	0.75	10.02	11
Sulfate, mg/L	9.33	5	13	5	7.83	1.5	12	6
Color, Pt-Co	37.25	19.4	48.1	5	83.40	2.4	200	6
Orthophosphate, mg/L as PO_4^{3-}	4.76	2.88	7.84	20	5.57	4.43	8.22	20
LSI	0.72	0.47	0.89	5	0.65	0.48	0.79	5
Larson Index	0.14	0.08	0.21	5	0.09	0.04	0.13	5

The water quality after chemical addition was very similar for most of the parameters to the raw water quality as would be expected. The pH of the water in the racks was slightly lower than the raw water and the Langelier Index was a little less, but still positive, indicating a slightly lower tendency to precipitate calcium carbonate. The average turbidity of the water from the coupon racks was less than 20% of the turbidity measured in the raw water and the average color was significantly lower in rack 1 and higher in rack 2. The total chlorine concentration was targeted to be 2.3 +/- 0.3 mg/L but averaged 1.11 and 1.35 for racks 1 and 2, respectively and varied over a much wider range. The orthophosphate concentration goal was 4.0 and 4.5 +/- 0.2 mg/L for racks 1 and 2, respectively but varied over a much wider range as depicted in the lead concentration graphs that follow. The low values of the Larson Index for both racks indicate a low potential for iron and steel corrosion.

3.2.2 Metals Concentrations

The metals concentrations of the stagnation samples collected weekly over the course of the coupon test are depicted in the graphs that follow. The lead concentration graphs also show the initial orthophosphate concentration after the stagnation samples were collected and the rack was returned to normal operation and the final orthophosphate concentration after the coupon rack flow rates and chemical feed rates had been adjusted before the field personnel left the station.

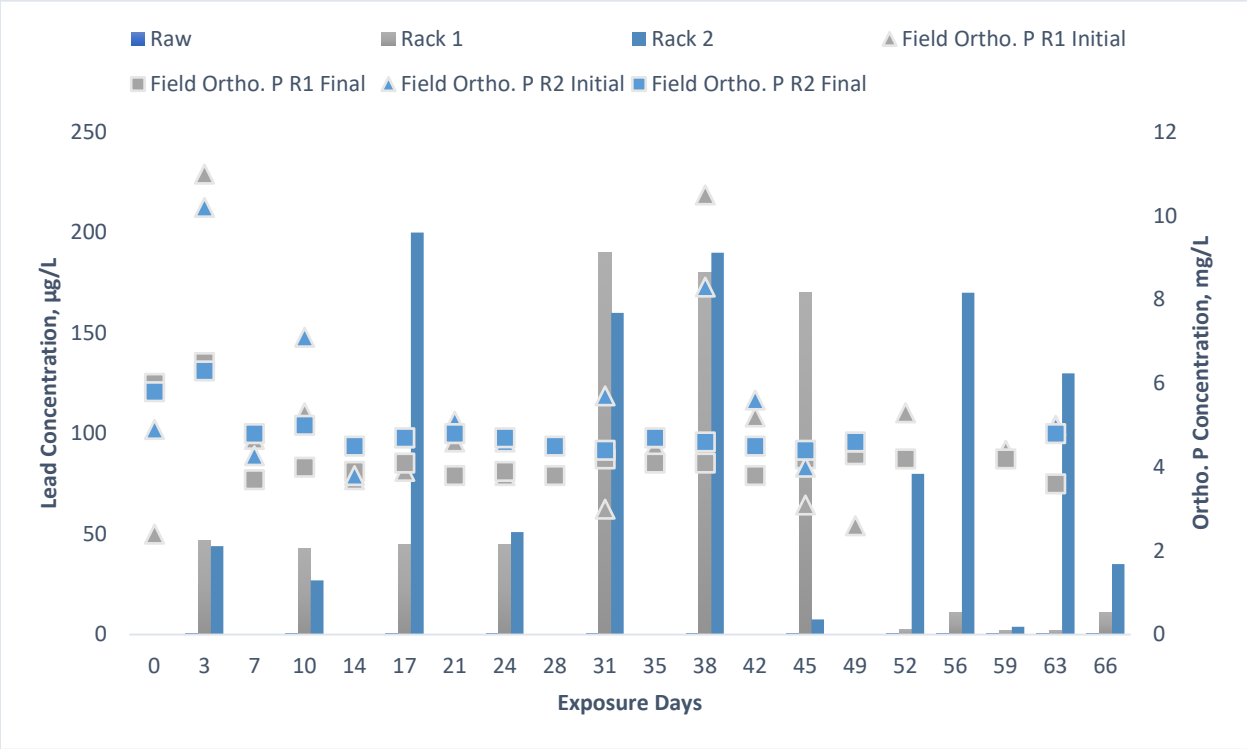


Figure 3-4 Station 24 Lead Concentration Versus Exposure Period

The lead concentrations for the raw water were all at or below the detection limit and therefore no raw water bars show up on the graph. Some very low lead concentrations were measured on rack 1 on some days in the latter portion of the test which were preceded by some very high values. Higher orthophosphate concentrations measured on day 38 which would include higher polyphosphate concentrations may have had an impact, but concentrations were not elevated for most of that time. Most concentrations were above the 10 µg/L trigger level except for some at the end of the study period. Further analysis would be required to determine if there was a correlation between the lead concentrations and the orthophosphate or polyphosphate levels prior to sample collection.

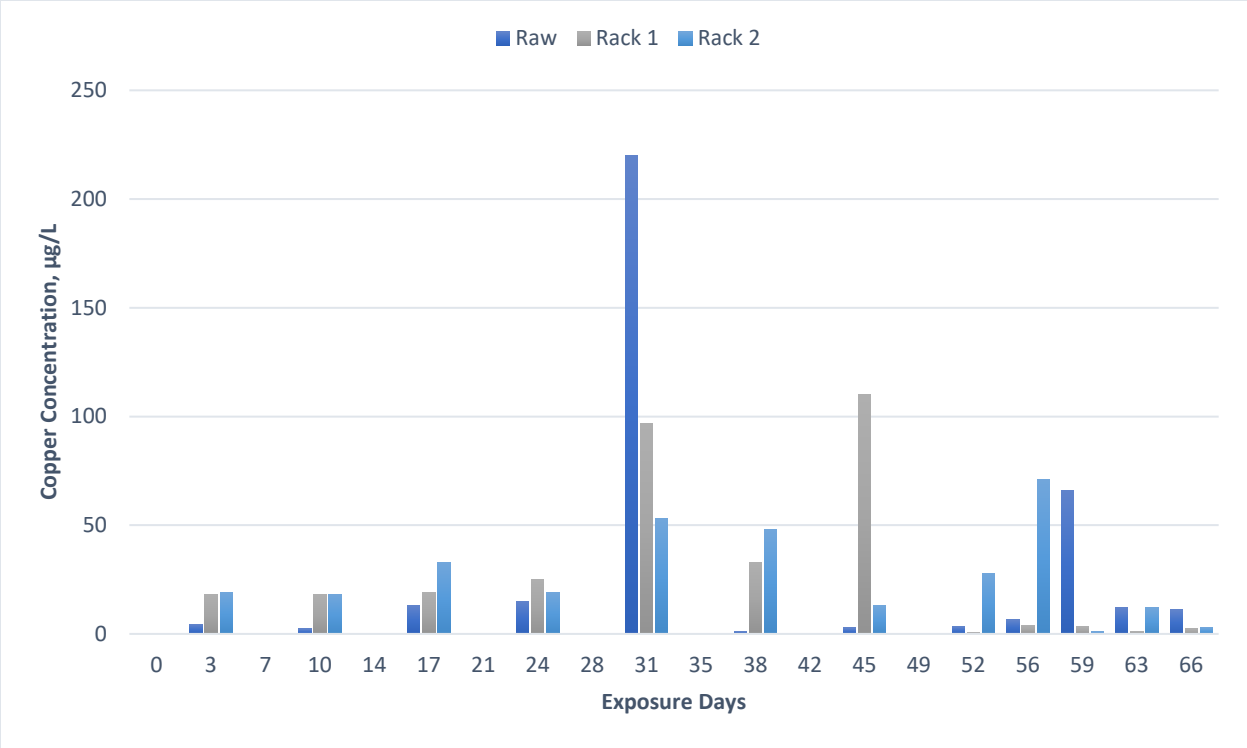


Figure 3-5 Station 24 Copper Concentration Versus Exposure Period

The copper concentrations in all the rack effluents over the study period were very low, <50 µg/L, well below the action level of 1300 µg/L or the secondary maximum contaminant level of 1,000 µg/L. Copper concentrations over 50 µg/L were measured on day 31 for both racks, day 45 for rack 1 and day 56 for rack 2. The concentrations in the raw water were very high on day 31 and that may have contributed to the higher values in the rack effluent on that day. A station blank using the finished water produced by this station was not tested, so it cannot be determined whether the addition of this new corrosion inhibitor product reduced the rate of copper corrosion. However, the concentrations were very low throughout the test period and therefore, the corrosion inhibitor product at the doses used did not appear to adversely affect the rate of copper corrosion.

.

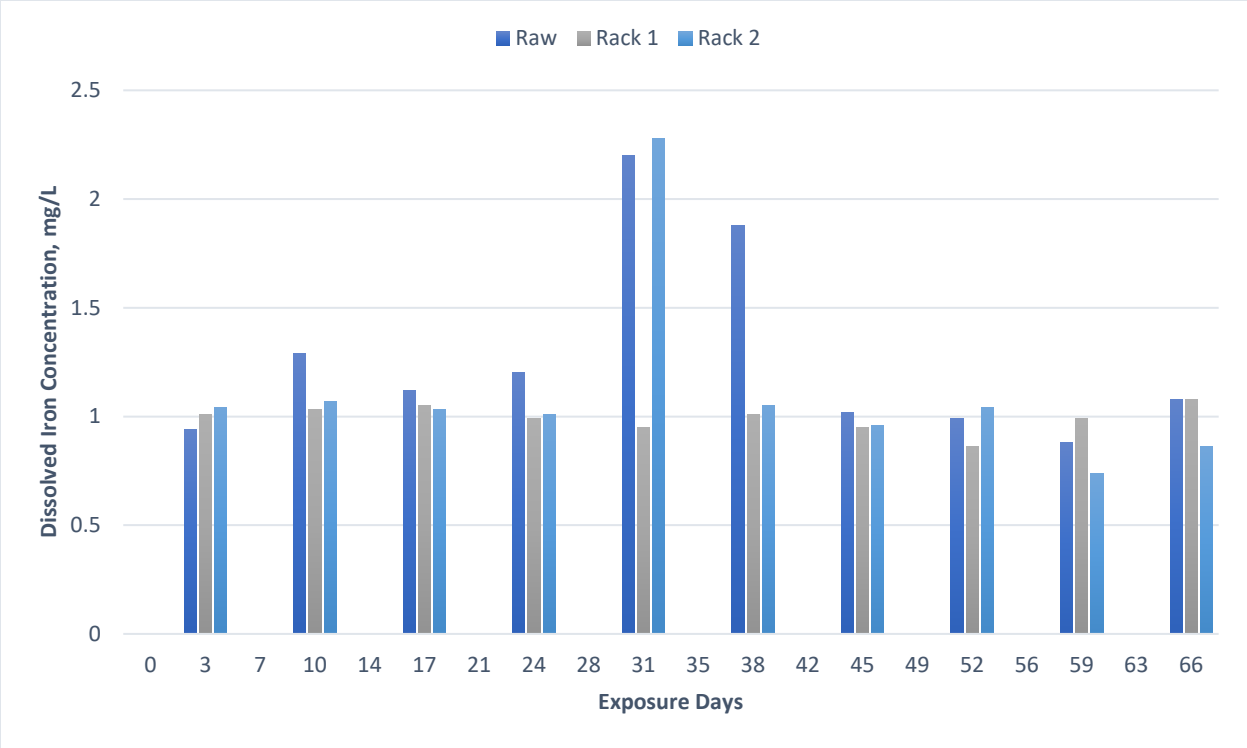


Figure 3-6 Station 24 Dissolved Iron Concentration Versus Exposure Period

The dissolved iron in the raw water averaged around 1 mg/L during the study period with higher values around 2 mg/L measured on days 31 and 38. The iron concentrations from the coupon racks were consistently the same or less than the dissolved iron concentrations in the raw water except rack 2 on day 31. It doesn't appear that the corrosion inhibitor had a significant impact upon dissolved iron concentrations and sequestered the dissolved iron that was present in the raw water. These values do not provide an indication of the potential changes in the corrosion rate since a blank using the treated water at this station was not provided and the total iron concentrations were not measured on a weekly basis in the coupon rack effluent.

3.3 STATION 25

3.3.1 Raw Water Quality

The raw water was sampled from the influent to the coupon racks before any chemicals were added. Samples were collected two times per week on Monday and Thursday of each week. The results of the routine sampling of the raw water are summarized in ***Table 3-6***

Table 3-6 Station 25 Raw Water Quality

Parameter*	Average	Minimum	Maximum	N
pH	7.99	7.53	9.32	19
Temperature, °C	14.61	10.4	18.6	19
Total Chlorine, mg/L	0.01	0	0.05	19
Conductivity, µS/cm	609.5	429	663	19
Turbidity, NTU	27.03	3.58	63.5	4
Alkalinity, mg/L as $CaCO_3$	254.09	229	337	19
Dissolved Inorganic Carbon, mg/L	60.59	56.37	85.38	19
Calcium, mg/L	83	80	86	11
Free Ammonia, mg/L	0.14	0.01	0.94	19
Iron, mg/L	0.55	0.06	1.16	9
Chloride, mg/L	12.74	0.8	22.5	19
Sulfate, mg/L	26	17	30	4
Color, Pt-Co	105	6	176	4
Orthophosphate, mg/L as PO_4^{3-}	0.31	0	0.8	19
LSI	1.08	0.57	2.09	5
Ryznar	6.14	5.14	6.63	5
Aggressiveness In.	13.01	12.45	14.10	5
Larson-Skold Index	0.20	0.10	0.27	5
CSMR	0.55	0.03	0.89	5

The raw water is hard, with a slightly alkaline pH, high in dissolved inorganic carbonate (DIC), is colored, had variable iron and turbidity and was low in chlorides and sulfates. The water would be considered nonaggressive and slightly scale forming based upon the positive Langelier Index, Ryznar and aggressiveness index values. The lower Larson-Skold Index number due to the high concentration of bicarbonate ion and low concentrations of sulfate and chloride indicate that the water should only be moderately corrosive towards iron and steel. The CSMR ratio indicates a moderate potential of galvanic corrosion of lead solder in copper piping.

The water from each rack after chemical addition was analyzed for the water quality parameters described in **Table 2-2** which is summarized in **Table 3-7**.

Table 3-7 Station 25 Coupon Rack Water Quality Data

Parameter	Coupon Rack #1				Coupon Rack #2			
	Average	Tenth Percentile	Ninetieth Percentile	N	Average	Tenth Percentile	Ninetieth Percentile	N
pH	7.88	7.68	8.16	18	7.89	7.68	8.1	19
Temperature, °C	13.7	11.91	15.5	18	13.66	11.51	17.32	19
Total Chlorine, mg/L	2.22	1.18	3	18	1.65	0.95	2.4	19
Conductivity, µS/cm	570.79	518.5	635.3	18	607.37	599.6	627.2	19
Turbidity, NTU	2.83	2.07	3.96	5	1.99	1.32	3.2	6
Alkalinity, mg/L as $CaCO_3$	231	230	236	18	235	233.2	237.8	19
Calcium, mg/L as $CaCO_3$	82.7	80.9	85	10	82.18	80	85	11
Free Ammonia, mg/L	0.07	0.03	0.11	18	0.09	0.05	0.12	19
Iron, mg/L	0.09	0.07	0.11	9	0.07	0.06	0.09	10
Chloride, mg/L	6.63	1.99	15.2	9	11.21	5.6	19.5	10
Sulfate, mg/L	19.60	12.4	26.8	5	26.5	22	32	5
Color, Pt-Co	40.33	7	87	5	129.5	122.7	136.3	5
Orthophosphate, mg/L as PO_4^{3-}	3.06	0.09	5.8	18	5	3.54	6.59	20
LSI	0.68	0.58	0.84	4	0.84	0.51	1.33	5
Larson Index	0.14	0.11	0.17	4	0.2	0.14	0.26	5

The water quality after chemical addition was very similar for most of the parameters to the raw water quality as would be expected. The pH of the water in the racks was slightly lower, 0.1 pH units, than the raw water and the Langelier Index was a little less, but still positive, indicating a slightly lower tendency to precipitate calcium carbonate. The average turbidity of the water from the coupon racks was less than 10% of the turbidity measured in the raw water and the average color was significantly lower in rack 1 and higher in rack 2. The total chlorine concentration was targeted to be 2.3 +/- 0.3 mg/L but averaged 1.65 for racks 2 and varied over a much wider range. The orthophosphate concentration goal was 4.0 and 4.5 +/- 0.2 mg/L for racks 1 and 2, respectively but varied over a much wider range as depicted in the lead concentration graphs that follow. The low values of the Larson Index for both racks indicate a low potential for iron and steel corrosion.

3.3.2 Metals Concentrations

The metals concentrations of the stagnation samples collected weekly over the course of the coupon test are depicted in the graphs that follow. The lead concentration graphs also show the initial orthophosphate concentration after the stagnation samples were collected and the rack was returned to normal operation and the final

orthophosphate concentration after the coupon rack flow rates and chemical feed rates had been adjusted before the field personnel left the station.

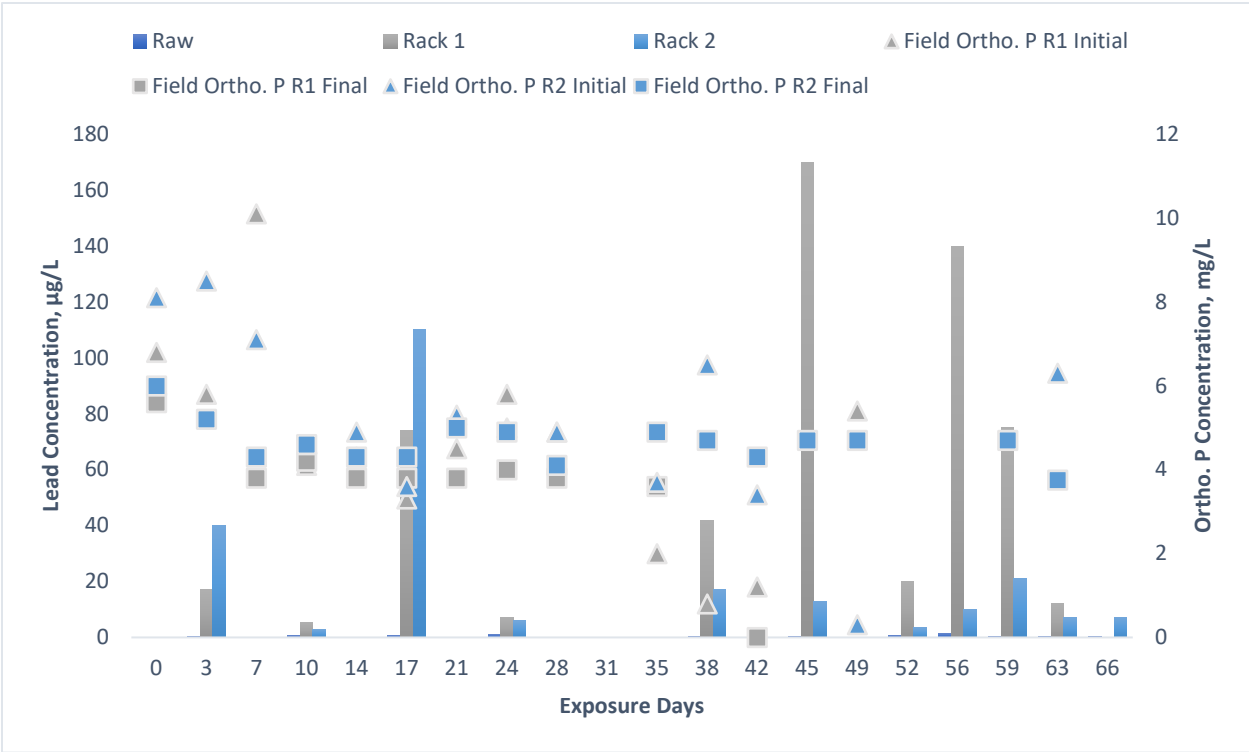


Figure 3-7 Station 25 Lead Concentration Versus Exposure Period

The overall lead concentrations measured in the coupon rack effluent at this station are lower than those measured at Station 1 or 24. The concentrations from coupon rack 2 are all less than 20 µg/L except on day 17. Samples were not collected on day 31 because the power at the station was out. The higher lead concentrations from coupon rack 1 may be explained by the problems with the orthophosphate feed system at the end of the test. However, a distinct pattern of lead concentrations steadily increasing as the orthophosphate dose was removed doesn't show up in the results. Further analysis would be required to determine if there is a direct correlation between the orthophosphate concentrations preceding the sample collection.

Table 3-8 Station 25 Lead Concentration Versus Exposure Period

Sample Location	Exp. Days	3	10	16	23	30	37	44	51	55	58	62	65
Raw Water	µg/L	<0.5	0.55	0.71	1.1	--	<0.5	<0.5	0.65	1.4	<0.5	<0.5	<0.5
Rack 1	µg/L	17	5.5	74	7.3	--	42	170	20	140	75	12	0
Rack 2	µg/L	40	3	110	5.9	--	17	13	3.5	10	21	7	7.3

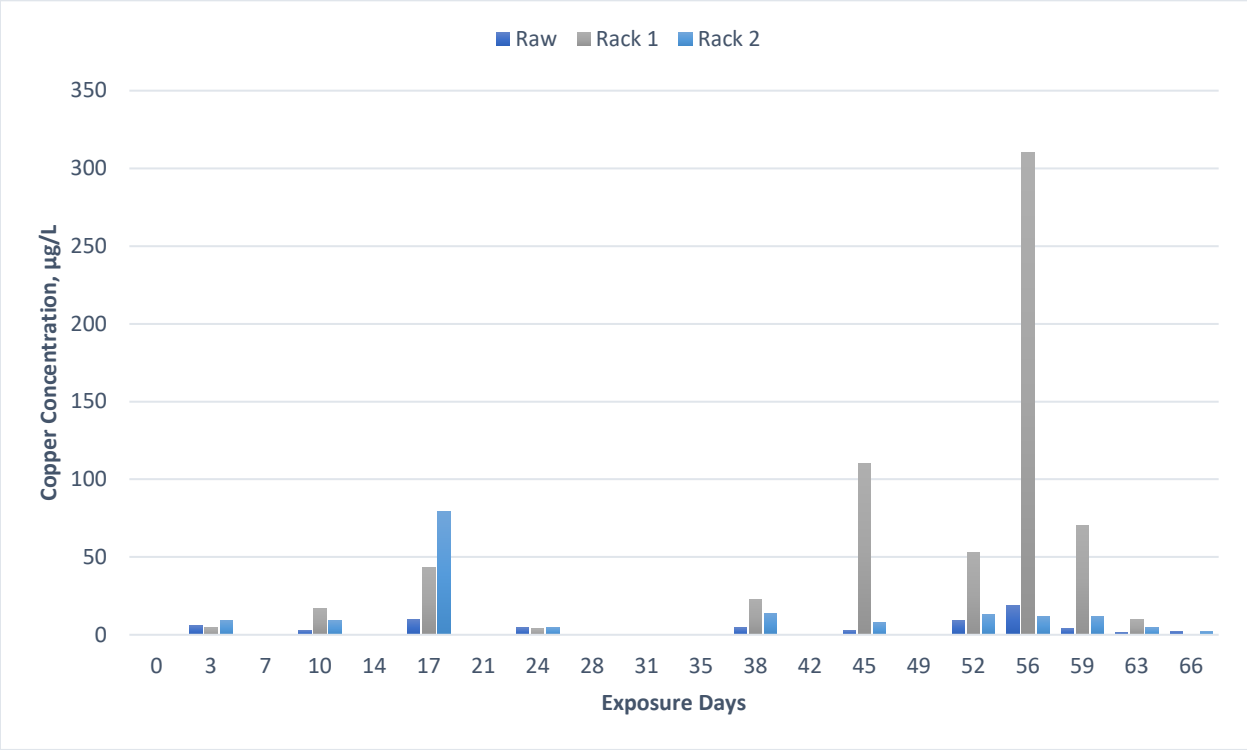


Figure 3-8 Station 25 Copper Concentration Versus Exposure Period

The overall copper concentrations, especially those from coupon rack 2, were very low throughout the study period. Some spikes in the copper concentration near the end of the test were measured like the results for lead from coupon rack 1. All copper concentrations were well below the 1,300 µg/L action level and the 1,000 µg/L secondary maximum contaminant level. Either the water from station 25 is not very corrosive towards copper or the corrosion inhibitor was very effective at this location in controlling copper corrosion when the orthophosphate dose was maintained over the test period as occurred at coupon rack 2.

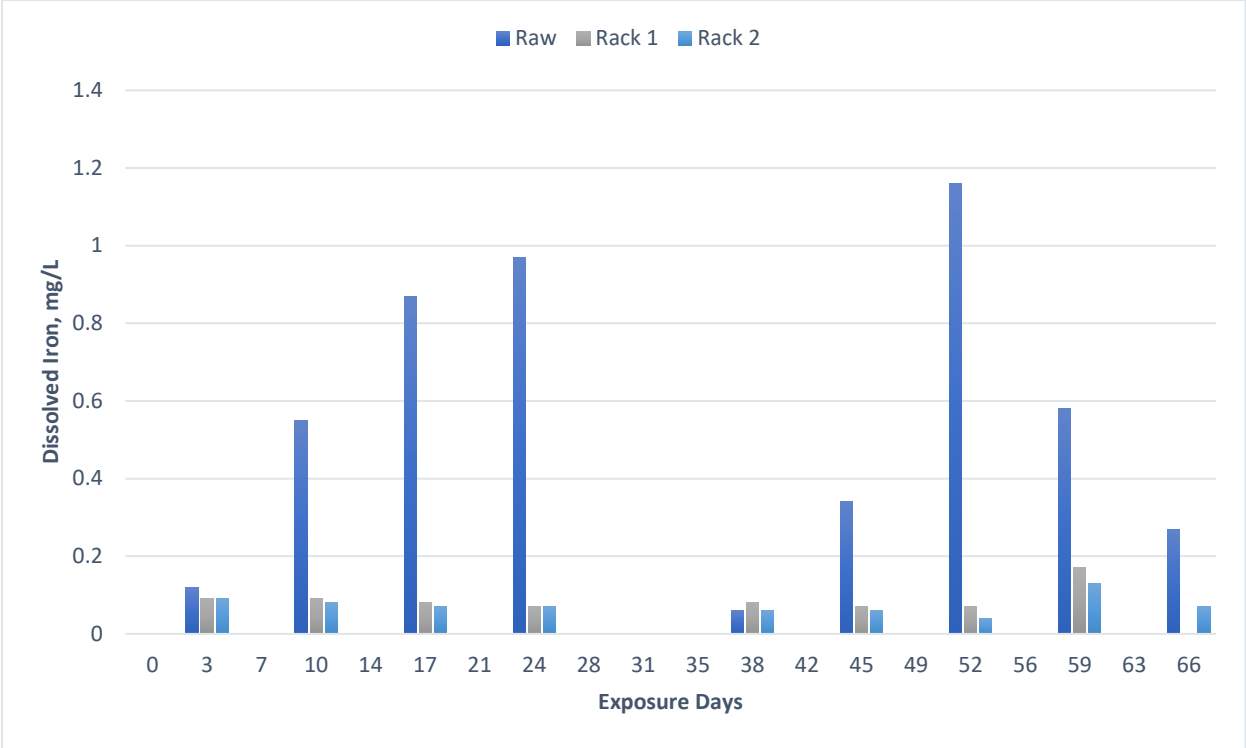


Figure 3-9 Station 25 Dissolved Iron Concentration Versus Exposure Period

Although the dissolved iron concentrations in the raw water were often much higher, the iron concentrations in the coupon rack effluent remained low throughout the test period. All the iron concentrations from the coupon racks were well below the secondary maximum contaminant level of 0.3 mg/L. There was not a blank for the treated water from this station to compare to in terms of the effect of the corrosion inhibitor. However, the significant reduction in dissolved iron concentration measured indicates that the iron had precipitated out of solution and the polyphosphate portion of the corrosion inhibitor solution was not effectively sequestering the iron present in the raw water.

3.4 STATION 39

3.4.1 Raw Water Quality

The raw water was sampled from the influent to the coupon racks before any chemicals were added. Samples were collected two times per week on Monday and Thursday of each week. The results of the routine sampling of the raw water are summarized in ***Table 3-9***.

Table 3-9 Station 39 Raw Water Quality

Parameter*	Average	Minimum	Maximum	N
pH	7.97	7.52	8.72	20
Temperature, °C	15.09	12.3	18.7	20
Total Chlorine, mg/L	0.01	0	0.04	20
Conductivity, µS/cm	650.3	455	698	20
Turbidity, NTU	223.31	4.03	841	5

Table 3-9 Station 39 Raw Water Quality (cont'd)

Parameter*	Average	Minimum	Maximum	N
Alkalinity, mg/L as $CaCO_3$	229.25	164	254	20
Dissolved Inorganic Carbon, mg/L	57.25	38.84	61.26	20
Calcium, mg/L	88.4	86	91	12
Free Ammonia, mg/L	0.34	0.19	0.58	20
Iron, mg/L	1.31	0.77	2.99	10
Chloride, mg/L	10.73	4.2	21.1	10
Sulfate, mg/L	37.2	33	42	5
Color, Pt-Co	116	8	315	5
Orthophosphate, mg/L as PO_4^{3-}	0.37	0.1	0.82	20
LSI	0.90	0.68	1.16	5
Ryznar	6.33	6.10	6.53	5
Aggressiveness In.	12.83	12.59	13.12	5
Larson-Skold Index	0.26	0.32	0.20	5
CSMR	0.35	0.76	0.14	5

The raw water is hard, with a slightly alkaline pH, high in dissolved inorganic carbonate (DIC), is colored, had higher iron and high average turbidity with significant variation of both parameters and was low in chlorides and sulfates. The water would be considered nonaggressive and slightly scale forming based upon the positive Langelier Index, Ryznar and aggressiveness index values. The lower Larson-Skold Index number due to the high concentration of bicarbonate ion and low concentrations of sulfate and chloride indicate that the water should only be slightly corrosive towards iron and steel. The CSMR ratio indicates a moderate potential of galvanic corrosion of lead solder in copper piping.

The water from each rack after chemical addition was analyzed for the water quality parameters described in ***Table 2-2*** which is summarized in **Table 3-10**

Table 3-10 Station 39 Coupon Rack Water Quality Data

Parameter	Coupon Rack #1				Coupon Rack #2			
	Average	Tenth Percentile	Ninetieth Percentile	N	Average	Tenth Percentile	Ninetieth Percentile	N
pH	7.84	7.46	8.1	19	7.79	7.55	8.1	19
Temperature, °C	14.74	12.66	16.5	19	15.01	13.38	16.58	19
Total Chlorine, mg/L	1.57	1	2.5	19	1.48	0.328	2.2	19
Conductivity, µS/cm	658.53	636.8	693	19	656.21	648	679.6	19
Turbidity, NTU	4	1.93	6.4	5	49.88	3.59	140.24	5
Alkalinity, mg/L as $CaCO_3$	231	230	236	19	233.64	229	237.7	19
Calcium, mg/L as $CaCO_3$	91.45	89	93	11	91.82	88	100	11
Free Ammonia, mg/L	0.37	0.19	0.53	19	0.33	0.16	0.43	19
Iron, mg/L	0.66	0.52	0.8	10	0.72	0.63	0.83	10
Chloride, mg/L	16.01	4.8	22.48	10	11.44	1.64	20.32	10
Sulfate, mg/L	35.40	34	37	5	31.20	26	37	5
Color, Pt-Co	19	8.6	30.2	5	82.40	3	228.8	5
Orthophosphate, mg/L as PO_4^{3-}	5.96	0.15	12.95	19	3.11	0.25	7.35	19
LSI	0.74	0.57	0.87	4	0.72	0.59	0.85	4
Larson Index	0.3	0.27	0.32	4	0.26	0.21	0.29	4

The water quality after chemical addition was very similar for most of the parameters to the raw water quality as would be expected. The pH of the water in the racks was slightly lower than the raw water and the Langelier Index was a little less, but still positive, indicating a slightly lower tendency to precipitate calcium carbonate. The average turbidity of the water from rack 1 was less than 2% and the average turbidity of the water from rack 2 was less than 25% of the turbidity measured in the raw water. The average color was significantly lower in rack 1 and about 25% lower in rack 2. The total chlorine concentration was targeted to be 1.5 +/- 0.3 mg/L and averaged within that range, but it varied over a much wider range than the target range. The orthophosphate concentration goal was 4.0 and 4.5 +/- 0.2 mg/L for racks 1 and 2, respectively but average much higher and varied over a much wider range as depicted in the lead concentration graphs that follow. The low values of the Larson Index for both racks indicate a low potential for iron and steel corrosion.

3.4.2 Metals Concentrations

The metals concentrations of the stagnation samples collected weekly over the course of the coupon test are depicted in the graphs that follow. The lead concentration graphs also show the initial orthophosphate concentration after the stagnation samples were collected and the rack was returned to normal operation and the final

orthophosphate concentration after the coupon rack flow rates and chemical feed rates had been adjusted before the field personnel left the station.

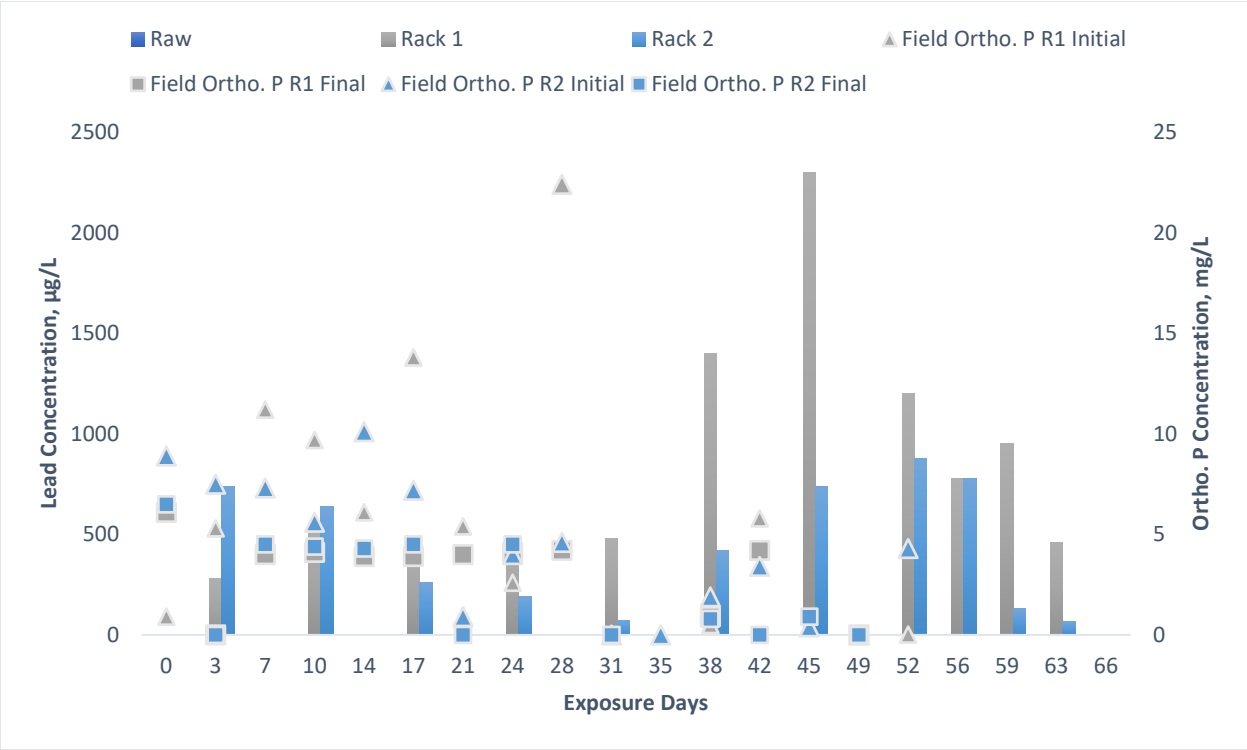


Figure 3-10 Station 39 Lead Concentration Versus Exposure Period

The lead concentrations for the raw water were all at or below the detection limit and therefore no raw water bars show up on the graph. Lead concentrations in the first half of the study period when orthophosphate was being delivered to both coupon racks appears to be decreasing with increasing exposure days up until about day 35. In the latter part of the test period the corrosion inhibitor feed was not consistent which may explain the higher lead concentrations measured. However, in the very end of the test rack 2 had very low lead concentrations when the corrosion inhibitor was not being fed. Most of the lead concentrations measured at this station were very high well above the 15 µg/L action level.

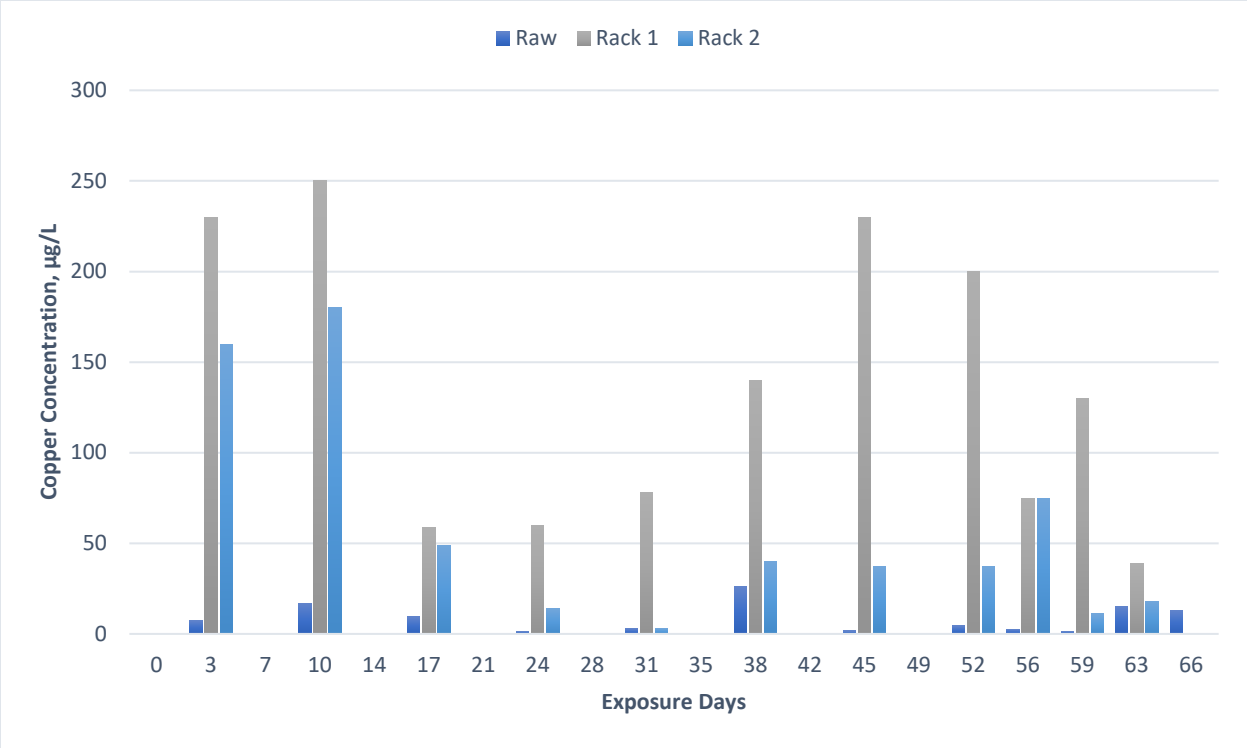


Figure 3-11 Station 39 Copper Concentration Versus Exposure Period

The copper concentrations in the rack effluent were very high in the beginning when the higher dose of the corrosion inhibitor was initially fed, lower in the middle of the study period and higher in the latter part of the study period, especially rack 1. There was difficulty in maintaining the orthophosphate feed to both skids during the latter portion of the test period. The higher copper concentrations may have been in response to the varying orthophosphate concentrations, but more analysis would be required to draw that correlation. A station blank using the finished water produced by this station was not tested, so it cannot be determined whether the addition of this new corrosion inhibitor product reduced the rate of copper corrosion. All concentrations were below the action level of 1,300 µg/L and the 1,000 µg/L secondary maximum contaminant level. However, all concentrations in the effluent from the coupon racks exceeded the concentrations in the raw water indicating that leaching of copper was occurring.

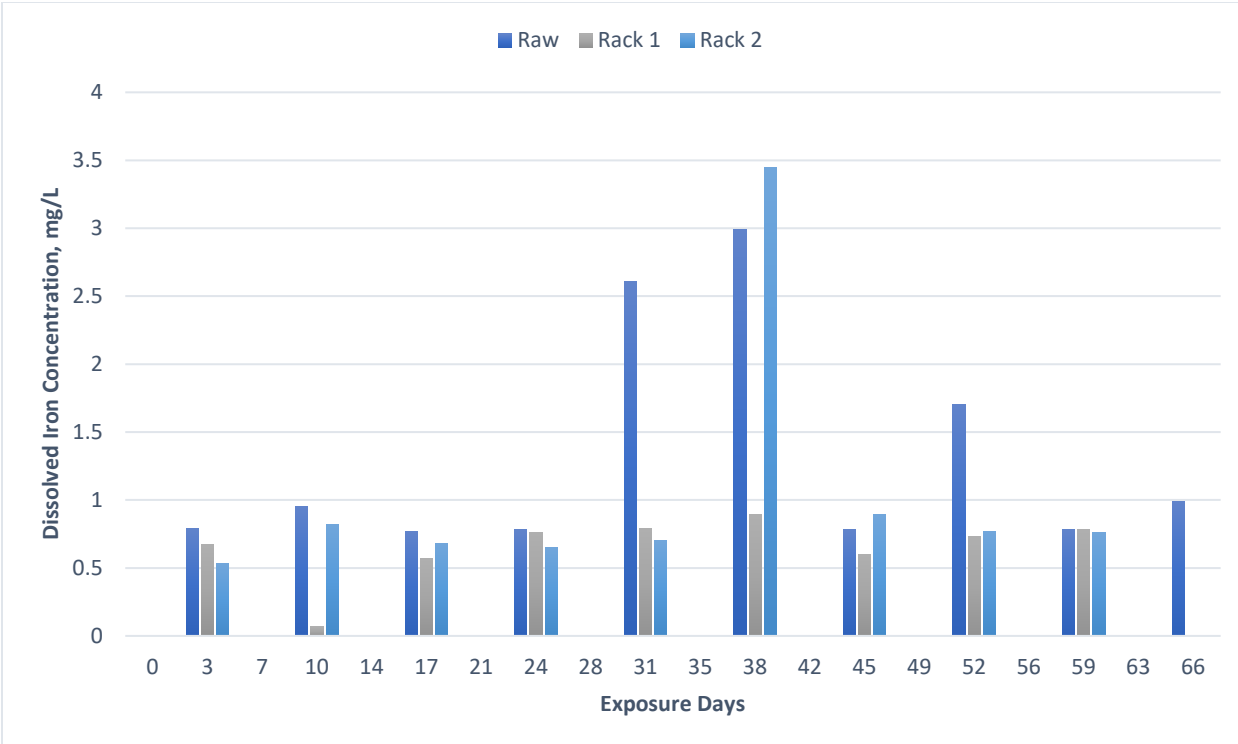


Figure 3-12 Station 39 Dissolved Iron Concentration Versus Exposure Period

All the iron concentrations in the coupon rack effluent were below the iron concentration in the raw water except for rack 2 on day 45 and the large spike in concentration from rack 2 on day 38. Only one concentration, rack 1 on day 10, was below the secondary maximum contaminant level of 0.3 mg/L. The lower concentrations in the rack effluent indicate that the polyphosphate component of the scale inhibitor solution may not have effectively sequestered the dissolved iron in the raw water. However, in the latter part of the study period when the corrosion inhibitor dose was not consistently being applied the iron concentrations did not show a significant change in concentration compared to the first half of the test period.

3.5 COUPON CORROSION RATES

The rate of corrosion of the coupons was measured based on a change in mass or weight loss over the test period. Weighed lead, copper and ductile iron coupons were supplied for the test by Metal Samples Company. The coupons were 3-inch long by 1/2 -inch wide and 1/16-inch thick providing an exposed surface area of approximately 3 square inches. The coupons were weighed prior to installation in the coupon racks and removed after being exposed to the raw water, chlorine and corrosion inhibitor for a period of 66 days. The coupons were returned to Metals Samples to be cleaned, photographed and weighed to evaluate their rate of corrosion using ***Equation3-1***.

$$\text{Corrosion Rate,}\left(\frac{\text{mils}}{\text{year}}\right) = \frac{(\text{W})(\text{K})}{(\text{D})(\text{A})(\text{T})}$$ ***Equation 3-1***

Where W is the weight loss in g, D is the density of the metal in g/cm^3, A is the area of the test specimen in in^2, T is the exposure time in hours, and K is a constant that equals to 5.34 x 10^5.

The information for each coupon used in the test is summarized in the tables in the following sections and each coupon was photographed at the end of the exposure period before and after weighing. Photographs of the coupons

at the end of the exposure period after they had been shipped to Metals Samples for weighing and before cleaning are included on the pages at the end of each section.

3.5.1 Lead

The lead coupons from both positions in each rack were removed and photographed, cleaned, and weighed. **Table 3-11** summarizes the weights of the coupons before and after exposure and provides the weight loss and corrosion rate for each. The summary data provided for each of the lead coupons from Metal Samples, Inc. contained the comment "No Visible Etching." The corrosion rates range from a low of 0.0491 up to a maximum of 0.1498 mils per year. The lead concentration in the rack effluent is graphed versus the corrosion rate for the B coupons, the C coupons and the average rate in **Figure 3-13**. The data do not show any significant correlation between the lead concentrations measured in the rack effluent and the corrosion rates of the coupons. The figure also shows that the position of the coupon did not determine which coupon would have the higher corrosion rate. There is a general pattern that the rack with the higher target orthophosphate concentration had a lower corrosion rate. However, station 24 showed the opposite.

Table 3-11 Lead Coupon Corrosion Rates

Coupon #	Coupon Serial #	Initial Weight, g	Final Weight, g	Weight Loss, mg	Corrosion Rate, mpy	Ave. Effluent Lead µg/L
1-1B	B6058	17.7537	17.7424	0.0113	0.0940	330
1-1C	B6059	18.1881	18.177	0.0105	0.0874	330
1-2B	B6060	17.8043	17.7967	0.0076	0.0632	234
1-2C	B6061	17.9296	17.9218	0.0078	0.0649	234
1-3B	B6062	18.4087	18.4013	0.0074	0.0616	176
1-3C	B6063	17.7682	17.7606	0.0076	0.0632	176
24-1B	B6064	17.9940	17.9848	0.0092	0.0766	62
24-1C	B6065	17.8959	17.8852	0.0107	0.0890	62
24-2B	B6066	18.1266	18.1147	0.0119	0.0990	92
24-2C	B6067	17.9343	17.9250	0.0093	0.0774	92
25-1B	B6054	17.9882	17.9702	0.0180	0.1498	56
25-1C	B6055	18.0944	18.0814	0.0130	0.1067	56
25-2B	B6056	17.9754	17.9695	0.0059	0.0491	22
25-2C	B6057	18.1904	18.1782	0.0122	0.1001	22
39-1B	B6050	17.8579	17.8418	0.0161	0.1340	512
39-1C	B6051	18..3441	18.3315	0.0126	0.1048	512
39-2B	B6052	17.8941	17.8841	0.0100	0.0832	273
39-2C	B6053	18.4686	18.4586	0.0100	0.0832	273

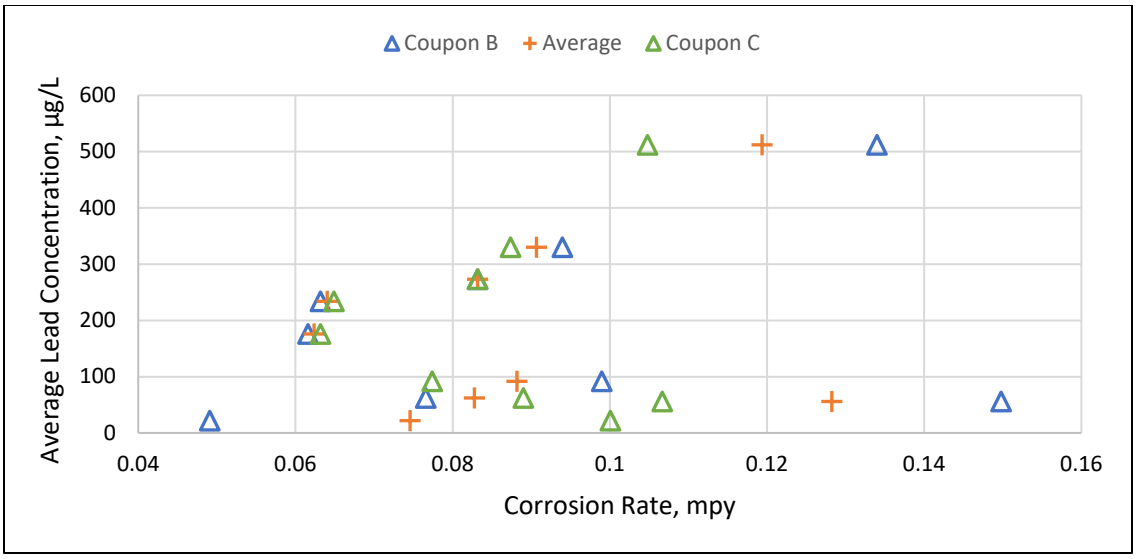


Figure 3-13 Lead Effluent Concentration Versus Corrosion Rate

The following pages show the photographs of the front and back of each of the lead coupons before and after they were cleaned before weighing. **Figure 3-14** shows pictures of one coupon from each station before it was installed in the coupon rack for comparison. The lead coupons were provided with a mill finish without any additional surface preparation and contained surface imperfections as shown in the figure. The lead coupons withdrawn from the coupon racks have a layer of cream-colored buildup of varying thickness and covering varying percentages of the surface area. The buildup is not uniform in coverage. Some of the scale build up and discoloration of the coupons is more brownish in color indicating that some coprecipitation of iron may have occurred. This is especially apparent on the coupons from rack 1 of Station 25 and to a lesser degree on the coupons from rack 2 of Station 25 and coupons from both racks at Station 39.

Figure 3-14 Lead Coupons Prior to Installation

Before Cleaning After Cleaning
Front

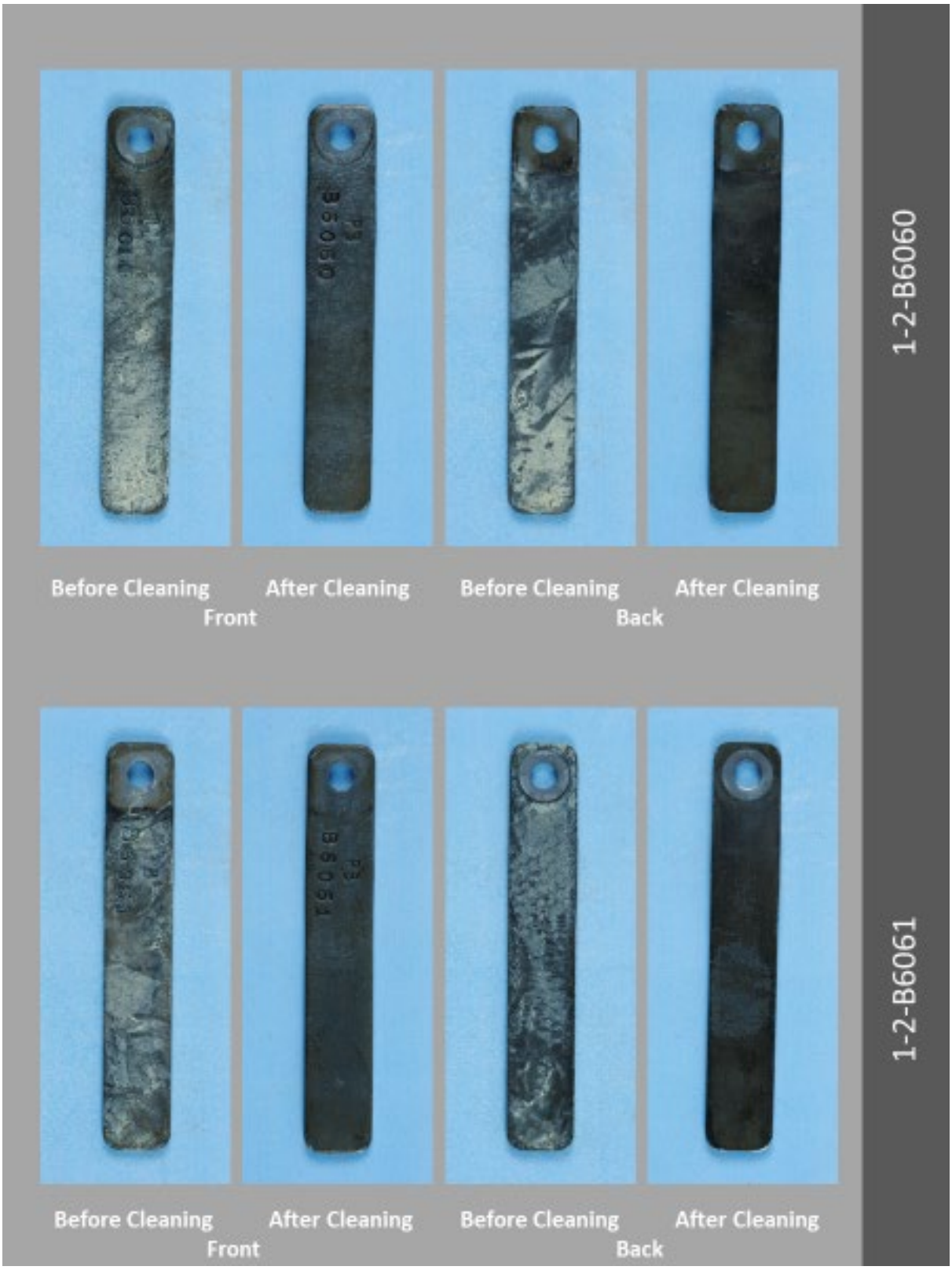
Before Cleaning After Cleaning
Back

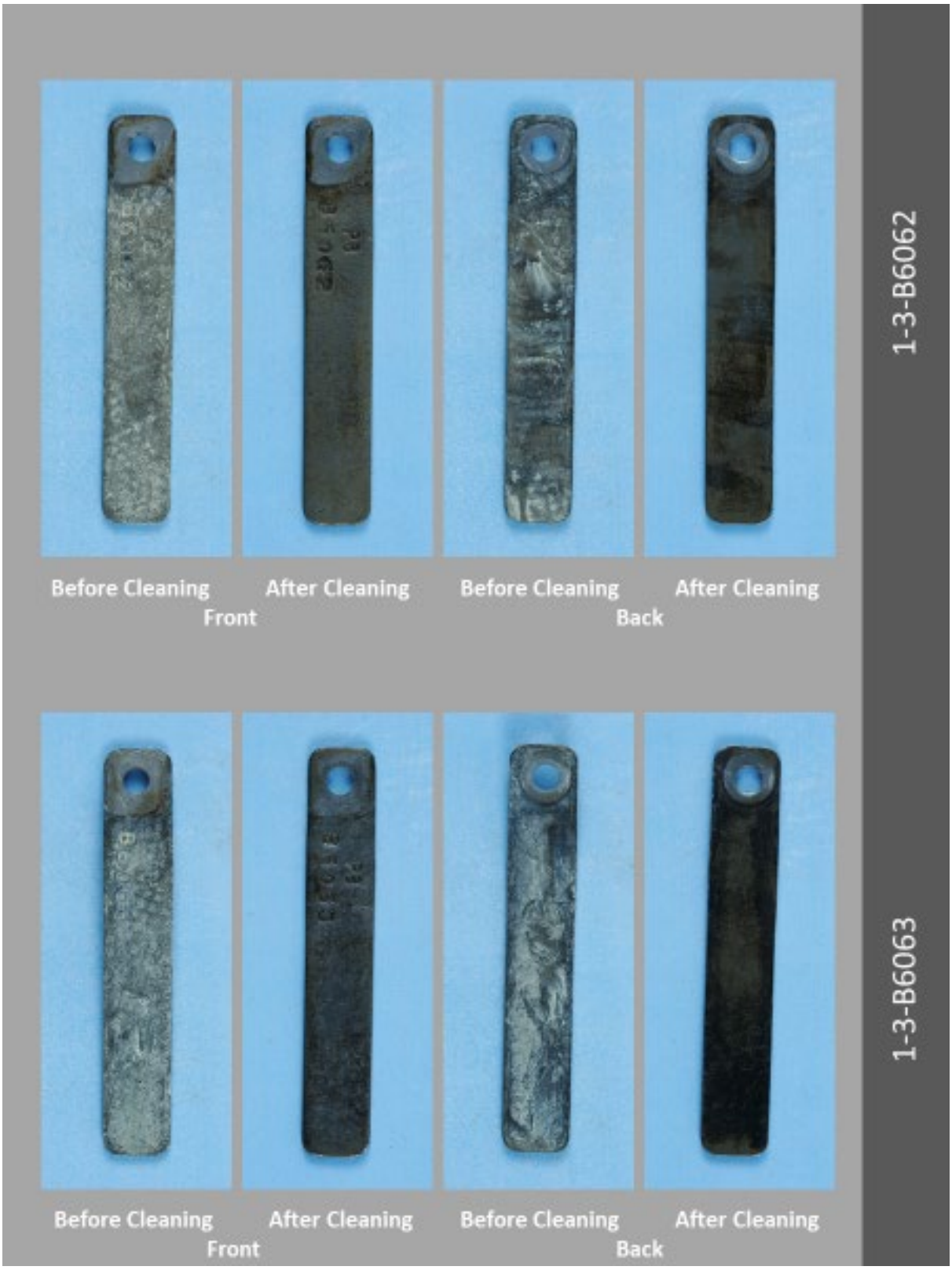
1-1-B6058

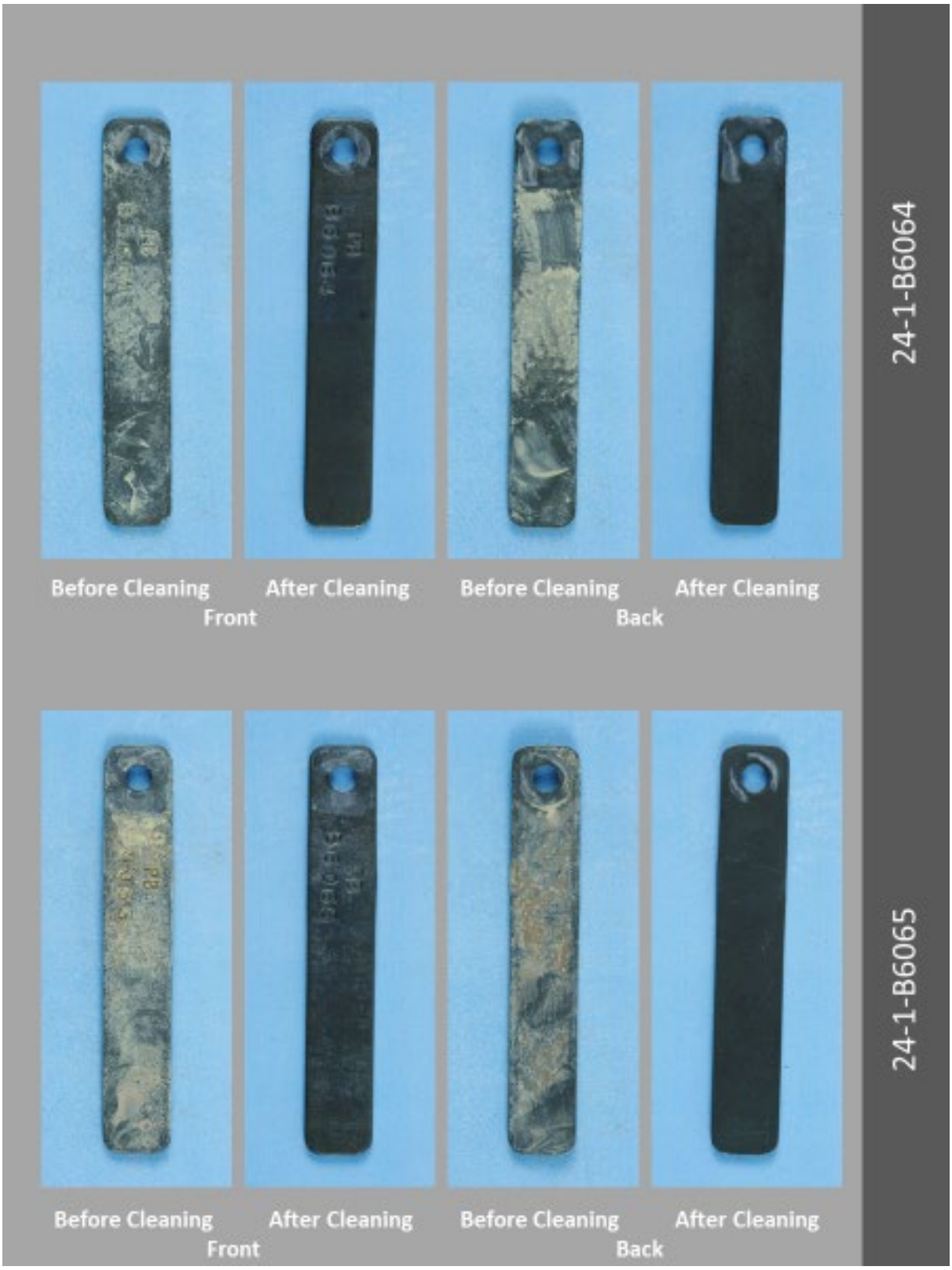
Before Cleaning After Cleaning
Front

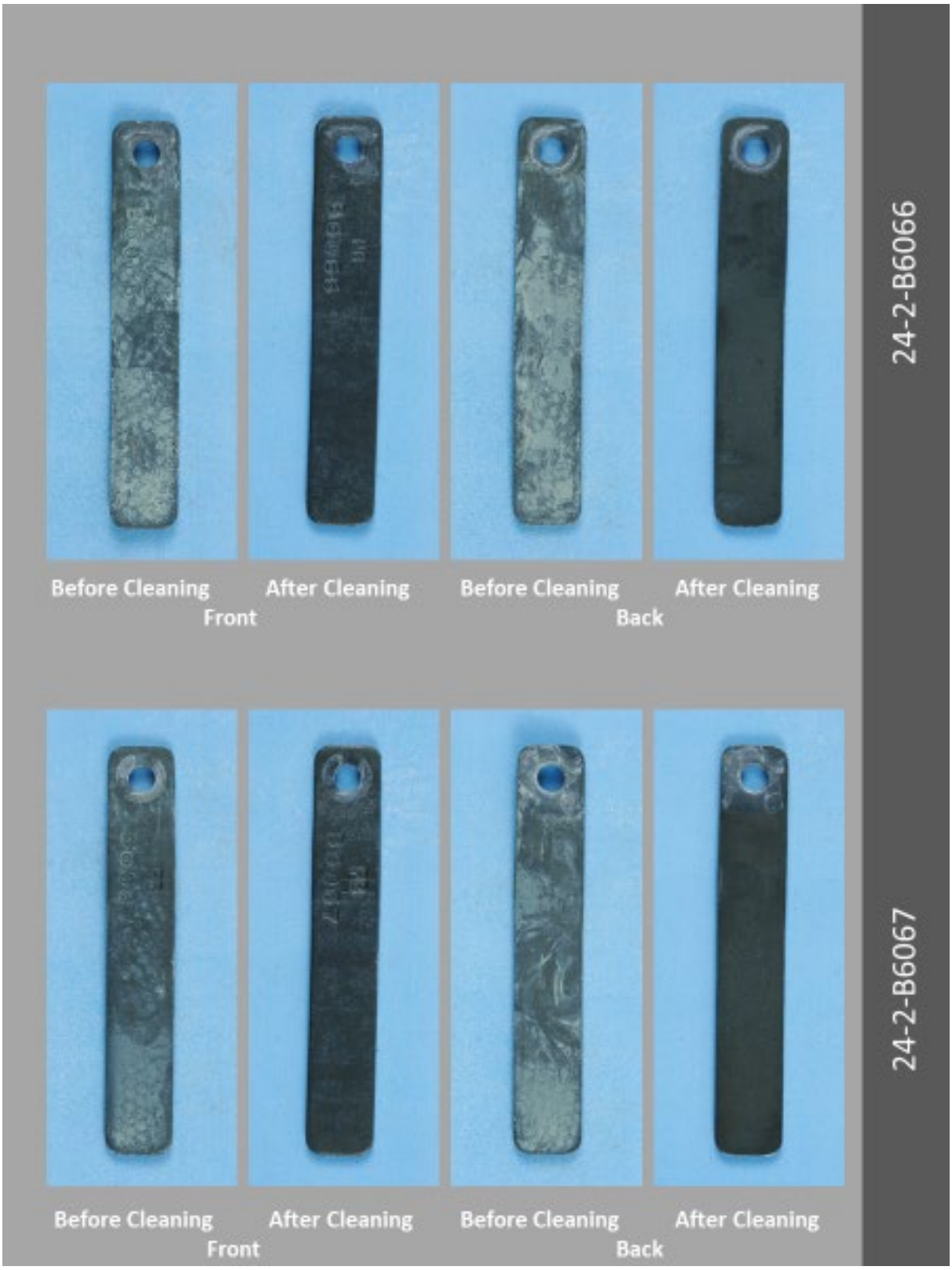
Before Cleaning After Cleaning
Back

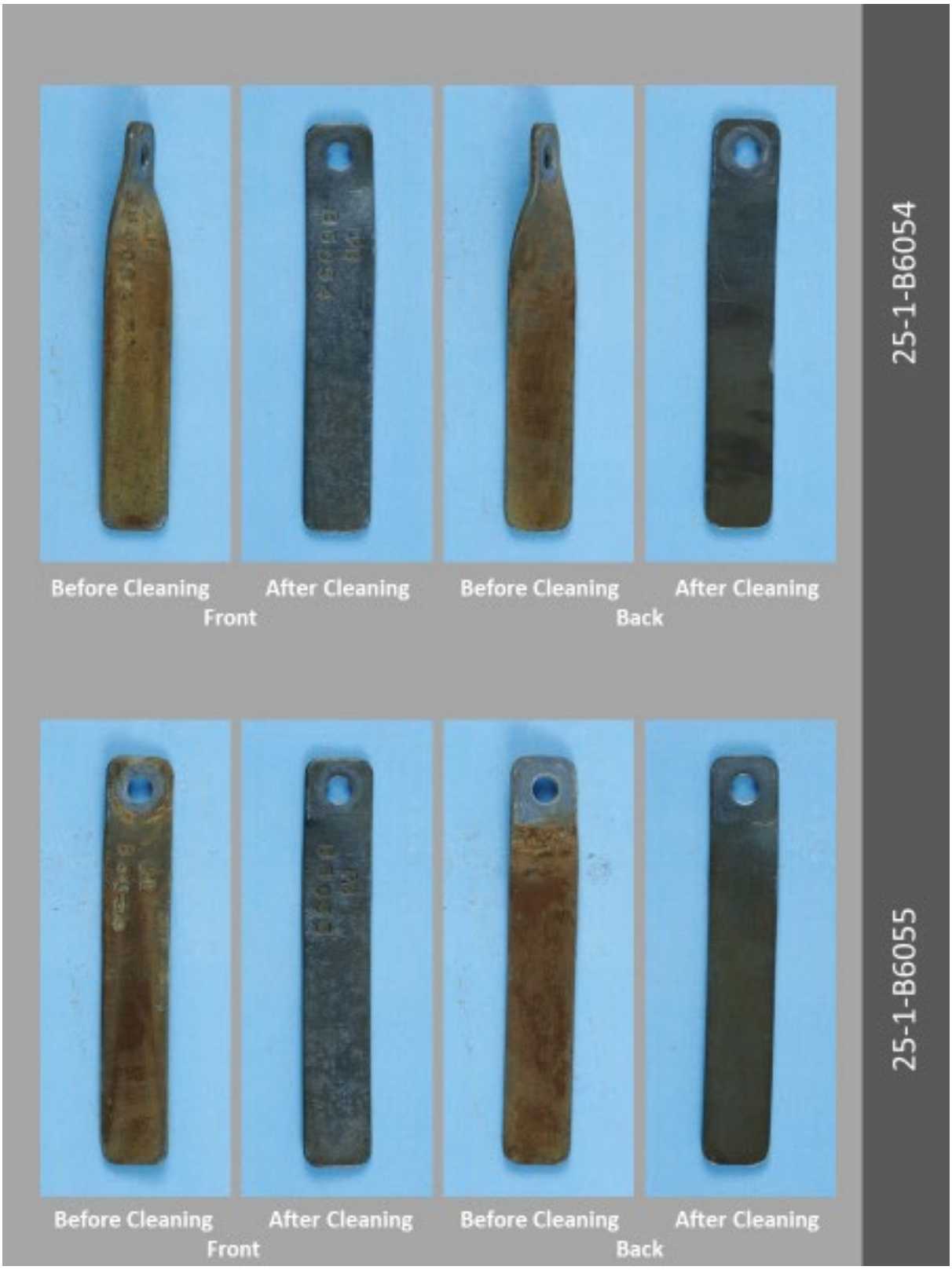
1-1-B6059

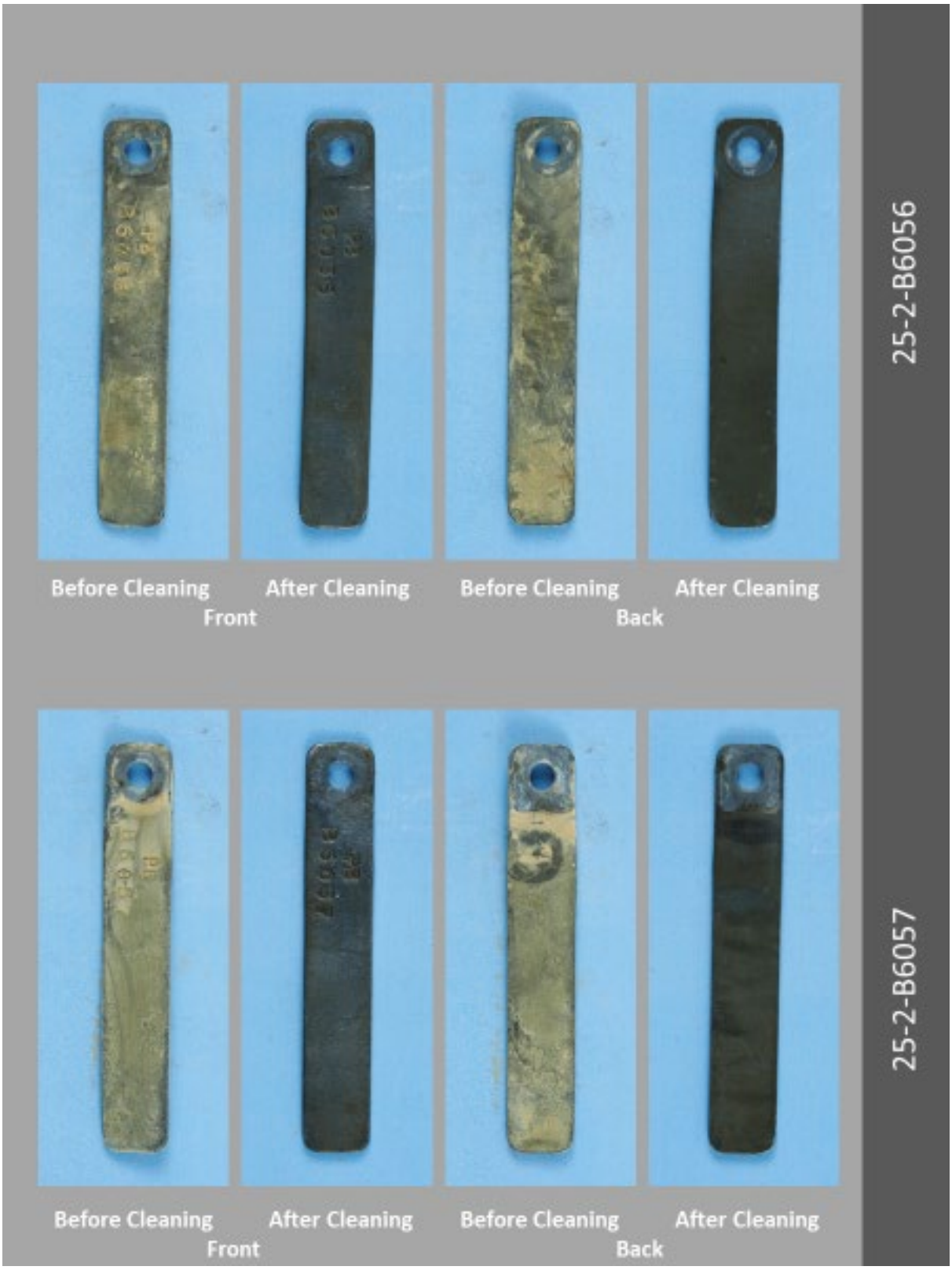

1-2-B6060
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
1-2-B6061
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back


1-3-B6062
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
1-3-B6063
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back


24-1-B6064
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
24-1-B6065
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back


24-2-B6066
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
24-2-B6067
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back


25-1-B6054
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
25-1-B6055
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back


Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
25-2-B6056
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
25-2-B6057

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

39-1-B6050

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

39-1-B6051

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

39-2-B6052

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

39-2-B6053

3.5.2 Copper Corrosion Rate

The copper coupons were alloy C12200. The copper coupons from each rack were removed and photographed, cleaned, and weighed. **Table 3-12** summarizes the weights of the coupons before and after exposure and provides the weight loss and corrosion rate for each. The summary data provided for each of the copper coupons from Metal Samples, Inc. contained the comment "Even Etch." The corrosion rates range from a low of 0.3528 up to a maximum of 0.5314 mils per year. There is some relative correlation between the corrosion rate and the copper concentration when comparing between the racks at each station. However, there does not appear to be a correlation between the corrosion rate and the average effluent copper concentration when you look at the data set as a whole. Even though the corrosion rates for the copper coupons were higher, the effluent copper concentrations were lower than the lead concentrations. However, the lead pipe segments incorporated into the coupon racks may have been responsible for the higher lead concentrations.

Table 3-12 Copper Coupon Corrosion Rates

Coupon #	Coupon Serial #	Initial Weight, g	Final Weight, g	Weight Loss, mg	Corrosion Rate, mpy	Ave. Effluent Copper µg/L
1-1	E1495	13.2304	13.1925	0.0379	0.4004	30
1-2	E1496	13.2338	13.1889	0.0449	0.4743	57
1-3	E1497	13.2329	13.1935	0.0394	0.4162	51
24-1	E1498	13.2317	13.1978	0.0339	0.3581	28
24-2	E1499	13.2317	13.1964	0.0353	0.3729	27
25-1	E1493	13.2505	13.2002	0.0503	0.5314	64
25-2	E1494	13.2433	13.1967	0.0466	0.4923	15
39-1	E1491	13.2356	13.1975	0.0381	0.4025	136
39-2	E1492	13.2130	13.1796	0.0334	0.3528	57

The following pages show the photographs of the front and back of each of the copper coupons before and after they were cleaned before weighing. There does not appear to be a consistent correlation of corrosion rate to the effluent copper concentration and except for Station 1 the copper concentrations for the rack with the lower target orthophosphate concentration also had lower effluent copper concentration. However, the copper concentrations varied over a range during the exposure period and the average may not be the best reflection of the performance of the corrosion inhibitor. The copper coupons were provided with a uniform bead blast finish. The coupons retrieved from Stations 25 rack 1 and 39 have a surface coating that is orangish-brown suggesting that iron in the water had been incorporated into the coating. The coupons retrieved from Station 1 racks 1 and 2, Station 24 rack 1 and Station 25 rack 2 have the same cream-colored coating buildup that was exhibited by the lead coupons. Coupons from Station 1 rack 1 and Station 24 rack 2 have less of the cream-colored surface buildup and in those areas where the surface buildup is not present, they appear to be evenly oxidized. Those coupons had lower average copper effluent concentrations. No pitting can be observed on the coupons before or after cleaning.

Before Cleaning After Cleaning
Front

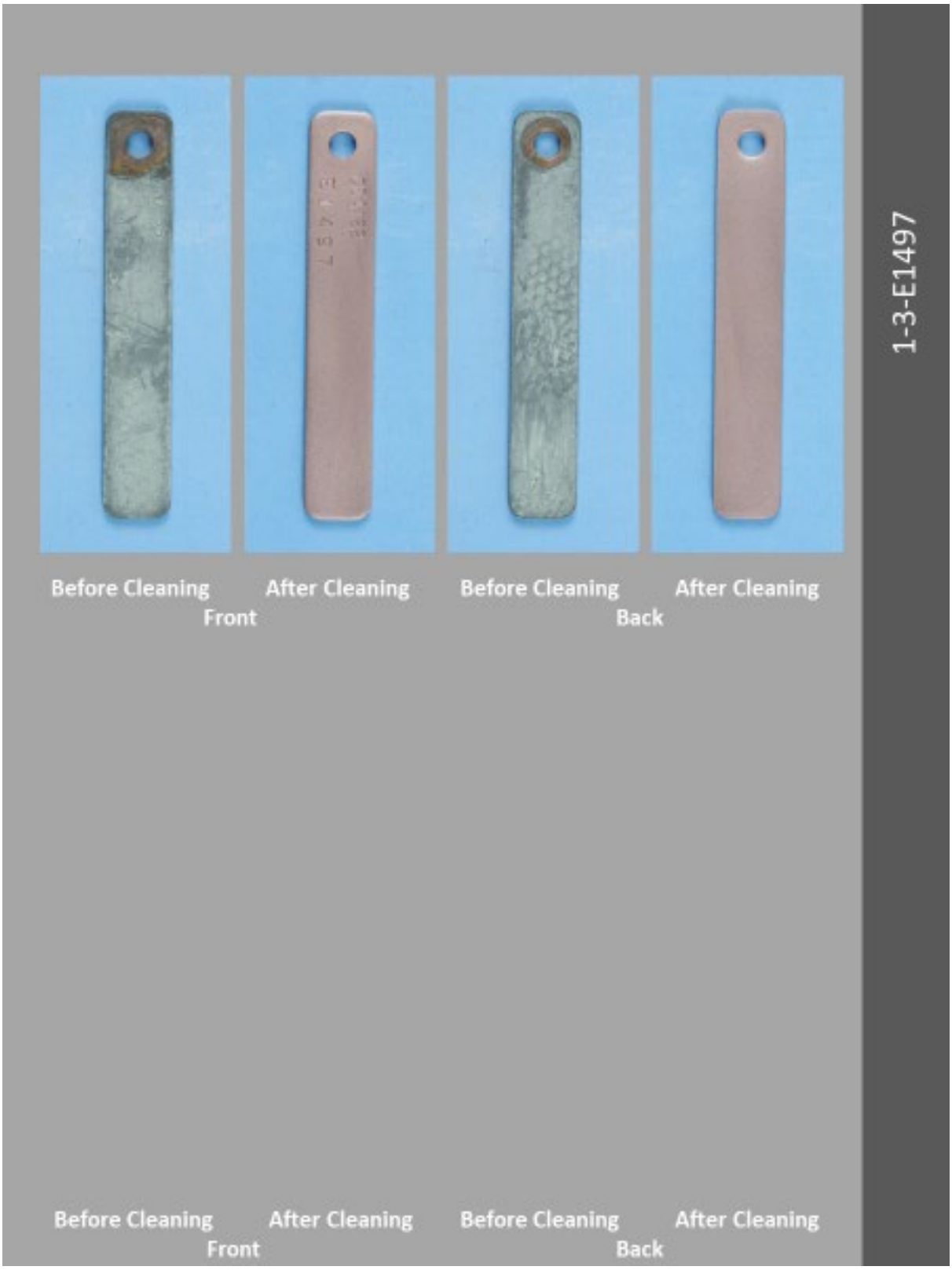
Before Cleaning After Cleaning
Back

1-1-E1495

Before Cleaning After Cleaning
Front

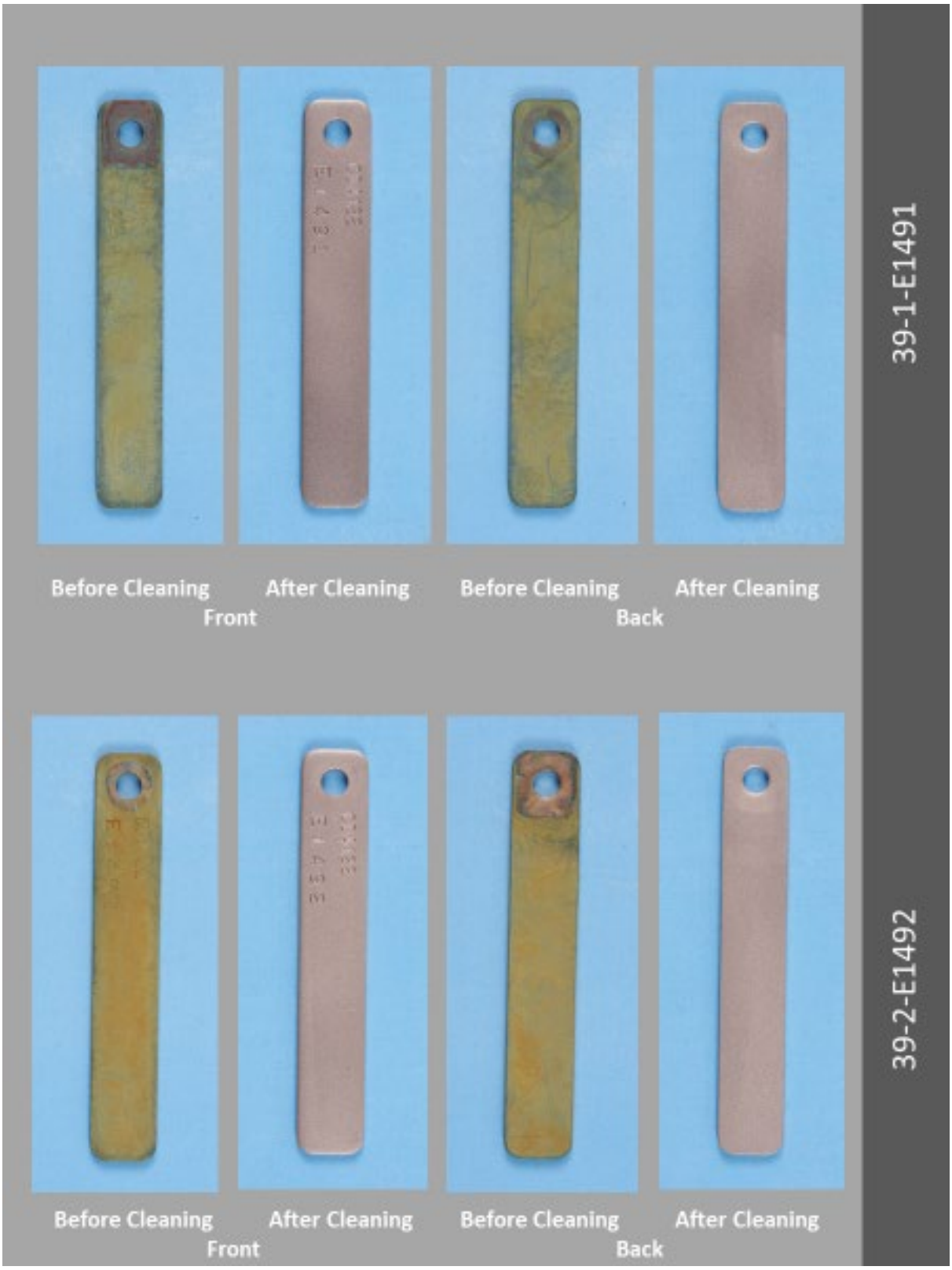
Before Cleaning After Cleaning
Back

1-2-E1496


1-3-E1497
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back

Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
24-1-E1498
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
24-2-E1499

Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
25-1-E1493
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
25-2-E1494


Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
39-1-E1491
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
39-2-E1492

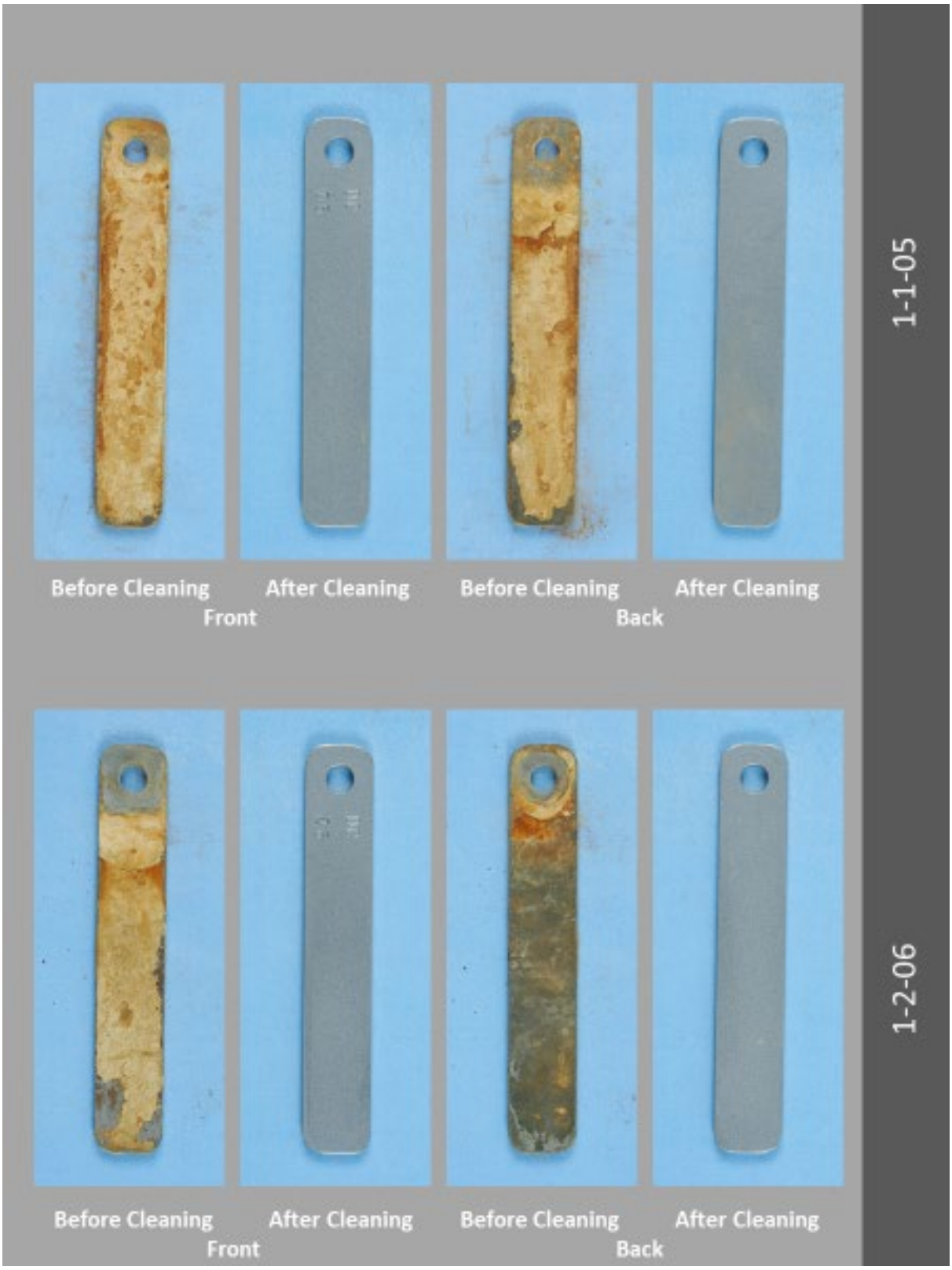
3.5.3 Ductile Iron Corrosion Rate

The ductile iron (65-45-12) coupons were alloy UNS F33100, ASTM A536 provided with a bead blast finish. The ductile iron coupons from each rack were removed and photographed, cleaned, and weighed. **Table 3-13** summarizes the weights of the coupons before and after exposure and provides the weight loss and corrosion rate for each. The summary data provided for each of the ductile coupons from Metal Samples, Inc. contained the comment "Even Etch." The corrosion rates range from a low of 1.7446 up to a maximum of 5.8464 mils per year. There is not a good relative correlation between the corrosion rate and the average iron concentration when comparing between the racks at each station. Most notably Station 25 with corrosion rates similar to Stations 1 and 24 had significantly lower average iron concentration and Station 39 with significantly higher corrosion rates had average iron concentrations similar to Station 24. However, a portion of this may relate to the difference in initial raw dissolved iron concentrations.

Table 3-13 Ductile Iron Coupon Corrosion Rates

Coupon #	Coupon Serial #	Initial Weight, g	Final Weight, g	Weight Loss, mg	Corrosion Rate, mpy	Ave. Effluent Iron mg/L	Ave. Raw Water Iron, mg/L	Change in Iron mg/L
1-1	05	11.8331	11.6670	0.1661	2.1481	0.23	0.29	-0.06
1-2	06	11.8036	11.6580	0.1456	1.9099	0.24	0.29	-0.05
1-3	07	11.8235	11.6706	0.1529	2.0056	0.23	0.29	-0.06
24-1	08	11.8003	11.6382	0.1621	2.1263	0.99	1.26	-0.27
24-2	09	11.6067	11.4737	0.1330	1.7446	1.11	1.26	-0.15
25-1	03	11.8593	11.7098	0.1495	1.9610	0.09	0.55	-0.46
25-2	04	11.8008	11.6433	0.1575	2.0660	0.07	0.55	-0.48
39-1	01	11.8731	11.4274	0.4457	5.8464	0.65	1.31	-0.66
39-2	02	11.8699	11.4444	0.4255	5.5814	1.03	1.31	-0.27

The following pages show the photographs of the front and back of each of the ductile iron coupons before and after they were cleaned before weighing. The coupons retrieved from Station 1, with the lowest dissolved iron concentration in the raw water, do not show any significant variation in surface profile after cleaning. They appear to be coated with a cream-colored surface material with is interspersed with oxidized iron areas. Several of the coupons before cleaning show that the coating has chipped off indicating it is not tightly adherent to the metal coupon surface or part of a more permanent passivation layer. Some of the coupons from Station 25 show that some of the surface layer that formed had also chipped off. Coupons from Station 25 rack 1 and Station 39 racks 1 and 2 show some darker brown areas and accompanying imperfections in the surface of the cleaned coupons. These areas appear to be the result of higher rates of nonuniform localized corrosion cells. All racks had a decrease in iron concentration when the average dissolved iron in the raw water was compared to the average total iron concentration in the effluent from the coupon racks.


1-1-05
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back
1-2-06
Before Cleaning
After Cleaning
Front
Before Cleaning
After Cleaning
Back

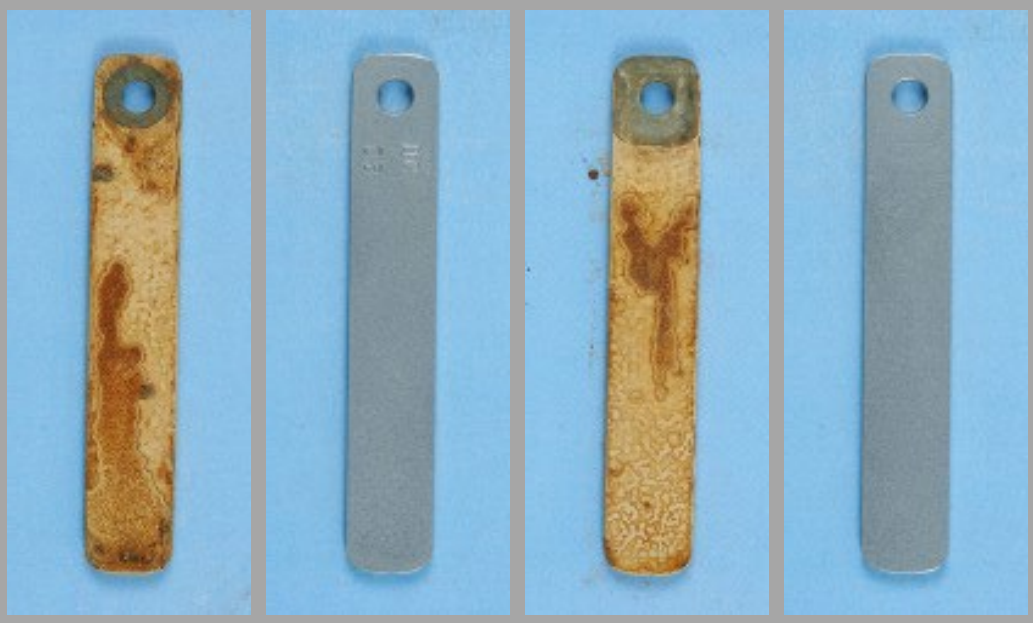
Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

1-3-07



Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

24-1-03

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

24-2-04

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

25-1-03

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

25-1-04

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

39-1-01

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

39-1-02

3.6 IRON SOLUBILITY TESTING

A set of iron solubility tests were performed at the same time as the coupon rack tests were being performed. Five 355 mL, wide mouth jars covered with Plexiglas tops from which ductile iron coupons were suspended were used for the testing. Water from Stations 1 and 24 was used for the testing. Water was collected from the effluent of each coupon rack at every semiweekly visit to the station which was placed into the jars and the coupons were then moved to the jars with the fresh solution. The water in the jar that had been in contact with the coupons was measured for color and turbidity and acidified with nitric acid to dissolve iron particulates or iron on the glass surface. Samples were then sent to the laboratory for analysis of the iron concentration, although a minimum number of tests were performed due to a misinterpretation by the lab of the test required and a sample bottle shortage. Color and turbidity measurements are depicted in **Figures 3-15 - 3-18** below.

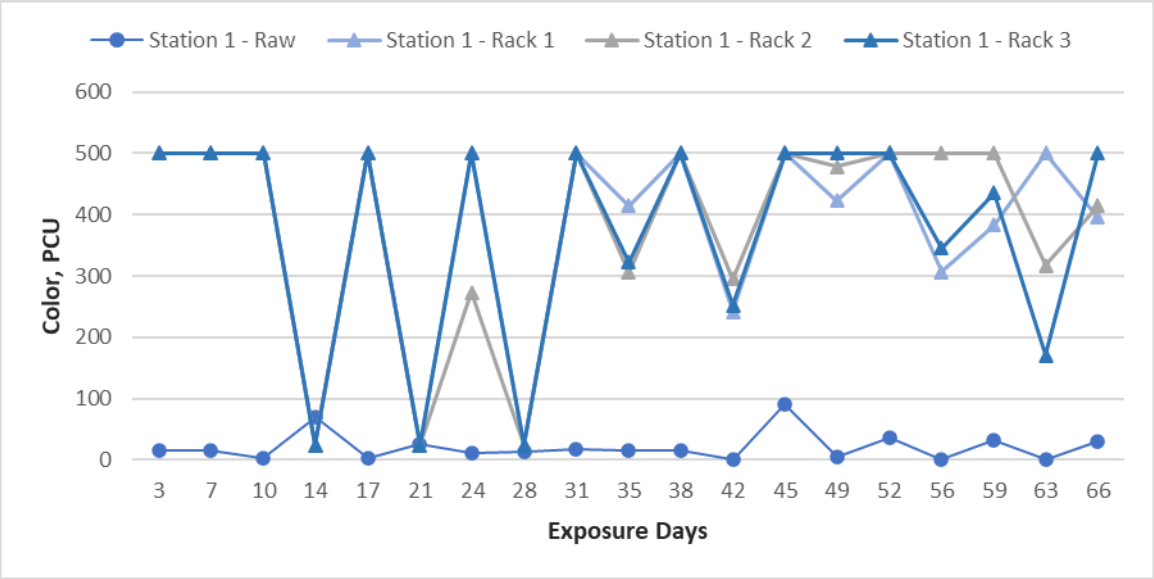


Figure 15 Central Station Color Versus Exposure Period

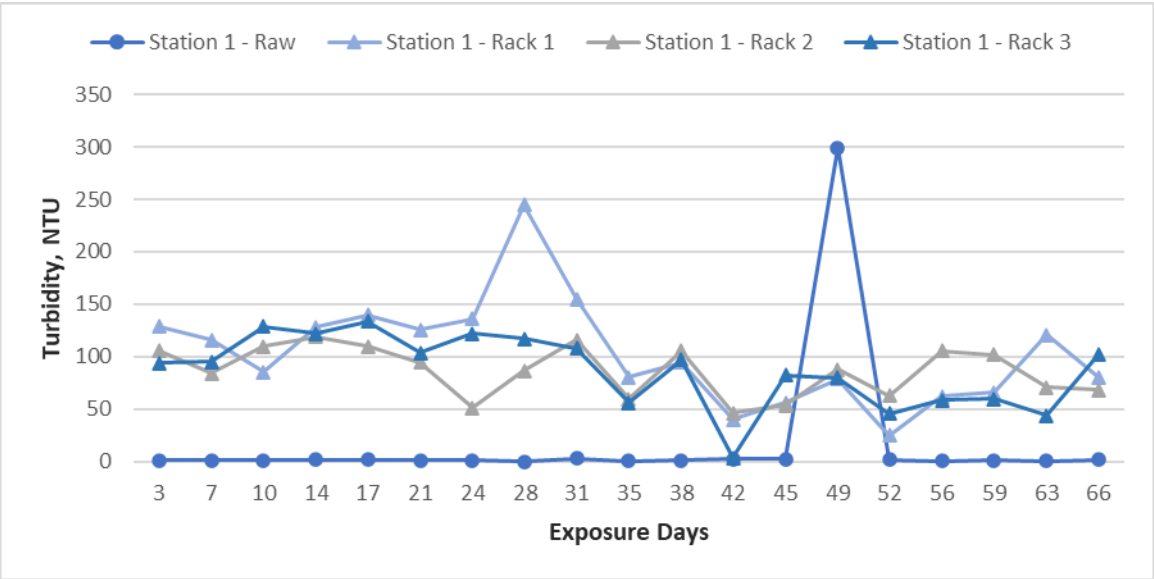


Figure 3-16 Central Station Turbidity Versus Exposure Period

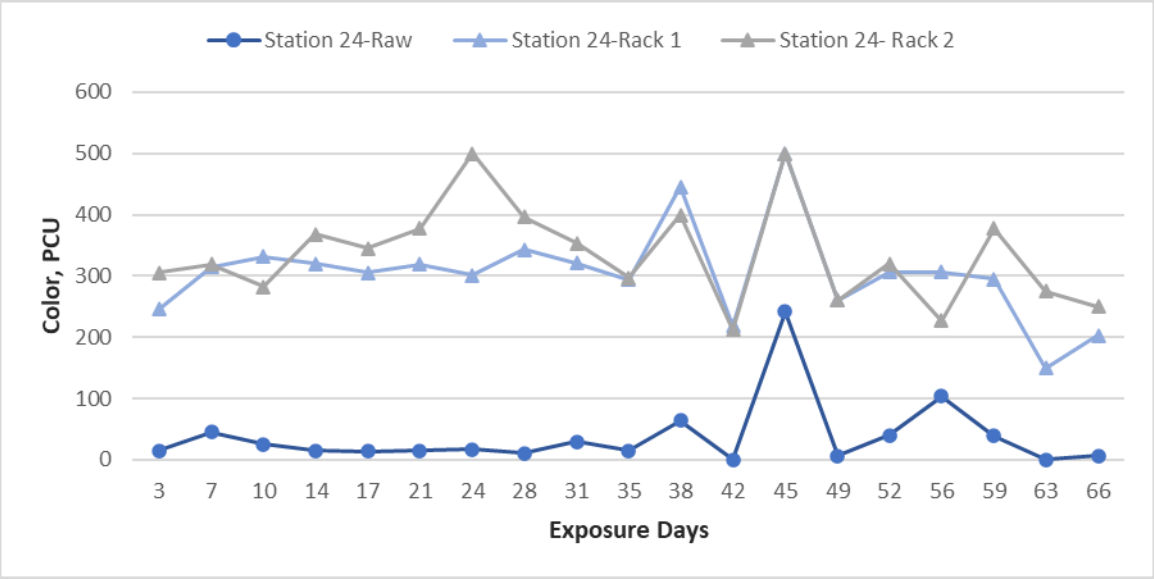


Figure 3-17 Station 24 Color Versus Exposure Period

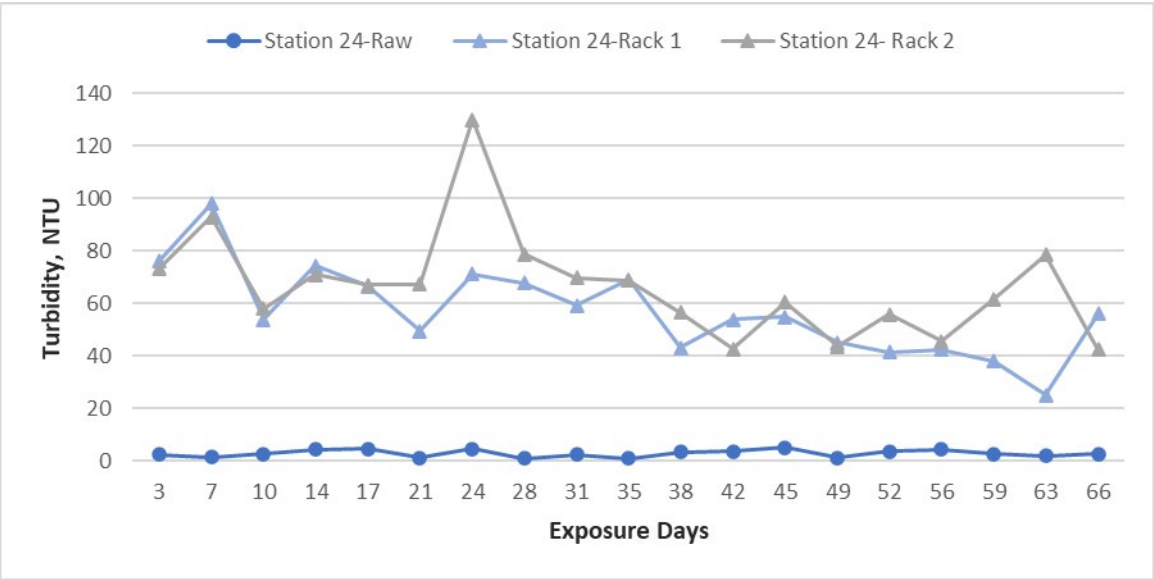


Figure 3-18 Station 24Turbidity Versus Exposure Period

Color and turbidity measurements taken on the jars containing the ductile iron coupons were elevated way above the values in the raw water and acceptable aesthetic standards for finished water. The measurements did appear to exhibit a trend of decreasing as the number of exposure days increased although the rate of decrease would have to continue over an extended time period for them to be reduced to acceptable levels. The tests appear to show that the orthophosphate component of the corrosion inhibitor was not preventing corrosion of the metal and the polyphosphate component was not sequestering the dissolved iron or corrosion products in solution.

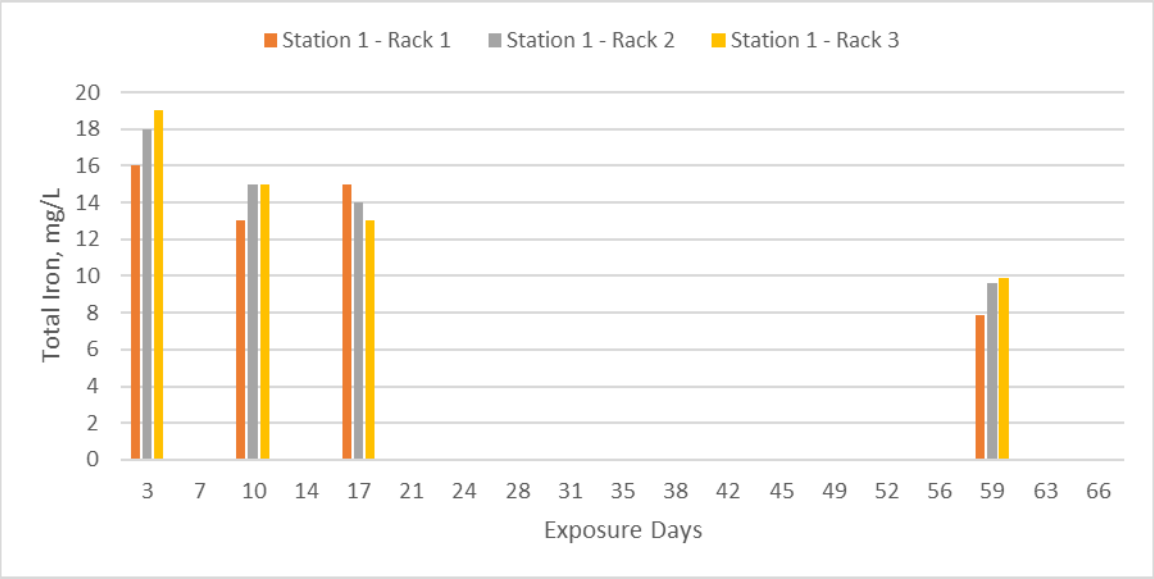


Figure 3-19 Central Station Total Iron Concentration Versus Exposure Period

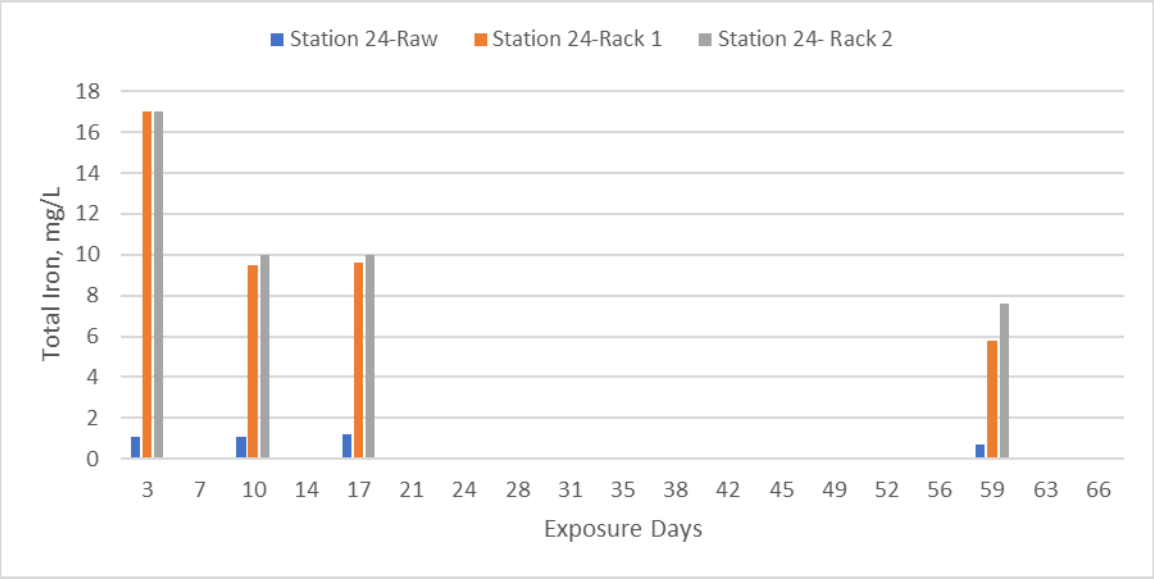


Figure 3-20 Station 24 Total Iron Concentration Versus Exposure Period

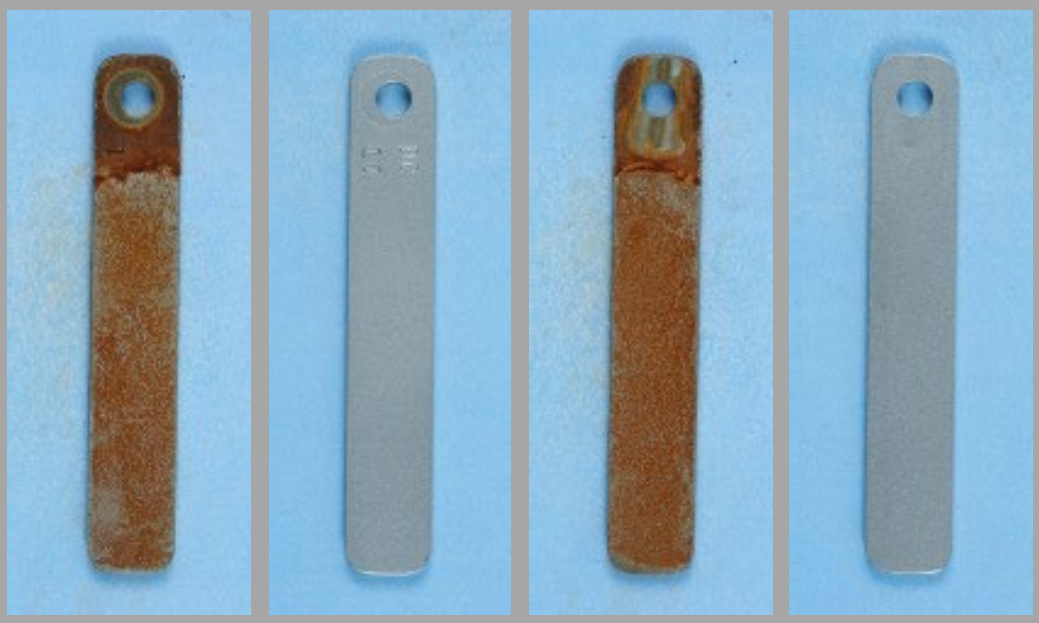
Figures 3-19 and **3-20** indicate a decrease in total iron concentration over the exposure period which corresponds to the general trend of the color and turbidity measurements.

Table 3-14 Solubility Test Ductile Iron Coupon Corrosion Rates

Coupon #	Coupon Serial #	Initial Weight, g	Final Weight, g	Weight Loss, mg	Corrosion Rate, mpy	Rack Corrosion Rate, mpy
1-1	10	11.8300	11.6839	0.1461	1.9164	2.1481
1-2	11	11.8565	11.7233	0.1332	1.7472	1.9099
1-3	12	11.8210	11.6904	0.1306	1.7131	2.0056
24-1	13	11.8318	11.7496	0.0822	1.0782	2.1263
24-2	14	11.8759	11.7849	0.0910	1.1937	1.7446

The weight loss and corrosion rates for the coupons used in the solubility test are summarized in **Table 3-14** The corrosion rates obtained for the coupons that were used in the coupon racks are also included in the table for comparison. The corrosion rates from the solubility test for Station 1 were all lower than the corresponding rates from the coupon rack tests, but only by approximately 10%. The corrosion rates from the solubility test for Station 24 were significantly lower than the corresponding rates from the coupon rack tests. The difference may be related to the higher dissolved iron concentration in the raw water at Station 24 which limited the amount of additional iron that could be released into solution under the stagnate conditions as opposed to the flowing condition in the coupon rack test.

The following pages show the photographs of the front and back of each of the ductile iron coupons before and after they were cleaned before weighing. The coupons from Station 1 all appear to have speckled brown areas of corrosion products being more pronounced on the coupon in water from rack 1 and less pronounced on the coupon in water from rack 3. The coupons from Station 24 have a more uniform orangish-brown coating of the entire surface of the coupon compared to the ones for Station 1. The higher iron concentration in the raw water at Station 24 may have formed more of a passivation layer over the entire surface which reduced the corrosion rate as compared to Station 1 where corrosion cells had developed and were in the process of creating a layer of corrosion byproducts to cover the entire surface.



Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

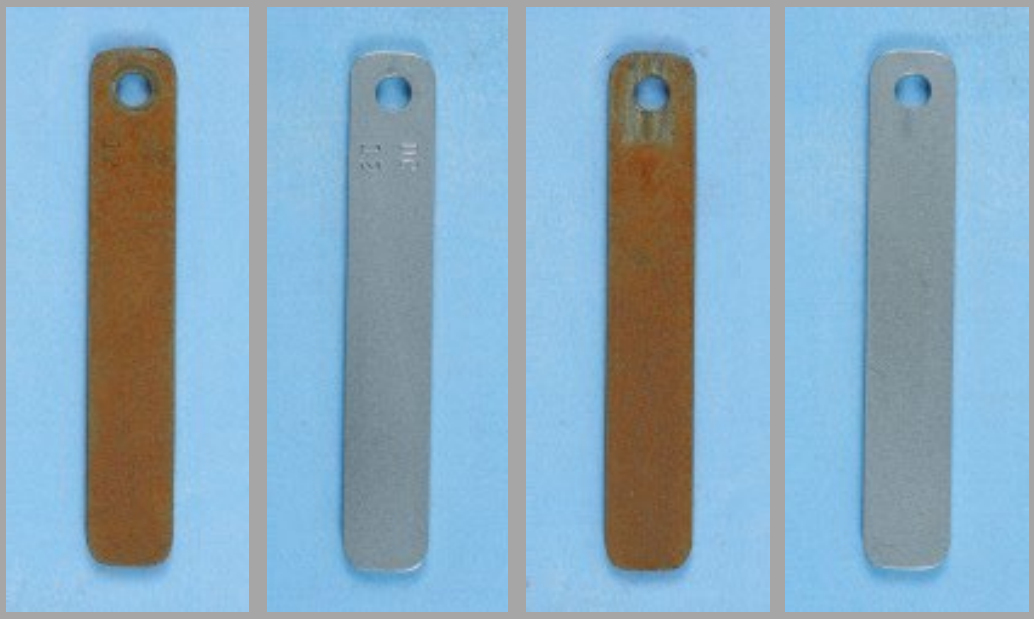
Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

1-1-010

Solubility

1-2-011



Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

1-3-012

Solubility

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

Before Cleaning After Cleaning
Front

Before Cleaning After Cleaning
Back

24-1-013

Solubility

24-2-014

4.0 DISCUSSION AND CONCLUSION

4.1 DISCUSSION OF RESULTS

The lead solubility testing that was previously performed to select the best phosphate corrosion inhibitor product for this test used raw water from Station 14 for the testing. The table below provides a summary of the average raw water quality of the water from Station 14 used for the second round of solubility testing and the average raw water quality from the measurements taken during the coupon testing period taken at each station.

Table 4-1 Average Raw Water Quality By Station

Parameter*	Station 14	Station 1	Station 24	Station 25	Station 39
pH	8.04	8.10	8.24	7.99	7.97
Temperature, °C	22.9	14.11	16.76	14.61	15.09
Total Chlorine, mg/L	0.03	0.01	0.03	0.01	0.01
Conductivity, µS/cm	842	1029.35	441.65	609.5	650.3
Turbidity, NTU	1.17	13.71	5.18	27.03	223.31
Alkalinity, mg/L as $CaCO_3$	284	275	191.80	254.09	229.25
Dissolved Inorganic Carbon, mg/L	68.7	58.97	46.11	60.59	57.25
Calcium, mg/L as $CaCO_3$	81.2	99.3	57	83	88.4
Free Ammonia, mg/L	0.07	0.07	0.25	0.14	0.34
Iron, mg/L	0.08	0.29	1.26	0.55	1.31
Dissolved Oxygen, mg/L	--	9.41	9.11	10.06	10.02
Chloride, mg/L	41.8	20.3	6.34	12.74	10.73
Sulfate, mg/L	31	29.8	9.2	26	37.2
Color, Pt-Co	9.6	76.5	78.75	105	116
Orthophosphate, mg/L as PO_4^{3-}	1.13	0.27	0.43	0.31	0.37
LSI	0.97	1.10	0.81	1.08	0.90
Ryznar	6.11	6.10	6.58	6.14	6.33
Aggressiveness In.	12.8	13.09	12.64	13.01	12.83
Larson-Skold Index	0.32	0.26	0.10	0.20	0.26
CSMR	1.35	1.11	1.07	0.55	0.35

Overall the raw water quality from each location is very similar to the raw water quality at Station 14. The pH of the raw water was very close to 8.0 for all the stations did not contain any chlorine residual. The average temperature listed for Station 14 above was measured in the lab and does not reflect the temperature in the field like the other stations. The water from Station 1 was the most mineralized based upon the conductivity and the Station 24 had the least mineralized water with the lowest conductivity. The water from Station 14 was in between but higher than

most of the stations. Station 39 had water with the highest turbidity and color followed by Station 25. Station 14 had the lowest average measured turbidity and color. The alkalinity and dissolved inorganic carbon were highest for Station 14 which could require a higher orthophosphate dose to form hydroxypyromorphite. A significantly lower average alkalinity was measured at Station 24. The average alkalinity values for the other stations may have been higher but the test method had a maximum value of 240 mg/L. Station 14 also has the highest chloride concentration and correspondingly higher CSMR and Larson indices indicating a greater tendency for galvanic corrosion of lead and corrosion of iron and steel. The dissolved iron concentration measured was higher at all stations compared to Station 14 and especially high at Station 24 and 39.

One of the objectives of the study was to test the performance of a lower dose of 4.0 mg/L orthophosphate versus the dose that provided the best performance in the second round of solubility testing, 4.5 mg/L. The inability to maintain the doses within a very tight range to allow a good comparison of the results was hampered by the issues with controlling the flow rates through the racks and adjusting the chemical feed rates. The results from Station 1 in **Figure 3-1** do appear to suggest that the 4.0 mg/L dose was less effective than the 4.5 mg/L which was more effective than the 5.0 mg/L dose. Except for the very end of the test period, none of the doses provided lead concentrations that would be acceptable for implementation. The results for Station 24 in **Figure 3-4** appear to show the opposite result in which the lower lead concentrations were generally associated in the lower orthophosphate dose, although there were several exceptions, and the doses were not consistently applied. The 4.5 mg/L target orthophosphate dose provided better performance at Station 25. However, it can't be concluded that the lower dose was less effective because the rack 1 chemical feed system was malfunctioning for much of the latter portion of the test period. The 4.5 mg/L appears to have provided better performance than the lower dose at Station 39. However, the chemical feed doses were the most erratic at this station and were not functioning in the latter portion of the test. The lead concentrations throughout most of the test period were unacceptably high and only entered what might be considered an acceptable range in the very end of the test. Running the test longer may have produced a set of results with more acceptable lead concentrations but without more precise dose control and a continuous feed of the corrosion inhibitor chemical the results would still be in question.

Another objective of the test was to observe the performance of the corrosion inhibitor on different metals. The action level for copper under the Lead and Copper Rule is much higher than lead at 1,300 µg/L and the secondary maximum contaminant level is 1,000 µg/L. The highest copper concentrations measured at any station were approximately 200 µg/L which is well below these limits. The 4.5 mg/L target dose appeared to provide lower concentrations at Station 24, 25 and 39. The water at Station 25 had the lowest overall copper concentrations throughout the entire test period. The 4.5 mg/L orthophosphate dose at Station 1 had higher measured copper concentrations throughout most of the test period and the 5.0 mg/L dose had copper concentrations that were almost the same as the 4.5 mg/L dose or much higher in the last half of the test period. At the very end of the test period the copper concentrations for the 5 mg/L orthophosphate dose were less than 2 µg/L. Aerated ground waters that are in contact with cold water copper piping often develop Type 1 pitting corrosion. Whether it was the result of the phosphate corrosion inhibitor solution or the average pH which was around 8.0 the coupons exhibited a uniform surface corrosion layer and did not show any signs of pitting. There was no control provided for the copper coupon corrosion rates like there was for the lead solubility tests and therefore, the effect of the phosphate corrosion inhibitor application compared to the current polyphosphate application is unknown.

Polyphosphates are often applied and have been applied historically in Kalamazoo for the purpose of maintaining dissolved ferrous iron in solution and to prevent oxidation and precipitation of the ferric ion form. Use in this manner has been able to reduce the amount of staining associated with low to moderate concentrations of iron in the water. Although there has been a significant amount of study relative to the effect of doses of orthophosphate upon lead solubility due to the serious health effects associated with higher lead concentrations in water, there is much less information available on the effect upon iron corrosion rates. Iron corrosion seems to be more heavily influenced by the levels of alkalinity, pH, dissolved oxygen and chlorides in the water. The raw water at each of the stations is relatively high in alkalinity and low in chlorides with correspondingly low Larson-Skold corrosion index values.

Dissolved iron was regularly measured in the raw water and coupon rack effluent. The dissolved iron concentrations at Station 1 remained less than the raw water concentrations, except for a notable spike in concentrations on day 31. The dissolved iron concentrations in the coupon rack effluent were primarily less than 0.2 mg/L. Station 24 had higher dissolved iron in the raw water averaging 1.3 mg/L and had similar, but slightly lower, concentrations in the coupon rack effluent with the notable exception of the effluent from rack 2 on day 31 of 2.3 mg/L. The polyphosphate appeared to be maintaining the dissolved iron in solution. The dissolved iron in the raw water at Station 25 varied up and down over the test period from 0.06 to 1.16 mg/L. The dissolved iron in the coupon rack effluent remained very low, less than 0.1 mg/L, in most of the measurements. This is an indication that the polyphosphate content was not effective in maintaining the dissolved iron in solution. The dissolved iron concentration in the raw water at Station 39 average around 0.8 mg/L with higher concentration spikes on days 31 and 38 greater than 2.6 mg/L. The dissolved iron in the coupon rack effluent was mostly between 0.6 and 0.9 mg/L with a notable spike in concentration from rack 2 on day 38 of 3.45 mg/L which was higher than the corresponding spike in the raw water concentration.

Ductile iron coupon corrosion rates were measured at the end of the test based upon coupon weight loss. The corrosion rates for Stations 1, 24 and 25 averaged around 2 mils per year and did not appear to exhibit a correlation to either the corrosion inhibitor dose or the concentration of iron in the raw water. The ductile iron coupons in the coupon racks at Station 39 exhibited a much higher iron corrosion rate of 5.6 to 5.8 mils per year. Since there was not a corresponding increase in the dissolved iron concentration in the rack effluent it, the iron corrosion products either were retained on the surface of the coupon or released into solution as particulate iron. Although there is no way to conclude if this contributed to the higher corrosion rate at this station, there was a malfunction in the phosphate corrosion inhibitor feed observed during 8 of the 20 semiweekly visits to the station. A control to compare the ductile coupon corrosion rates to those for the current polyphosphate feed was not provided and therefore, the effect of the phosphate corrosion inhibitor application compared to the current polyphosphate application is unknown.

A set of solubility tests with ductile iron coupons was performed with water samples collected from Station 1 and 24. Some limited testing of the total iron concentration in the jars after the coupons had been exposed to the solution was performed. The water in the jars after each exposure period following removal of the coupons was regularly measured for color and turbidity. Raw water from each station which was not exposed to the ductile iron coupons was also measured for color and turbidity. The test was intended to see if the corrosion inhibitor would prevent turbidity and color increases in the water when the ductile iron coupon was present. The test results show that this didn't occur since very high color and turbidity were measured in the treated water exposed to the iron coupons. The values for color and turbidity do appear to be trending somewhat in a downward direction but at the apparent rate of reduction it would take a long period of time before those values were in an acceptable range for potable water. It should be noted that these tests were conducted using new unused, uncoated ductile iron coupons and may not be representative of the actual piping within the distribution system. The corrosion rates of the coupons within the coupon racks which were exposed to a period of flow followed by periods of stagnation are compared to the corrosion rates for the coupons used in the solubility tests in **Table 3-12.** The corrosion rates for all the coupons in the solubility tests were lower than the rates for the corresponding coupon in the coupon rack. The rates for the Station 1 coupons were 8.5 to 14.6% lower and the rates for Station 24 were 31.6 to 49.3% lower. The flowing condition in the racks in which more dissolved oxygen was delivered to the surface and corrosion products were removed from the surface may partially explain the lower rates.

4.2 CONCLUSION

The results of the coupon testing performed do not affirmatively confirm that a slightly lower dose of the corrosion inhibitor to provide 4.0 mg/L orthophosphate would provide equal or better protection against lead corrosion. A portion of the inability to confirm the relative effectiveness of the 4.0 mg/L dose is related to the difficultly in maintaining a consistent dose within a very narrow range of the target dose. The lead concentration results measured did not exhibit a similar trend as the solubility test results where the beginning concentrations were higher and decreased over the course of the test. The coupon test also did not provide a consistent set of lead concentration results that were at or below the 15 µg/L action level from which you could conclude that passivation of the lead surface had occurred which would provide some level of confidence for its effectiveness in full scale use. However, these types of coupon tests are often conducted to test the relative effectiveness of different corrosion control products against each other versus predicting the lead concentration that would be measured at the customer's tap. The product selected from the solubility testing phase was not tested against the historical corrosion control practice and therefore, no conclusion can be reached based upon these results about the relative effectiveness compared to historical practice.

The copper concentrations measured during the coupon testing were a fraction of the action level and except for a couple concentration spikes remained very low throughout the test period. Copper corrosion when aerated ground waters are involved is often related to the pH of the water. A pH of the water at 8 or greater generally does not create significant copper corrosion issues and the pH of the water tested was all at or slightly below 8.0. The coupons that were exposed to the raw water treated with the corrosion inhibitor were uniformly corroded and there wasn't any pitting observed. Although we didn't have a control using the historical corrosion control practice, the testing didn't provide any reason for concern for copper corrosion for the full-scale implementation.

The coupon testing showed that the corrosion inhibitor product was unable to maintain all the dissolved iron in solution at Stations 1, 25 and 39. This was most apparent at Station 25 where the dissolved iron in the coupon rack effluent was a fraction of the concentration in the raw water. Corrosion rates did not vary significantly for the different corrosion inhibitor doses but were more than 2.5 times greater at Station 39. A specific raw water quality parameter could not be identified to account for this difference. However, as previously noted the corrosion inhibitor feed rate at this station was difficult to maintain in operation and there was little corrosion inhibitor chemical being fed at the end of the test period. The coupons from the racks appeared to have developed a scale layer that was not tightly adherent to the coupon surface. It also can't be concluded what the effect would be on aged pipe that either had a coating intact or a corrosion layer already in place as compared to the new bare metal coupons used in this study. The color and turbidity measurements collected during the testing do provide some cause for concern in terms of aesthetic issues that might develop resulting from a change in the corrosion control strategy. Reduction of the polyphosphate dose could have allowed a portion of the dissolved iron to be oxidized by chlorine and dissolved oxygen in the water to produce ferric compounds that can impart turbidity and color to the water.

APPENDIX A – TEST OPERATION AND SAMPLING PLAN

Kalamazoo Coupon Test Rig Sampling and Operating Protocol

The purpose of the testing is to determine the optimum dose for the corrosion inhibitor product by comparing the lead released into solution each week and the metal loss rate of the metal coupons. It is very important that the chemical feed rates be maintained to achieve the target orthophosphate and chlorine residual so that their effects can be compared. Other water quality parameters can also affect lead solubility and therefore it also important to be consistent in the sample collection and measurement of these other parameters.

A summary of the tasks to be performed during each site visit is provided below and more complete descriptions of each task are provided in the text sections that follow.

Tasks to be Performed Each Visit

- ☐ **Shut off flow to coupon racks**
- ☐ **Start pumping station operation**
- ☐ **Collect metal stagnation samples from each rack**
- ☐ **Collect/analyze routine water quality monitoring samples**
- ☐ **Collect iron solubility test samples**
- ☐ **Check orthophosphate and chlorine concentrations**
- ☐ **Check and adjust coupon rack flow rate**
- ☐ **Check corrosion inhibitor and chlorine levels and restock as necessary**
- ☐ **Perform Iron Solubility Testing**

1. Shut off flow to coupon racks

It is intended that the initial samples be collected from each station after a period of stagnation in the coupon racks (target stagnation period is 8 hours). Therefore, there should not be any flow thru the coupon racks when you arrive at the station and the pumping station may be turned off (Stations 24, 25 and 39). If the station is running, note that on field sheet and follow procedure. The first thing that should be done when arriving at the station is closing the manual shutoff valve that provides flow to each of the coupon racks and closing the manual shutoff valve on each coupon rack. ***If the chemical feed pump is running shut it off before closing valves***. ***Do not close or adjust the needle flow control valve on each coupon rack prior to collecting samples.*** This step is intended to ensure that operation of the station does not cause flow through the coupon racks which would flush out the stagnant water in contact with the metal coupons. The valves to be closed are shown in Figure 1 below.

WATER SUPPLY: 269-337-8179

ANNA CRANDALL: 269-993-5146

BRIAN KLEBBA: 269-491-9673

TRACY BELL (MAINT. SUPERVISOR): 269-998-1863

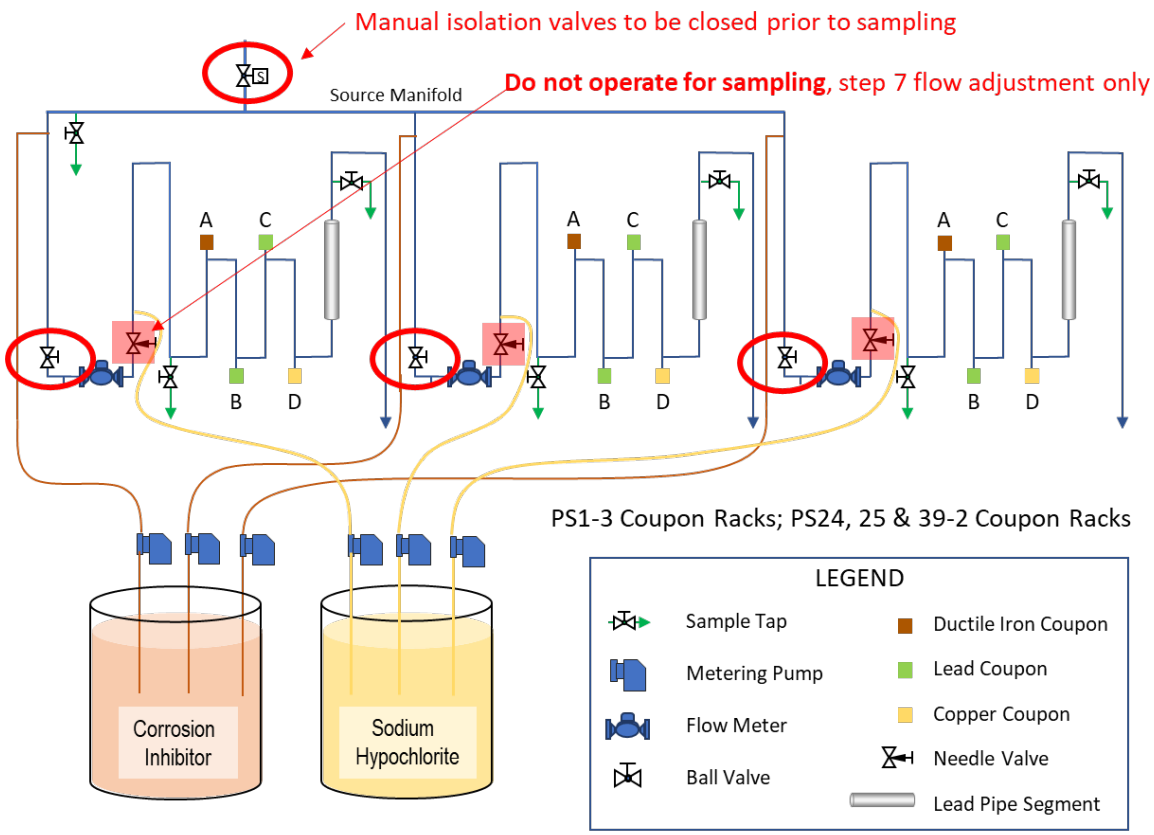


Figure 1. Valve Position prior to Sample Collection

2. Start pumping station operation

After all the manual isolation valves have been closed flow will need to be restored to the station. This will need to be coordinated with the City operations staff. The station flow must be restored so that pressure will be available to collect samples and observe and adjust, if necessary, the operation of the coupon rack system. No flow should be going through the coupon racks at this point.

3. Collect metal stagnation samples from each coupon rack

After the station is in operation open the overall isolation valve (A). Samples will be collected from each coupon rack that are intended to be representative of water that has been in contact with the metal coupons and pipe segment during a period of no flow thru the rack which would simulate conditions in a home or business when the potable water plumbing is not in use. Samples will be analyzed for **lead, copper, calcium** and **phosphorus** by an outside laboratory. Samples should be collected from each rack individually by first placing the 1,000 mL sampling container under the sample tap (#1 in the figure below) and then slowly cracking open the isolation valve on the coupon rack (#2 in the figure below). The isolation valve should be opened so that water slowly flows through the coupon rack and into the sampling container to collect a **900 mL** sample. When the sample container has been completely filled, the sample valve (#1) can be fully closed and the isolation valve (#2) can be left completely opened. The 1,000 mL sample container with the **900 mL** sample will be slowly swirled to mix the contents and then

the lab sample bottle for metals analysis[1] will be filled from this container. After the lab sample bottle for metals has been filled, the remaining contents in the 1,000 mL sample container will be used to fill the lab sample bottle for total phosphorus and orthophosphate analysis[2]. A separate 1,000 mL sample container will be used to collect the metal stagnation sample from each individual coupon rack and labeled with the rack number. The remaining contents of the 1,000 mL sample container will be discarded and the container will be rinsed with distilled water.

A raw water sample should also be collected by slowly opening the raw water sample valve (3#) to fill the sample bottle and then closing the valve. The next coupon rack should be sampled in a similar manner until metal stagnation samples have been collected and there is flow through all the coupon racks.

The first 5 weeks of operation metal stagnation samples will be collected once per week. Beginning with the sixth week of operation metal stagnation samples will be collected twice per week at each visit to the pumping station.

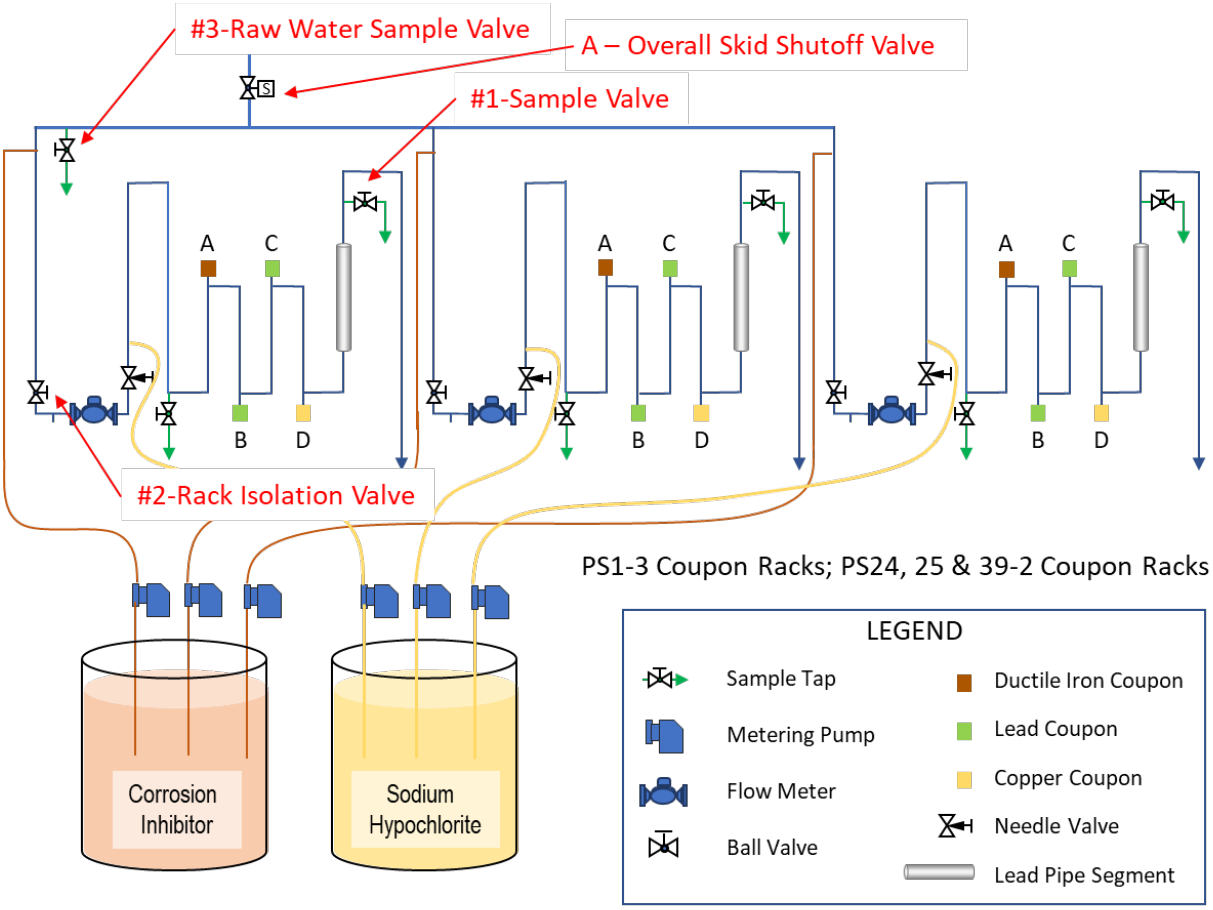


Figure 2. Valves to be Opened for Sampling Each Coupon Rack

[1] 250mL, nitric acid laboratory container

4. Collect/analyze routine water quality monitoring samples

Following the completion of the collection of the metal stagnation samples all the coupon racks should have flow going thru them and the chemical dosing pumps should be operating. The racks should be allowed to run for approximately 10 minutes before the remainder of the samples are collected and analyzed. The intent of the routine monitoring samples is to document the conditions that the coupon racks were operating under prior to the stagnation period and will be operating under prior to the next stagnation period.

Twice each week, samples of the raw water quality prior to corrosion inhibitor and chlorine addition and from each coupon rack following chemical addition will be collected and analyzed[3] [4]. The same sample tap/valve (#1) that was used for collection of the metal stagnation samples can be used for the routine monitoring sample collection and analysis. The routine sampling and monitoring frequency is summarized in the **Table 1.**

[3] Collect field measurement samples into 1 L unpreserved, plastic bottle. Bottles will be labeled with Station and Rack ID for reuse each sampling event.

[4] Metals – 250 ml Nitric acid bottle; Orthophosphate – 125 ml unpreserved bottle; Total Phosphate – 125 ml hydrochloric acid bottle

Table 1. Routine Water Quality Monitoring

Parameter	Sampling Frequency*		Instrument
	Source Water	Individual Rack Effluent	
Field Measurements			
Alkalinity	Semiweekly	Semiweekly	Hach SL1000 Chemkey
Total Ammonia	Semiweekly	Semiweekly	Hach SL1000 Chemkey
Orthophosphate	Semiweekly	Semiweekly	Hach SL1000 Chemkey
Total Chlorine	Semiweekly	Semiweekly	Hach SL1000 Chemkey
Conductivity	Semiweekly	Semiweekly	Hach SL1000 Probe
pH	Semiweekly	Semiweekly	Hach SL1000 Probe
Temperature	Semiweekly	Semiweekly	Hach SL1000 Probe
Dissolved Oxygen	Semiweekly	Semiweekly	Hach SL1000 Probe
Dissolved Copper	Weekly	Weekly	Hach SL1000 Chemkey
Dissolved Iron	Weekly	Weekly	Hach SL1000 Chemkey
Chloride	Weekly	Weekly	Hach DR1900
Color	Biweekly	Biweekly	Hach DR1900
Sulfate	Biweekly	Biweekly	Hach DR1900
Turbidity	Biweekly	Biweekly	Hach 2100Q Turbidimeter
Outside Laboratory Tests			
Metals-Ca,Cu,Pb*** (STAGNATION)	Weekly	Weekly/Semiweekly	ICP
Orthophosphate (OPERATING)	Weekly	Weekly	Spectrophotometer
Total Phosphate (OPERATING)	Weekly	Weekly	Spectrophotometer

Semiweekly-two times each week, Biweekly-once every other week.

***Metal sampling frequency will be increased to semiweekly in week 6.

5. Collect iron solubility test samples

Iron solubility testing will be performed on samples from the Central Station (#1) and Station 24. Twice per week raw water and treated water samples from each coupon rack will be collected for iron solubility testing. The samples should be collected after the coupon racks have been back in service for five to ten minutes and after the water quality samples described above have been taken. The samples will be used to fill the solubility test jars which will require > 400 mL to be collected of the raw water and coupon rack effluent (Central Station 1 raw and 3 coupon rack samples; Station 24 1 raw and 2 coupon rack samples). Samples should be collected and transported in containers that minimize the introduction of air into the samples prior to filling of the jars[5]. Sample bottles can be reused by rinsing with tap water then rinsing with the source in the field prior to sample collection. Note: *If the prior sample contained iron particulates or was colored brown or orange by iron in the water, then the sample bottle should be detergent cleaned, rinsed with distilled water and then rinsed with 1:1 hydrochloric acid prior to reuse.*

6. Check orthophosphate and chlorine concentrations

The flow rates to each coupon rack should be checked to determine if they are operating at the intended flow rate (1 gpm) prior to proceeding with this step. Note: *If the flow is out of adjustment adjust the flow rate as indicated in the step 7 prior to proceeding with this step. If the flow must be adjusted, then the orthophosphate must be resampled to check if it is out of range prior to proceeding with the following instructions*. The table below summarizes the target orthophosphate and chlorine residual concentrations for each of the coupon racks.

Table 2. Target Orthophosphate and Chlorine Residuals

Pump Station	Corrosion Test Rack No.	Inhibitor Type	Product Dose (mg/L)	OrthoP Concentration (mg/L PO_4)	Chlorine Residual (mg/L)
Central	1	Carus 8700	4.7	**4.0**	**1.5**
Central	2	Carus 8700	5.3	**4.5**	**1.5**
Central	3	Carus 8700	5.9	**5.0**	**1.5**
24	1	Carus 8700	4.7	**4.0**	**2.3**
24	2	Carus 8700	5.3	**4.5**	**2.3**
25	1	Carus 8700	4.7	**4.0**	**2.3**
25	2	Carus 8700	5.3	**4.5**	**2.3**
39	1	Carus 8700	4.7	**4.0**	**1.5**
39	2	Carus 8700	5.3	**4.5**	**1.5**

Orthophosphate. Samples of the raw water without chemical treatment and samples of the water from each of the coupon racks were analyzed as part of the semiweekly monitoring in **Table 1** for the orthophosphate concentration and the chlorine residual. The semiweekly orthophosphate rack sample

[5] 500 mL, unpreserved bottles; zero headspace to the extent possible. Place in iced cooler for transport to office for processing as discussed in Step 9.

concentrations should be compared to the target concentrations in **Table 2** to see if they are in reasonable agreement (+/- 0.2 mg/L). If the concentrations are not in the right range the concentration in the raw water should be compared to prior readings to see if it has changed and therefore, if the corrosion inhibitor dose rate should be changed. If the raw water quality hasn't changed significantly or the coupon rack flow rate was adjusted, remeasure the orthophosphate concentration.

If both samples indicate that the concentration is not within an acceptable range the feed rate of the chemical feed pump should be adjusted. The chemical feed rate is proportional to the pump speed. If the measured orthophosphate dose is 3.8 mg/L instead of 4.5 mg/L and the speed of the chemical feed pump is on 60, then it should be increased to (4.5/3.8)*60 = 71. (Target dose/measured dose) * pump speed setting.

Chlorine residual. The chlorine residual concentrations should be compared to the target chlorine residual in **Table 2** to see if the chlorine residual is within an acceptable range (+/- 20%). The raw water iron and color should be compared to results from prior biweekly or weekly routine sampling to see if there has been a significant change that might have caused the chlorine demand to have changed. If the raw water quality has changed, adjust the chlorine solution feed rate. If the raw water hasn't changed or the coupon rack flow rate was adjusted, sample and test the chlorine residual again to see if the readings agree and if it is within range. If subsequent residual measurements determine that the chlorine residual is out of range, then adjust the chemical feed rate on the chemical feed pump.

If both samples indicate that the concentration is not within an acceptable range the feed rate of the chemical feed pump should be adjusted. The chemical feed rate is proportional to the pump speed. If the measured chlorine dose is 1.0 mg/L instead of 1.5 mg/L and the speed of the chemical feed pump is on 40, then it should be increased to (1.5/1.0)*40 = 60. (Target dose/measured dose) * pump setting.

Note: *Station 39 will have chlorine added to the water prior to coupon racks. Therefore, the amount of chlorine that will be added may be significantly less than the other stations. The chlorine metering pump should be initially set at approximately 50% speed and the chlorine residual in the racks measured. The pump speed should then be reduced to obtain the target chlorine residual. If the chlorine residual is still above the target concentration, then the chlorine feed system should be shut off.*

7. Check and adjust coupon rack flow rate

Make sure that the shutoff valve on each rack is fully open first. All the coupon racks should be reading ***1 gpm*** on their respective flow meters. If not adjust the needle valve to obtain the correct flow rate. Turn clockwise to decrease the flow rate and turn counterclockwise to increase the flow rate. Make small changes in the valve position and allow flow reading to stabilize before making another adjustment. If the flow to the coupon rack was adjusted, the orthophosphate and chlorine residuals should be rechecked, see above. If required to maintain the correct residuals the chemical feed pump rate should be adjusted.

8. Check corrosion inhibitor and chlorine levels and restock as necessary

The level in the chlorine solution and corrosion inhibitor solution feed tanks should be checked and the level and time of measurement in each recorded. If the level in the tank is less than 9 gallons a new 5-gallon batch of the chemical should be mixed up and added to the tank and the resultant level and time recorded.

The corrosion inhibitor and sodium hypochlorite solutions will need to be replenished on a regular basis. It is important that each batch of solution be made up the same so that the solution concentrations remain identical throughout the testing period.

Corrosion Inhibitor solution. The corrosion inhibitor solution will be made up by adding 1250 mL of the Carus 8700 corrosion inhibitor product to the 5-gallon make-up container and then diluting it with raw water from the station to create 5 gallons of solution. The 5-gallon make-up container should be rinsed with the raw water prior to making the new solution. Approximately 2 gallons of raw water should be added to the make-up container followed by the addition of the Carus 8700 corrosion inhibitor and then the contents should be gently mixed by swirling or agitating or stirring the contents of the container. Raw water should then be added to the 5-gallon mark and gently mixed. The entire contents of the make-up solution tank should be emptied into the supply tank for the chemical feed pumps. The same 5-gallon container will be used for all stations. It should be rinsed with the source water prior to reuse.

Chlorine solution. The chlorine (sodium hypochlorite, bleach) solution should be made up by adding 4 gallons of raw water *(distilled water was used for the makeup solutions beginning 9/16)* to the make-up solution container and then adding 1700 mL of 10-12.5% sodium hypochlorite solution. The contents should be gently mixed by swirling the container or stirring of the contents. Additional raw water should be added to bring the total volume of solution up to the 5-gallon mark. ***Your face should be kept as far from the open acid solution as possible to prevent inhalation of the hydrogen chloride gas and the acid should be added slowly to avoid release of chlorine gas from the make-up container. Avoid breathing in any fumes from the make-up container.*** Cap the make-up container and allow to sit for 2 minutes after the total volume has been added. Transfer the entire volume of the make-up solution into the supply tank for the chemical feed pumps. The same 5-gallon container will be used for all stations. It should be rinsed with the source water prior to reuse. *Acid addition discontinued for safety reasons after the initial batch of solutions. Week 7 protocol changed to add 30 mL of acid per gallon to all chlorine solutions to help control scaling at the injection. Week 8 protocol changed to add 53 mL of acid per gallon of solution to reduce scale build up.*

9. Iron Solubility Testing

Treated water collected from the coupon racks at the Central Station and Station 24 will be used to conduct iron solubility testing. Raw water collected will be used as controls. The solubility testing will be performed by adding treated water from each rack to completely fill a jar and then covering the jar with a plexiglass cover to which a ductile iron coupon has been attached. On each sampling day the water in the jars will be replaced with water collected that day and the coupon will be moved to the jar with the fresh solution. Raw water samples will remain in the collection bottles. The Plexiglas tops and coupons should be marked with the Station and rack number so that the same coupon will be used with the water collected from the coupon rack each water change. Each event, a portion of the solution from each of the jars from which the coupons have been removed and sitting raw water samples will be measured for **color** and **turbidity**. Solution should be removed from the jar down to the 250 mL mark. After the solution has been withdrawn for measurement of turbidity and color, once per week the remaining contents of the jar and raw water sample bottle will be acidified with 1 to 2 mL of 50% nitric acid to reduce the pH to 2. Once the volume of acid is confirmed it is not necessary to measure the pH each time. The acidified solutions will be held for a minimum of 16 hours and then samples will be

placed into laboratory bottles[6] for measurement of total iron. On the day that an iron sample is not collected for laboratory analysis the solutions should be discarded after measurement of the **color** and **turbidity**.

A sample of the untreated raw water should be obtained from each station at the same time as the samples of the treated water samples are obtained. The samples should be held in closed containers for the same duration as the solutions in the jars with the coupons. The samples should be measured for **color** and **turbidity** at the same time as the samples with the coupons and laboratory samples should be collected at the same time as the samples after the coupons are transferred.

[6] 250 mL, unpreserved bottles

Chemical Solution/Feed Calculations

Corrosion Inhibitor Feed Rate

1 gal/min x 4.0 mg orthoP/L x 3.785 L/gal x 60 min/hr = 908.4 mg orthoP/hour

908.4 mg/hour x 1 mg Carus 8700/0.282 mg orthoP = 3,221 mg Carus 8700/hour

3,221 mg/hr x 1 lb/453,592 mg x 1 gal/11.35 gal x 3785 ml/gal = 2.36 mL Carus 8700/hour

Chem feed pump @ 50% speed ≈ 35.6 mL/hour

Dilution = 35.6 mL/hour / 2.36 mL/hour = 15.1 times

To make 5 gallons of solution:

2.36 mL Carus 8700/35.6 mL solution x 3785 mL/gal x 5 gal = 1,254.6 mL

USE: 1250 mL Carus 8700, dilute to 5 gallons with raw water.

Solution Refill Stations 24, 25, 39

1,250 mL /2 rigs x 2.36 mL Carus 8700/hour x 20 hours/day = 13.2 days

Solution Refill Central Station

1,250 mL/ 3 rigs x 2.36 mL Carus 8700/hour x 20 hours/day = 8.8 days

Total Product Required

4 rigs x 2.36 mL/hour x 20 hours/day x 60 days = 11,328

4 rigs x 2.36 mL/hour x 4.5/4.0 x 20 hours/day x 60 days = 12,744

1 rig x 2.36 mL/hour x 5.0/4.0 x 20 hours/day x 60 days = 3,540

Total = 11,328 + 12,744 + 3,540 = 27,612 mL /3785 mL/gallon =7.29 gallons

Nitric Acid for Iron Samples

From RTW need 350 to 400 mL HCl per liter to reduce to pH 2.3

400 mg HCl/L x 63.013 mg HNO_3/mmole / 36.46 mg HCl/mmole = 691.3 mg HNO_3/L

250 mL jar x 1 L / 1000 mL x 691.3 mg HNO_3/L = 172.8 mg HNO_3

Use 1:1 Nitric Acid, 42.2% HNO_3, 1.25 g/cc

172.8 mg HNO_3 x 1 mg 1:1 solution/0.422 mg HNO_3 x 1 mL/1250mg = 0.328 mL 1:1 HNO_3

USE: 1 mL/jar

Sodium Hypochlorite Feed Rate

Feed sodium hypochlorite to provide 2.0 mg/L CL2 in feed to coupon rack

1 gal/min x 1.5 mg Cl2/L x 3.785 L/gal x 60 min/hr = 340.6 mg Cl2/hour

454.2 mg Cl2/hour x 1 mg 10% NaOCl solution/.06 mg NaOCl x 74.44mg NaOCL/70.9 mg Cl2 = 3,576 mg 10% NaOCl solution/hour

3,576 mg 10% NaOCl solution/hour x 1 mL/1,140mg = 3.13 mL/hour

Dilution = 35.6 mL/hour /3.13 mL/ hour = 11.4 times

To make 5 gallons of solution:

3.13 mL 10% NaOCl/35.6 mL solution x 3785 mL/gal x 5 gal = 1,664 mL

USE: 1,700 mL 10% NaOCL, dilute to 5 gallons with raw water

Solution Refill Stations 24, 25, 39:

1,700 mL/ 2 racks x 3.13 mL/hour x 20 hours/day = 13.6 days

Solution Refill Central Station

1,700 mL/ 3 racks x 3.13 mL/hour x 20 hours/day = 9.1 days

Sodium Hypochlorite Solution Required

9 rigs x 1,700/1,664 x 3.13 mL/hour x 20 hours/day x 60 days = 34,535 mL

34,535 mL/3,785 mL/gallon = 9.12 gallons

APPENDIX B - ROUTINE SEMIWEEKLY WATER QUALITY MEASUREMENTS

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	8/18/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	7:35			9:45			11:45				14:22		
	Time Off-site	9:30			11:30			14:05				16:00		
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	234	236	234	238	232	>240	>240	>240	>240	>240	189	192	195
F	Total Ammonia (mg/L)	0.36	0.68	0.39	0.94	<0.05	0.13	0.12	0.1	0.04 (<)	0.31	0.31	0.12	0.05
F	Conductivity (µS/cm)	649	663	664	663	559	598	1060	1077	1062	1079	488	488	488
F	Dissolved Oxygen (mg/L)	9.11	9.69	9.66	9.17	9.04	7.72	8.86	9.51	9.44	9.61	7.94	7.6	8.26
F	Orthophosphate (ppm)	0.15	5.3	7.5	0.17	5.8	8.5	0.06	8.5	5.8	0.19	0.19	11	10.2
F	pH	7.86	7.78	7.84	8	7.8	7.83	8.03	7.92	7.7	7.54	7.8	8.08	7.96
F	Total Chlorine (mg/L)	0.04 (<)	1.18	2.1	0.04 (<)	1.16	3.5	0.00(<)	0.96	0.51	1.1	0.02 (<)	2.61	2.11
F	Temperature (°C)	15	15.3	17.3	14.3	13.5		13.7	13.8	13.8	14.1	19.8	1402	18.1
F	Chloride (mg/L)	>25.0	21.1	18.1	13.1	4.5	15.1	0.8	>25.0	>25.0	>25.0	>25.0	5.2	9.9
F	Dissolved Copper (mg/L)	<0.06	<0.06	<0.06	<0.06	0.02 (<)	0.02 (<)	0.05	0.00 (<)	0.00 (<)	0.00 (<)	0.28	0.02 (<)	0.02 (<)
F	Dissolved Iron (mg/L)	0.79	0.67	0.53	0.12	0.09	0.09	0.2	0.18	0.16	0.17	0.94	1.01	1.04
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time	7:55	8:05	8:05	9:50	9:55	10:00	11:58	12:00	12:03	12:05	14:25	14:27	14:30
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time													
F	Color (PCU)							<15	>500	>500	>500	<15	246	305
F	Turbidity (NTU)							1.64	129	106	94.4	2.52	76.2	73.2
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	22-Aug-22	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site													
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	232	231	228	337	239	237	>240	>240	>240	>240	192	192	192
F	Total Ammonia (mg/L)	0.46	0.41	0.63	0.17	0.19	0.05	0.09	0.13	0.18	0.05	0.3	0.3	0.35
F	Conductivity (µS/cm)	642	663	657	602	622	606	1067	1084	1075	1064	453	466	465
F	Dissolved Oxygen (mg/L)	9.19	9.22	9.26	9.02	8.78	8.68	8.64	8.77	9.18	9.19	8.71	8.63	7.79
F	Orthophosphate (ppm)	0.82	11.2	7.3	0.8	10.1	7.1	1	7.1	12.6	6.8	0.16	4.61	4.27
F	pH	7.77	7.75	7.65	7.54	7.54	7.71	7.99	7.6	7.66	7.65	8.02	7.86	7.82
F	Total Chlorine (mg/L)	0.00 <	2.7	0.92	0.01 <	3.7	1.96	0.02	2.61	4.63	1.35	0.01 <	0.14	1.12
F	Temperature (°C)	15.9	16.2	16.6	18.6	14.7	15.7	13.5	13.5	14.1	14.2	13.9	13.2	14.2
F	Chloride (mg/L)													
F	Dissolved Copper (mg/L)													
F	Dissolved Iron (mg/L)													
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time													
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							19:00	19:00	19:00	19:00	19:00	19:00	19:00
F	Color (PCU)							16	>500	>500	>500	45	315	319
F	Turbidity (NTU)							1.39	116	84.3	95.4	1.57	98	93
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	25-Aug-22	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site													
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	234	231	236	>240	237	237	>240	>240	>240	>240	189	187	186
F	Total Ammonia (mg/L)	0.42	0.08	0.44	0.2	0.06	0.08	0.08	0.09	0.09	0.13	0.25	0.10	0.07
F	Conductivity (µS/cm)	652	679	669	611	621	616	1007	1049	1057	-	437	433	453
F	Dissolved Oxygen (mg/L)	9.6	8.88	8.66	8.75	8.68	8.62	8.5	9.48	9.11	9.19	8.88	8.8	8.45
F	Orthophosphate (ppm)	0.27	9.7	5.6	0.24	4.1	4.6	<0.03	2.9	8.8	4.2	0.09	5.5	7.1
F	pH	7.88	7.67	7.69	7.77	7.83	7.87	8.16	7.88	7.9	7.92	8.23	8.25	8.14
F	Total Chlorine (mg/L)	<0.01	1.84	2.08	<0.00	1.95	1.8	0.02	<0.01	3.29	2.14	<0.01	1.53	2.44
F	Temperature (°C)	15.5	16.2	16.4	17.4	15.5	17.8	15.4	13.8	14.5	14.6	20.6	16.6	16.6
F	Chloride (mg/L)	>25.0	>25.0	>25.0	22.4	5.8	7.7	>25.0	>25.0	>25.0	>25.0	21.9	8.8	9.6
F	Dissolved Copper (mg/L)	<0.00	<0.01	<0.01	<0.00	<0.00	<0.02	<0.04	<0.00	<0.01	<0.01	<0.00	<0.00	<0.00
F	Dissolved Iron (mg/L)	0.95	0.068	0.82	0.55	0.09	0.08	0.34	0.27	0.2	0.21	1.29	1.03	1.07
F	Color (PCU)	8	3	5	<15	<15	<15	11	10	8	<15	147	<15	<15
F	Sulfate (mg/L)	33	37	34	28	22	32	32	35	35	33	12	13	8
F	Turbidity (NTU)	841	1.79	3.31	9.76	3.61	3.87	3.61	1.61	0.85	0.74	2.52	1.29	0.9
Metals Stagnation Sampling **														
	Lab Sample Collection Time	7:55	7:57	8:00	10:15	10:19	10:22	12:35	12:35	12:38	12:40	15:58	16:00	16:04
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							19:00	19:00	19:00	19:00	19:00	19:00	19:00
F	Color (PCU)							4	>500	>500	>500	25	332	282
F	Turbidity (NTU)							1.54	85.3	110	129	2.81	54	58.1
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	8/29/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	7:35			9:44			11:30				13:53		
	Time Off-site	9:30			11:14			13:30				15:33		
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	235	230	234	236	238	236	>240	>240	>240	>240	189	192	196
F	Total Ammonia (mg/L)	0.24	0.23	0.06	0.12	0.06	0.07	0.11	0.1	0.06	0.04 (<)	0.14	0.3	0.61
F	Conductivity (µS/cm)	653	670	690	6.2	6.28	628	1081	1078	1079	1077	468	457	457
F	Dissolved Oxygen (mg/L)	9.09	0.91	8.88	8.58	8.52	8.4	8.83	8.87	9.37	9.41	9.07	7..52	7.78
F	Orthophosphate (ppm)	0.39	6.1	10.1	0.57	4.3	4.9	0.07	4.8	5	6.4	0.25	3.7	3.8
F	pH	7.69	7.66	7.64	7.66	7.72	7.65	7.61	7.74	7.7	7.69	8.13	8.01	7.93
F	Total Chlorine (mg/L)	0.01 (<)	2.57	2.6	0.05	2.82	1.79	0.01 (<)	1.77	0.73	0.66	0.01 (<)	0.42	0.83
F	Temperature (°C)	16.3	17.3	18.2	18.1	14.6	17.6	13.7	14.1	13.8	16.1	13.3	18.1	17.9
F	Chloride (mg/L)													
F	Dissolved Copper (mg/L)													
F	Dissolved Iron (mg/L)													
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time													
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							16:00	16:00	16:00	16:00	16:00	16:00	16:00
F	Color (PCU)							69	>25.0	>25.0	>25.0	<15	320	368
F	Turbidity (NTU)							1.75	128	119	122	4.47	74.4	71
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	9/1/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site													
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	237	235	233	235	236	237	>240	>240	>240	>240	187	190	195
F	Total Ammonia (mg/L)	0.43	0.03	0.10	0.06	0.06	0.21	0.09	0.06	0.06	0.03	0.32	0.29	0.21
F	Conductivity (µS/cm)	649	693	676	618	589	600	1003	1043	1107	1068	441	435	474
F	Dissolved Oxygen (mg/L)	9.21	9.3	9.37	9.22	8.9	8.96	8.7	9.19	9.45	9.16	8.68	8.06	7.8
F	Orthophosphate (ppm)	0.1	13.8	7.2	0.18	3.3	3.6	<0.05	3.8	23.4	5.1	0.25	3.9	4.7
F	pH	8.00	7.76	7.76	7.93	7.97	7.87	8.16	8.10	7.84	7.81	8.20	8.26	8.15
F	Total Chlorine (mg/L)	<0.00	3.37	1.36	<0.00	1.93	0.73	<0.02	0.53	9.53	1.06	<0.02	1.05	1.27
F	Temperature (°C)	15.6	16.3	16.2	17.9	16.1	15.6	14.8	15.2	14	13.7	20.7	15.9	15.5
F	Chloride (mg/L)	4.2	1.8	2.0	0.9	5.6	11.6	>25	>25	>25	>25	1.1	12	0.8
F	Dissolved Copper (mg/L)	0.00	<0.04	<0.01	<0.00	<0.00	<0.04	0.13	<0.03	<0.01	<0.00	<0.00	<0.01	<0.03
F	Dissolved Iron (mg/L)	0.77	0.57	0.68	0.87	0.08	0.07	0.24	0.19	0.38	0.19	1.12	1.05	1.03
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time	7:40	7:43	7:45	10:01	10:03	10:05	11:57	11:58	11:59	12:00	14:28	14:29	14:30
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time													
F	Color (PCU)							3	>500	>500	>500	14	305	345
F	Turbidity (NTU)							1.97	140	110	134	4.69	66.5	67.2
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	9/5/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site			8:23			10:15				13:00			17:00
	Time Off-site			10:00			12:30				16:45			18:30
	Routine Monitoring													
F	Alkalinity ($mgCaCO_3/L$)	232	233	232	231	233	235	>240	>240	>240	>240	188	191	193
F	Total Ammonia (mg/L)	0.33	0.03 (<)	0.17	0.07	0.06	0.05	0.06	0.08	0.05	0.06	0.25	0.27	0.23
F	Conductivity (µS/cm)	643	683	661	601	625	627	1009	1061	1090	1082	467	478	483
F	Dissolved Oxygen (mg/L)	9.43	9.83	9.48	9.62	9.61	9.58	9.64	9.6	9.57	9.56	8.94	8.91	8.89
F	Orthophosphate (ppm)	0.19	12.1	0.8	0.24	4.5	5.3	0.05 (<)	4	9.3	6.5	0.21	4.6	5.1
F	pH	7.82	7.74	7.69	7.81	7.6	7.78	7.87	7.81	7.77	7.58	8.37	8.28	8.15
F	Total Chlorine (mg/L)	0	1	2.09	0	1.81	2.14	0	0.01	3.02	1.62	0	1.5	1.54
F	Temperature (°C)	15.7	15.9	15.9	15.4	13.8	13.6	13.4	13.4	13.1	13	13.7	13	12.9
F	Chloride (mg/L)													
F	Dissolved Copper (mg/L)													
F	Dissolved Iron (mg/L)													
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
	Metals Stagnation Sampling **													
	Lab Sample Collection Time													
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
	Iron Solubility Testing													
F	Routine Monitoring Time							19:00	19:00	19:00	19:00	19:00	19:00	19:00
F	Color (PCU)							26	>25	>25	>25	>15	319	378
F	Turbidity (NTU)							1.26	126	94.5	104	1.26	49.5	67.3
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

Water Quality Data Summary

Date		Station 39			Station 25*			Central Station 1				Station 24		
	9/8/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	7:35			10:15			12:40				15:15		
	Time Off-site	10:00			12:20			15:00				17:00		
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	232	230	229	235	238	234	>240	>240	>240	>240	191	195	194
F	Total Ammonia (mg/L)	0.34	0.53	0.35	0.06	0.11	0.11	0.09	0.07	0.08	0.16	0.35	0.34	0.29
F	Conductivity (µS/cm)	659	668	661	598	607	617	1078	1114	115	1115	451	448	466
F	Dissolved Oxygen (mg/L)	9.62	10.71	10.54	9.72	9.41	9.27	9.08	9.7	9.6	9.58	7.96	8.07	8.08
F	Orthophosphate (ppm)	0.14	2.6	4	0.27	5.8	5	0.43	5	6.6	6.5	0.28	3.8	4.6
F	pH	8.06	8.01	7.89	8.21	8.16	8.09	8.28	8.09	7.85	7.75	8.27	8.29	8.23
F	Total Chlorine (mg/L)	<0.00	1.36	<0.01	<0.01	0.25'	0.97''	<0.01	2.48	2.03	2.08	0.05	1.5	1.47
F	Temperature (°C)	15.2	14.6	14.8	14.4	15.3	14.4	14.9	14	14.1	14.1	25	17.2	15.5
F	Chloride (mg/L)	7.9	>25	>25	17.1	2.2	5.6	>25	>25	>25	23.4	1	4.4	3.3
F	Dissolved Copper (mg/L)	<0.00	<0.02	<0.00	<0.00	<0.01	<0.02	<0.06	<0.01	<0.00	<0.00	<0.00	<0.02	<0.01
F	Dissolved Iron (mg/L)	0.78	0.76	0.65	0.97	0.07	0.07	0.23	0.22	0.22	0.25	1.2	0.99	1.01
F	Color (PCU)	17	17	3	106	7	<15	<15	13	6	27	89	46	200
F	Sulfate (mg/L)	34	34	26	30	19	22	31	35	33	37	11	10	12
F	Turbidity (NTU)	4.03	4.03	4	63.5	2.07	1.38	0.38	2.11	1.58	2.09	11.7	1.9	2.88
Metals Stagnation Sampling **														
	Lab Sample Collection Time	7:52	7:55	7:57	10:52	10:55	10:57	10:48	12:50	12:52	12:54	15:40	15:42	15:44
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time													
F	Color (PCU)							11	>500	273	>500	17	301	>500
F	Turbidity (NTU)							1.59	136	51.2	122	4.63	71.3	130
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

=' expired chem key was 0.23

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	9/12/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	8:20			10:00			12:50				15:15		
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	231	>240	228	229	234	233	>240	>240	>240	>240	185	189	190
F	Total Ammonia (mg/L)	0.58	0.4	0.41	0.13	0.17	0.09	0.07	0.04	0.08	0.03	0.5	0.25	0.08
F	Conductivity (µS/cm)	648	656	658	601	606	611	1054	1065	1066	1065	437	473	475
F	Dissolved Oxygen (mg/L)	10.04	9.89	10.09	10.15	10.17	10.13	9.83	9.77	9.71	9.66	9.88	9.87	9.69
F	Orthophosphate (ppm)	0.24	22.4	4.6	<0.00	4.9	4.9	0	4.6	6.3	4.9	0.56	6.7	8.2
F	pH	7.73	7.79	7.82	7.87	7.8	7.82	8.11	7.68	7.66	7.63	8.05	8.01	7.99
F	Total Chlorine (mg/L)	<0.00	1.00	<0.00*	<0.00	<0.00*	<0.00*	0	1.54	1.14	1.05	<0.00	2.89	1.89
F	Temperature (°C)	15.1	14.9	15.1	13.2	13.2	13.5	13.9	12.8	12.9	12.7	17.4	14.5	13.8
F	Chloride (mg/L)													
F	Dissolved Copper (mg/L)													
F	Dissolved Iron (mg/L)													
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time													
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							16:30	16:30	16:30	16:30	16:30	16:30	16:30
F	Color (PCU)							13	>25	>25	>25	11	343	396
F	Turbidity (NTU)							0.45	245	86.6	117	0.99	67.8	78.8
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

* Line Malfuction

Water Quality Data Summary

	Date	Station 39			Station 25*			Central Station 1				Station 24		
	9/15/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	7:30			9:30			11:30				14:45		
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	>240	232	232				>240	>240	>240	>240	193	198	191
F	Total Ammonia (mg/L)	0.34	0.41	0.49				0.08	0.05	0.15	0.07	0.28	0.29	0.06
F	Conductivity (µS/cm)	671	665	665				1045	1108	1117	1112	443	430	445
F	Dissolved Oxygen (mg/L)	9.91	10.5	10.99				9.97	9.96	9.86	9.29	7.54	8.43	8.5
F	Orthophosphate (ppm)	0.63	0.6	0.4				<0.00	3.9	5.4	5.8	0.79	3	5.7
F	pH	7.72	7.69	7.65				7.95	7.95	7.81	7.82	8.04	8.14	8.12
F	Total Chlorine (mg/L)	<0.00	<0.00	<0.00				<0.00	1.84	5.71	4.01	0.06	0.05	1.47
F	Temperature (°C)	18.7	15	14.9				14	14.2	13.9	14	20.7	15.3	14.6
F	Chloride (mg/L)	8	6.8	4				>25	>25	>25	>25	8.2	5.2	3.8
F	Dissolved Copper (mg/L)	<0.00	<0.05	<0.02				<0.03	<0.00	<0.00	<0.03	<0.00	<0.04	<0.01
F	Dissolved Iron (mg/L)	2.61	0.79	0.7				0.24	0.7	0.76	0.56	2.2	0.95	2.28
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time	7:40	7:42	7:44				12:04	12:06	12:08	12:10	14:56	14:58	15:00
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							17:00	17:00	17:00	17:00	17:00	17:00	17:00
F	Color (PCU)							18	>500	>500	>500	29	321	354
F	Turbidity (NTU)							3.53	155	116	108	2.36	59.2	69.7
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

* Station running malfuction; samples and data were not collected.

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	9/19/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	8:25			9:45			11:40				14:45		
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	233	237	237	236	237	236	>240	>240	>240	>240	194	188	195
F	Total Ammonia (mg/L)	0.34	0.45	0.42	0.08	0.05	0.1	0.09	0.12	0.07	0.03	0.3	0.29	0.37
F	Conductivity (µS/cm)	650	648	650	607	621	619	980	1099	1104	1110	455	460	465
F	Dissolved Oxygen (mg/L)	9.71	9.69	9.67	9.5	9.45	9.43	7.97	7.98	7.91	7.75	8.59	8.48	8.53
F	Orthophosphate (ppm)	0.59	0.6*	0.2*	0.11	2	3.7	0.08	4.3	4.9	6.1	0.27	4.5	4.7
F	pH	7.57	8.1	7.63	7.9	7.81	7.69	8.06	7.98	7.87	7.8	8.09	8.08	8.08
F	Total Chlorine (mg/L)	<0.00	1.09	0.01*	0	2.37	1.62	<0.00	0.54	1.96	2.05	0.07	0.07	0.69
F	Temperature (°C)	17.6	17.4	16.2	15.5	14.7	13.6	20.7	18.3	16.4	15.3	21.5	17.5	15.7
F	Chloride (mg/L)													
F	Dissolved Copper (mg/L)													
F	Dissolved Iron (mg/L)													
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time													
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							17:00	17:00	17:00	17:00	17:00	17:00	17:00
F	Color (PCU)							<15	415	306	323	<15	294	297
F	Turbidity (NTU)							1.02	80.6	60.2	56.2	1.03	69	68.8
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

*line malfunction

Water Quality Data Summary

Date		Station 39			Station 25			Central Station 1				Station 24		
	9/23/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	7:30			9:40			11:30				13:40		
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	>240	>240	>240	>240	>240	>240	>240	>240	>240	>240	198	200	203
F	Total Ammonia (mg/L)	0.4	0.42	0.36	0.01	0.06	0.06	0.03	<0.03	<0.05	0.18	0.22	0.28	0.24
F	Conductivity (µS/cm)	455	463	459	429	424	426	724	734	737	740	315	315	314
F	Dissolved Oxygen (mg/L)	10.6	10.45	10.69	10.87	9.99	10.03	10.03	9.9	9.98	9.8	9.78	10.18	10.05
F	Orthophosphate (ppm)	0.75	0.5*	1.9*	0.14	0.8	6.5	0.08	3.8	5	4.9	3.08	10.5	8.3
F	pH	7.91	7.99	7.95	8.2	7.83	7.75	8.07	7.9	7.84	7.72	8.37	8.33	8.21
F	Total Chlorine (mg/L)	0.04	1.25	0.5*	<0.00	0.99*	0.62*	<0.00	2.82	1.32	1.13	<0.01	1.62	2.57
F	Temperature (°C)	15.4	14.6	14.1	14.9	13.1	12.9	14	14	14.1	13.5	21.5	13.2	12.8
F	Chloride (mg/L)	5.8	17.7	1.1	0.8	1.5	5.8	21.5	>25	16.8	>25	0.7	0.8	9.6
F	Dissolved Copper (mg/L)	<0.00	<0.03	0	0.09	<0.00	<0.01	<0.04	<0.02	<0.04	<0.00	<0.00	<0.05	<0.00
F	Dissolved Iron (mg/L)	2.99	0.89	>3.45	0.06	0.08	0.06	0.27	0.19	0.19	0.17	1.88	1.01	1.05
F	Color (PCU)	>25	35	342	6	<0	<0	0	0	0	106	41	8	0
F	Sulfate (mg/L)	41	35	39	27	30	28	8	14	28	25	12	13	12
F	Turbidity (NTU)	145	2.15	225	6.22	4.19	1.54	1.33	0.52	0.52	0.63	8.6	1.72	1.07
Metals Stagnation Sampling **														
	Lab Sample Collection Time	7:38	7:40	7:40	10:04	10:06	10:08	12:04	12:06	12:08	12:10	13:52	14:02	14:04
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							16:00	16:00	16:00	16:00	16:00	16:00	16:00
F	Color (PCU)							16	>25	>25	>25	64	446	400
F	Turbidity (NTU)							1.55	94.8	106	97	3.31	43.2	56.5
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

*line malfunction

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	9/25/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	8:20			9:45			11:15				14:15		
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	>240	>240	>240	>240	>240	>240	>240	>240	>240	>240	205	199	187
F	Total Ammonia (mg/L)	0.38	0.4	0.43	0.12	0.05	0.07	0	0.07	0.04	0.03	0.18	0.27	0.25
F	Conductivity (µS/cm)	660	608	663	625	615	612	1058	1065	1068	1068	468	462	464
F	Dissolved Oxygen (mg/L)	10.49	10.49	10.5	10.44	10.42	10.4	10.1	10.1	10.05	10.05	10.2	10.14	10.12
F	Orthophosphate (ppm)	0.31	5.8	3.4	0	1.2	3.4	0	2.5	3.6	3.3	0.01	5.2	5.6
F	pH	8.06	8	7.92	7.93	7.7	7.7	7.97	7.92	7.81	7.76	8.22	8.14	8.06
F	Total Chlorine (mg/L)	0	1.62	1.59	0	3.03	1.02	0	1.23	0.95	1.31	0	1.23	1.69
F	Temperature (°C)	14.3	14.5	14.5	15.3	14.2	13.1	14.1	13.5	13.2	13	14.8	14.2	13.4
F	Chloride (mg/L)													
F	Dissolved Copper (mg/L)													
F	Dissolved Iron (mg/L)													
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time													
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							16:30	16:30	16:30	16:30	16:30	16:30	16:30
F	Color (PCU)							<0	242	295	252	<0	219	212
F	Turbidity (NTU)							2.52	40.4	46.3	3.76	3.76	54	42.6
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

*line malfunction

Water Quality Data Summary

Date		Station 39			Station 25			Central Station 1				Station 24		
	9/29/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	7:35			11:50			12:00				14:15		
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	>240	>240	>240	>240	>240	>240	>240	>240	>240	>240	200	201	206
F	Total Ammonia (mg/L)	0.28	0.39	0.36	0.04	<0.02	<0.02	<0.05	0.07	<0.05	<0.05	0.15	0.24	0.2
F	Conductivity (µS/cm)	679	694	677	633	627	622	1066	1080	1095	1095	457	462	474
F	Dissolved Oxygen (mg/L)	11.03	12.08	12.03	11.97	11.72	11.59	11.16	10.28	10.12	9.81	10.24	10.57	10.42
F	Orthophosphate (ppm)	<0.05	4.2	0.4	<0.00	<0.05	2.8	<0.03	5.7	6.1	6.5	0.18	3.1	4
F	pH	8.72	8.12	8.11	8.33	8.16	7.78	8.33	8.07	8.08	7.97	8.65	8.37	8.37
F	Total Chlorine (mg/L)	<0.00	1.53	1.05	<0.00	2.25	1	<0.00	1.6	2.51	1.65	<0.00	0.62	1.67
F	Temperature (°C)	14	12.7	13.6	13.6	12	11.8	14	13.6	13.2	12.9	14.8	11.9	12
F	Chloride (mg/L)	21.1	21.6	13.4	16.8	14.6	9.6	6	>25	>25	>25	>25	13.4	>25
F	Dissolved Copper (mg/L)	<0.00	<0.00	<0.00	<0.05	<0.03	0.14	<0.00	0.08	<0.01	<0.00	<0.01	<0.00	0.03
F	Dissolved Iron (mg/L)	0.78	0.6	0.89	0.34	0.07	0.06	0.33	0.17	0.16	0.15	1.02	0.95	0.96
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time	7:46	7:48	7:50	10:06	10:08	10:10	12:20	12:22	12:24	12:26	14:24	14:26	14:28
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							16:00	16:00	16:00	16:00	16:00	16:00	16:00
F	Color (PCU)							91	>500	>500	>500	242	>500	>500
F	Turbidity (NTU)							2.61	56	53.9	82.3	5.17	54.8	60.6
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

*line malfunction

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	10/3/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	8:00			9:53			11:30				14:05		
	Time Off-site													
	Routine Monitoring													
F	Alkalinity ($mgCaCO_3/L$)	>240	>240	232	>240	>240	234	>240	>240	>240	>240	202	191	202
F	Total Ammonia (mg/L)	0.25	0.26	0.29	0.05	0.03	0.06	0.08	0.04	0.06	0.06	0.19	0.24	0.23
F	Conductivity (µS/cm)	676	693	672	638	636	621	1057	1059	1063	1064	449	456	472
F	Dissolved Oxygen (mg/L)	10.71	12.92	12.9	12.85	12.41	12.11	11.36	10.69	10.7	10.77	9.5	9.47	9.45
F	Orthophosphate (ppm)	0.12	8.3	0.5	<0.0	0.3	5.4	0.13	3.6	4.3	3.6	0.26	2.6	4.6
F	pH	7.52	7.46	7.48	7.85	7.87	7.88	7.95	7.69	7.96	7.31	8.36	8.24	8.09
F	Total Chlorine (mg/L)	<0.0	0.5	0.41	<0.0	1.93	<0.0	<0.00	0.2	0.3	0.38	<0.00	<0.01	<0.01
F	Temperature (°C)	13.8	11.6	13.5	12	11.7	10.3	12.5	12.6	12.6	12.5	13.5	12.4	12.4
F	Chloride (mg/L)													
F	Dissolved Copper (mg/L)													
F	Dissolved Iron (mg/L)													
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
	Metals Stagnation Sampling **													
	Lab Sample Collection Time													
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
	Iron Solubility Testing													
F	Routine Monitoring Time							16:00	16:00	16:00	16:00	16:00	16:00	16:00
F	Color (PCU)							6	423	478	>500	6	261	261
F	Turbidity (NTU)							299	78.8	88.3	79.9	1.29	45.2	43.8
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

*line malfunction

Water Quality Data Summary

Date		Station 39			Station 25			Central Station 1				Station 24		
	10/6/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	7:40			9:45			11:17				14:30		
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	>240	>240	>240	>240	>240	>240	>240	>240	>240	>240	184	187	187
F	Total Ammonia (mg/L)	0.29	0.43	0.34	0.19	0.03	0.05	0.07	0.09	0.06	0.06	0.29	0	0.3
F	Conductivity (µS/cm)	669	693	673	624	629	629	1040	1046	1044	1036	369	395	389
F	Dissolved Oxygen (mg/L)	10.91	10.96	11.14	10.62	10.54	10.46	9.54	9.35	8.87	8.76	8.24	8.59	8.22
F	Orthophosphate (ppm)	0.63	1.5	0.1	0.07	0	6.8	0.04	3.4	3.3	3.9	0.16	0	6
F	pH	8.3	8.1	8.09	8	7.83	7.77	8.06	8.09	8.1	8.08	7.96	7.86	7.94
F	Total Chlorine (mg/L)	0	2.32	0	0	2	1.25	0	0.38	0.36	0.31	0.01	0	0
F	Temperature (°C)	14.2	13.4	12.9	13.3	12.1	12.5	13.7	13.6	14.2	15.5	15.4	13.3	14.5
F	Chloride (mg/L)	11.9	23.8	22.9	>25	>25	>25	>25	>25	>25	>25	5.2	>25	0.3
F	Dissolved Copper (mg/L)	0	0	0	0.15	0.01	0.03	0	0	0.01	0	0.01	0.01	0
F	Dissolved Iron (mg/L)	1.7	0.73	0.77	1.16	0.07	0.04	0.23	0.17	0.17	0.18	0.99	0.86	0.8
F	Color (PCU)	315	23	59	176	107	121	1	55	24	18	38	49	11
F	Sulfate (mg/L)	42	37	31	28	8	23	36	40	36	35	9	2	2
F	Turbidity (NTU)	96.5	7.98	13.1	52.1	2.23	2.5	0.71	0.97	0.64	1.31	2.51	0.97	1.04
Metals Stagnation Sampling **														
	Lab Sample Collection Time	7:58	8:00	8:02	9:52	9:54	9:56	11:30	12:04	12:06	12:08	14:52	14:54	11:56
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							16:00	16:00	16:00	16:00	16:00	16:00	16:00
F	Color (PCU)							36	>500	>500	>500	40	307	320
F	Turbidity (NTU)							2.13	25	63	45.8	3.63	41.5	55.9
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

*line malfunction

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	10/10/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	8:00			9:15			11:05				13:15		
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	>240	>240	238	>240	>240	239	>240	>240	>240	>240	193	203	195
F	Total Ammonia (mg/L)	0.27	0.37	0.27	0.07	0.01	<0.06	0.08	0.06	0.04	0.03	0.26	0.26	0.26
F	Conductivity (µS/cm)	661	670	660	625	669	610	1025	1052	1057	1061	384	455	470
F	Dissolved Oxygen (mg/L)	10.83	10.84	10.81	11.13	11.01	10.86	9.3	9.26	9.3	9.25	9.25	9.01	8.78
F	Orthophosphate (ppm)	0.33	0	0	0.3	0	4.3	0	4.4	5	5.1	0.14	5.3	4.6
F	pH	7.84	7.45	7.45	7.79	7.62	7.54	8	7.89	7.74	7.52	8.21	7.86	7.8
F	Total Chlorine (mg/L)	<0.00	<0.01	<0.00	<0.01	5.63	<0.00	0	0.27	0.22	0.35	0	0.01	0
F	Temperature (°C)	14.5	14.3	14.4	14.7	12.7	12.7	14.3	13.4	13.2	13.8	14.8	13.4	12.1
F	Chloride (mg/L)													
F	Dissolved Copper (mg/L)													
F	Dissolved Iron (mg/L)													
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time													
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							16:00	16:00	16:00	16:00	16:00	16:00	16:00
F	Color (PCU)							<0	307	>500	346	104	307	227
F	Turbidity (NTU)							0.54	62.1	106	58.9	4.31	42.5	45.6
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

*line malfunction

Water Quality Data Summary

Date		Station 39			Station 25			Central Station 1				Station 24		
	10/13/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	7:50			10:00			11:04				13:12		
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	>240	>240	>240	>240	>240	>240	>240	>240	>240	>240	194	212	203
F	Total Ammonia (mg/L)	0.31	0.29	0.32	0.03	<0.02	<0.05	<0.04	<0.02	<0.03	<0.06	<0.05	0.17	0.25
F	Conductivity (µS/cm)	672	682	670	630	635	624	1064	1072	1067	1059	469	466	485
F	Dissolved Oxygen (mg/L)	9.24	10.47	10.67	10.83	10.89	10.54	10.75	10.83	10.99	10.65	10.63	9.5	9.32
F	Orthophosphate (ppm)	0.14	0.3	0.6	0.7	<0.00	4.3	<0.4	3.4	4.1	5.6	0.32	4.4	4.6
F	pH	8.43	8.06	7.92	8.01	8.04	8.07	8.33	8.01	7.87	7.85	9.17	8.82	8.44
F	Total Chlorine (mg/L)	<0.00	<0.00	<0.00	<0.00	0.75	<0.01	<0.00	0.91	0.92	<0.00	<0.00	<0.00	0.53
F	Temperature (°C)	13.9	13.5	13.8	12	11.2	11.6	12.1	12.1	12.3	12.4	12.1	11.4	11.2
F	Chloride (mg/L)	15.7	19.3	18.6	22.5	16.6	19.2	>25	>25	>25	>25	7	12.3	7.8
F	Dissolved Copper (mg/L)	<0.00	<0.00	<0.02	<0.00	<0.02	<0.00	<0.00	<0.00	<0.04	<0.01	<0.00	<0.02	<0.01
F	Dissolved Iron (mg/L)	0.78	0.78	0.76	0.58	0.17	0.13	0.16	0.12	0.11	0.2	0.88	0.99	0.74
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time	8:00	8:02	8:04	10:04	10:06	10:08	11:32	11:34	11:36	11:38	13:24	13:26	13:28
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
Iron Solubility Testing														
F	Routine Monitoring Time							16:00	16:00	16:00	16:00	16:00	16:00	16:00
F	Color (PCU)							33	383	>500	435	39	295	378
F	Turbidity (NTU)							1.63	66.2	102	59.7	2.74	38	61.8
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

*line malfunction

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	10/17/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site	8:05			9:15			11:15				14:15		
	Time Off-site													
Routine Monitoring														
F	Alkalinity ($mgCaCO_3/L$)	254	214	244	301	265	228	256	267	279	266	169	135	135
F	Total Ammonia (mg/L)	0.25	0.27	0.27	0.08	<0.00	<0.04	0.05	<0.02	<0.02	0.09	0.12	0.23	0.26
F	Conductivity (µS/cm)	689	672	699	642	618	622	1049	1067	1065	1059	458	469	472
F	Dissolved Oxygen (mg/L)	11.3	11.9	11.92	10.87	10.53	10.28	9.84	9.8	9.69	9.46	8.85	9.43	9.08
F	Orthophosphate (ppm)	0.27	0	0.54	<0.00	<0.00	6.3	<0.00	4.2	4.56	5.6	<0.00	>5.00	4.98
F	pH	8.3	8.15	8.07	8.25	8.15	7.95	8.24	8.17	8.07	7.96	8.6	8.35	8.13
F	Total Chlorine (mg/L)	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	<0.00	1.14	0.8	<0.00	<0.00	<0.00	<0.00
F	Temperature (°C)	12.3	12.5	12.8	12	12.1	11.9	13.2	12.7	12.5	12.3	13.1	12.4	12.1
F	Chloride (mg/L)													
F	Dissolved Copper (mg/L)													
F	Dissolved Iron (mg/L)													
F	Color (PCU)													
F	Sulfate (mg/L)													
F	Turbidity (NTU)													
Metals Stagnation Sampling **														
	Lab Sample Collection Time													
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**	8:28	8:30	8:32	9:50	9:52	9:54	11:32	11:34	11:36	11:38	14:32	14:34	14:36
Iron Solubility Testing														
F	Routine Monitoring Time							16:00	16:00	16:00	16:00	16:00	16:00	16:00
F	Color (PCU)							<0	>500	317	171	<0	150	275
F	Turbidity (NTU)							0.52	121	71	44.3	1.91	25.2	78.5
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

*line malfunction

Water Quality Data Summary

	Date	Station 39			Station 25			Central Station 1				Station 24		
	10/20/2022	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Raw	Rack 1	Rack 2	Rack 3	Raw	Rack 1	Rack 2
	Time On-site													
	Time Off-site													
	Routine Monitoring													
F	Alkalinity ($mgCaCO_3/L$)	164			282		234	294	334	293	309	205	201	191
F	Total Ammonia (mg/L)	0.19			<0.05		0.06	0.04	<0.01	<0.02	0.09	0.13	0.19	0.17
F	Conductivity (µS/cm)	698			631		621	1078	1087	1066	1107	474	467	469
F	Dissolved Oxygen (mg/L)	10.64			11.8		11.14	11.41	12.03	11.87	11.9	11.69	10.57	10.03
F	Orthophosphate (ppm)	0.27			<0.00		4.61	<0.00	4.95	4.3	5.4	0.17	4.1	4.54
F	pH	8.55			9.32		8.94	8.89	8.88	8.94	8.65	8.18	8.12	8.02
F	Total Chlorine (mg/L)	<0.00			<0.00		<0.00	<0.00	1.16	0.81	<0.00	<0.00	<0.00	<0.00
F	Temperature (°C)	13.3			10.4		11.3	10.2	8.6	9.5	10.3	10.9	11.9	11.9
F	Chloride (mg/L)	11.2			8.3		20.7	>25	>25	21.4	>25	5.6	>25	11.1
F	Dissolved Copper (mg/L)	<0.00			<0.01		0.63	<0.01	<0.01	<0.00	<0.02	0.1	0.1	<0.02
F	Dissolved Iron (mg/L)	0.99			0.27		0.07	0.61	0.11	0.08	0.23	1.08	1.08	0.86
F	Color (PCU)	124			132		138	294	294	>500	77	>500	<15	6
F	Sulfate (mg/L)	36			17		32	42	13	18	4	2	8	1
F	Turbidity (NTU)	30			3.58		1.26	62.5	1.61	0.62	0.84	0.56	3.29	0.9
	Metals Stagnation Sampling **													
	Lab Sample Collection Time	8:15			9:35		9:36							
L	Orthophosphate													
L	Total Phosphate													
L	Calcium, Copper, Lead, Iron**													
	Iron Solubility Testing													
F	Routine Monitoring Time							14:30	14:30	14:30	14:30	14:30	14:30	14:30
F	Color (PCU)							31	396	414	>500	6	203	250
F	Turbidity (NTU)							1.76	80.7	68.3	102	2.73	56.1	42.5
	Lab Sample Collection Time													
L	Total Iron													

Once per week

Once every other week

**Weekly samples first 5 weeks; semiweekly weeks 6 to 8

*line malfunction

APPENDIX C - FLOW AND CHEMICAL FEED PUMP ADJUSTMENTS

Site Visit: 15Aug

Pump Station #	Rack	Time for 1 Gal (s)	Ortho-P Range, mg/L	Ortho-P within Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Ortho-P within Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
						Before	After				Before	After	
39	1	59.1	3.8-**4.0**-4.2	N	0.9	100	65	6.1	Y				
	2	60.14	4.3-**4.5**-4.7	N	8.9	100	65	6.5	N	6.5	65	60	6.5
25	1	60.85	3.8-**4.0**-4.2	N	6.8	60	50	5.4	N	5.4	50	55	5.6
	2	59.05	4.3-**4.5**-4.7	N	8.1	60	45	6.9	N	6.9	45	40	6
1	1	59.04	3.8-**4.0**-4.2	N	11.3	40	20	8.3	N	8.3	20/15	15/12	7.5/7.4
	2	61.37	4.3-**4.5**-4.7	Y	6								
	3	59.06	4.8-**5.0**-5.2	N	5.2	55	62	6	Y				
24	1	60.15	3.8-**4.0**-4.2	N	2.4	50	60	6	Y				
	2	61.05	4.3-**4.5**-4.7	N	4.9	50	100	1.1	N	1.1	100	55	5.8

Pump Station #	Rack	Chlorine Residual Range, mg/L	Chlorine Residual in Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Chlorine Residual in Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
					Before	After				Before	After	
39	1	1.2-**1.5**-1.8	N	1	57	75	1.28	Y				
	2	1.2-**1.5**-1.8	N	<0.04	57	75	1.76	Y				
25	1	**1.8-2.3**-2.8	N	1.24	70	100	2.14	Y				
	2	**1.8-2.3**-2.8	N	1.3	70	100	2.93	N	2.93	100	80	2.37
1	1	1.2-**1.5**-1.8	N	2.12	70	50	1.29	Y				
	2	1.2-**1.5**-1.8	Y	1.26								
	3	1.2-**1.5**-1.8	Y	1.2								
24	1	**1.8-2.3**-2.8	N	0.84	71	100	1.49	N				
	2	**1.8-2.3**-2.8	N	0.85	70	100	1.69	N	1.69	100	100	2.21

Site Visit: Aug 18

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Ortho-P within Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
							Before	After		Before	After	
39	1	0.87		5.5-**6.0**-6.5	N	5.3	65	71	5.3**			
	2	0.66		5.5-**6.0**-6.5	N	7.5	65	65	4.6**	65	85	
25	1	0.98		5.5-**6.0**-6.5	Y	5.8	55	-	-			
	2	0.6	1.02	5.5-**6.0**-6.5	N	8.5	35	-	4.5	45	53	5.2
1	1	0.97	-	5.5-**6.0**-6.5	Y	8.5	12*	50	61			
	2	0.98	-	5.5-**6.0**-6.5	N	5.8	75	-	-			
	3	0.9	0.98	5.5-**6.0**-6.5	N	6.8	62	-	5.7			
24	1	0.5	1.02	5.5-**6.0**-6.5	N	11	60	65	6.5			
	2	0.5	1.05	5.5-**6.0**-6.5	N	10.2	57	67	6.3			

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Chlorine Residual in Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine				Before	After		Before	After	
39	1					1.2-**1.5**-1.8	Y	1.18	75	75	0.89	75	82	
	2					1.2-**1.5**-1.8	N	2.1	75	75	1.08	72	83	
25	1					**1.8-2.3**-2.8	Y	2.1	100	-	1.73	80	85	2.1
	2					**1.8-2.3**-2.8	N	3.1	80	80	2.09	55	75/60	2.42
1	1	5.00	5.50	5.00	10.00	1.2-**1.5**-1.8	N	0.96	50	78	1.76			
	2					1.2-**1.5**-1.8	N	0.51	53	90	1.14			
	3					1.2-**1.5**-1.8	N	1.1	80	87				
24	1					**1.8-2.3**-2.8	Y	2.61	100	-				
	2					**1.8-2.3**-2.8	Y	2.11	100	100	1.6	-	-	1.91

* S1R1 Orthophosphate meter pump dial malfuction, relaigned off-0 stop-100

** had to leave to the next station

Site Visit: Aug 22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Ortho-P within Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
							Before	After		Before	After	
39	1	0.5	1.07	3.8-**4.0**-4.2	N	11.2	72	55	4.4	50	50/45	4.5/4.0
	2	0.82	0.98	4.3-**4.5**-4.7	N	7.3	83	70	5.5	70	57/52	4.9/4.0/4.5
25	1	0.47	0.95	3.8-**4.0**-4.2	N	10.1	58	49	5.3	49	40/36/30	4.9/4.7/3.8
	2	0.8	1.02	4.3-**4.5**-4.7	N	7.1	55	44	8.5	44	36	4.3
1	1	0.714	0.97	3.8-**4.0**-4.2	N	7.1	47	37	4.7	37	31/20	4.4/2.8/3.8
	2	0.38	0.95	4.3-**4.5**-4.7	N	12.6	51	48	5	43	35/39	4.0/5.2/4.6
	3	0.81	1.03	4.8-**5.0**-5.2	N	6.8	61	55	5.8	45	40	4.8
24	1	1.39	0.95	3.8-**4.0**-4.2	N	4.66	65	40	5.1	40	31/25	5.4/3.7
	2	1.53	1	4.3-**4.5**-4.7	N	4.27	65	-	6.4	65	45	4.9/4.8

Pump Station #	Rack	Tank Level (gal)		Solution After (Gal)		Chlorine Residual Range, mg/L	Chlorine Residual in Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine				Before	After		Before	After	
39	1	6.5	6.5	10.5	10.5	1.2-**1.5**-1.8	N	2.7	82	-	1.47			
	2					1.2-**1.5**-1.8	N	0.92	82	90	1.2			
25	1	6.5	6.5	10.5	10.5	**1.8-2.3**-2.8	N	3.7	100	-	2.4			
	2					**1.8-2.3**-2.8	N	1.96	82	85	2.21			
1	1	7.00	11.50	-	-	1.2-**1.5**-1.8	N	2.61	62	-	1.93	62	50	1.67
	2					1.2-**1.5**-1.8	N	4.63	100	85	1.69			
	3					1.2-**1.5**-1.8	N	1.35	72	85	1.34			
24	1	6	6	-	-	**1.8-2.3**-2.8	N	0.14	100	-	1.12			2.14
	2					**1.8-2.3**-2.8	N	1.12	100	-	2.06			1.95

Site Visit: 25Aug22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Ortho-P within Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
							Before	After		Before	After	
39	1	0.3	1.0	3.8-**4.0**-4.2	N	9.7	45	-	4.6	50	43/40	4.7/4.1
	2	0.63	0.95	4.3-**4.5**-4.7	N	5.6	52	-	4.4			
25	1	0.85	1.04	3.8-**4.0**-4.2	N	4.1	30	-	4.2			
	2	0.83	0.98	4.3-**4.5**-4.7	N	4.6	36	-	4.2	36	40/36	5.0/4.6
1	1	0.69	0.95	3.8-**4.0**-4.2	N	2.9	28	-	3.2	28	35	4.1
	2	0.76	1.05	4.3-**4.5**-4.7	N	8.8	39	-	3.8	39	47/44/49	4.8/4.1
	3	0.95	-	4.8-**5.0**-5.2	N	4.2	40	50	5.6	50	44	5.0
24	1	0.73	1.01	3.8-**4.0**-4.2	N	5.3	25	40	30.0			4.0
	2	0.56	1.0	4.3-**4.5**-4.7	N	7.1	45	4	4	45	40/50	3.7/5.0

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Chlorine Residual in Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine				Before	After		Before	After	
39	1					1.2-**1.5**-1.8	N	1.84	82	-	1.77	82	65	2.01/1.34
	2					1.2-**1.5**-1.8	N	2.08	90	-	0.5	40	100	1.22
25	1	10.5	10.5	6	10	**1.8-2.3**-2.8	N	1.95	100	1.5				1.99
	2					**1.8-2.3**-2.8	N	1.8	88	-	1.57	85	95	2.34
1	1	6.00	10.00			1.2-**1.5**-1.8	-	*	50	-	1.3			
	2					1.2-**1.5**-1.8	N	3.29	85	-	2	85	63	
	3					1.2-**1.5**-1.8	N	2.14	85	60	2.13	60	45	0.99*
24	1	7.5		11.75		**1.8-2.3**-2.8	N	1.53	100	1.06				1.23
	2					**1.8-2.3**-2.8	N	2.24	100	1.8				

* pump feedline malfunction

Site Visit: 29Aug22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Ortho-P within Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
							Before	After		Before	After	
39	1	0.28	0.95	3.8-**4.0**-4.2		6.1	40		2.5	40	64/53	4.8/3.9
	2	0.33	1.05	4.3-**4.5**-4.7		10.1	52		4	52	59	4.3
25	1	0.92	1.02	3.8-**4.0**-4.2		4.3	35		3.6	35		3.8
	2	0.81	0.95	4.3-**4.5**-4.7		4.9	35		4.3			
1	1	0.86	0.98	3.8-**4.0**-4.2		4.8	31		3.9			
	2	0.94	0.98	4.3-**4.5**-4.7		5	49		5.4	49	40	4.5
	3	0.74	1.05	4.8-**5.0**-5.2		6.4	45		4.6	45	48/55	4.4/5.2
24	1	1.64	1.05	3.8-**4.0**-4.2		3.7	38		3.6	38	42	3.7/3.9
	2	1.5	1.03	4.3-**4.5**-4.7		3.8	50		4.2	50	54	4.5

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Chlorine Residual in Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine				Before	After		Before	After	
39	1	9	7.5			1.2-**1.5**-1.8		2.57			0.75	70	85	1.47
	2					1.2-**1.5**-1.8		2.6			0.85	100	-	0.75
25	1	9.75	9			**1.8-2.3**-2.8		2.82			1.76			
	2					**1.8-2.3**-2.8		1.79			1.52			
1	1	4.00	8.50			1.2-**1.5**-1.8		1.77			0.98	42	65	1.51
	2					1.2-**1.5**-1.8		0.73			1.74			
	3					1.2-**1.5**-1.8		0.66			0.69	48	80	1.53
24	1	11	9.5			**1.8-2.3**-2.8		0.42			0.66	100	100	0.97/1.00
	2					**1.8-2.3**-2.8		0.83			1.55			1.68

Site Visit: 01Sep22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Ortho-P within Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
							Before	After		Before	After	
39	1	0.18	1.02	3.8-**4.0**-4.2		13.8	55		2.7	55	80/65	5.0/3.9
	2	0.47	0.97	4.3-**4.5**-4.7		7.2	58		4.5			
25	1	1.0	1.0	3.8-**4.0**-4.2		3.3	35	40	3.8			
	2	1.11	1.05	4.3-**4.5**-4.7		3.6	35	45	4.3			
1	1	0.96		3.8-**4.0**-4.2		3.8	32					
	2	0.17	0.97	4.3-**4.5**-4.7		23.4	40	-	4.4			
	3	0.93	1	4.8-**5.0**-5.2		5.1	52					
24	1	1.09	1.04	3.8-**4.0**-4.2		3.9	42		4.9	42	35/40	3.4/4.1
	2	1.05	1.05	4.3-**4.5**-4.7		4.7	50					

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Chlorine Residual in Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine				Before	After		Before	After	
39	1					1.2-**1.5**-1.8		3.37	82		0.82	82	90	1.78
	2					1.2-**1.5**-1.8		1.36	100		1.8			
25	1					**1.8-2.3**-2.8		1.93	100					
	2					**1.8-2.3**-2.8		0.73	95	100	1.21	-	-	2.4
1	1					1.2-**1.5**-1.8		0.53	60	75	0.53		100/100	0.73/1.86
	2					1.2-**1.5**-1.8		9.53	75		1.36			
	3					1.2-**1.5**-1.8		1.06	80	85	1.82			
24	1					**1.8-2.3**-2.8		1.05	100		1.18			1.34/1.11
	2					**1.8-2.3**-2.8		1.27	100		1.72			1.95

Site Visit: 05Sep22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Ortho-P within Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
							Before	After		Before	After	
39	1	0.42	0.97	3.8-**4.0**-4.2	Y	5.4	60	45	4			
	2	0.48	0.94	4.3-**4.5**-4.7		0.9	55	70	1.1*			
25	1	0.97	0.97	3.8-**4.0**-4.2	y	4.5	40	35	3.8			
	2	0.9	1	4.3-**4.5**-4.7	y	5.3	45	-	4.1	45/50	50/45	5
1	1	0.76	1.02	3.8-**4.0**-4.2		4	31		3.3		35/40/36	2.9/4.5/3.5
	2	0.47	1	4.3-**4.5**-4.7	y	9.3	40		3.3	40	55/45	5.5/4.4
	3	0.93	0.97	4.8-**5.0**-5.2		6.5	60		4.2	60	71/62/55	6.5/5.9
24	1	0.9	0.97	3.8-**4.0**-4.2		4.6	37	35	3.4	35	40/35	3.8
	2	1.07	1.02	4.3-**4.5**-4.7	y	5.1	52	45	4.8			

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Chlorine Residual in Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine				Before	After		Before	After	
39	1	7.5	4	7.5	9	1.2-1.5-1.8	y	1.35	90					
	2					1.2-1.5-1.8	Y	1.76	100					
25	1	8	5	5.5	10	**1.8-2.3-2.8**	Y	1.81	100					
	2					**1.8-2.3-2.8**	Y	2.14	100					
1	1	0.50	4.25	3.50	4.25	1.2-1.5-1.8	n	0.01	100		**			
	2					1.2-1.5-1.8	y	3.02	75		1.37			
	3					1.2-1.5-1.8	y	1.75	85					
24	1	9.75	7	9.75	7	**1.8-2.3-2.8**	n	1.5	100					
	2					**1.8-2.3-2.8**	n	1.54	100					

* air in the pump line

**line disconnected

Site Visit: 08Sep22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Ortho-P within Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
							Before	After		Before	After	
39	1	1.07		3.8-**4.0**-4.2		2.6	45	50	2	50	65/70	3.6/4.1
	2	1.03		4.3-**4.5**-4.7		4	55	60	4.2	50	63	4.5
25	1	0.66	1.04	3.8-**4.0**-4.2		5.8	35	30	3.2	30	38	4
	2	0.98		4.3-**4.5**-4.7		5	45	40	4.9			
1	1	0.72	0.98	3.8-**4.0**-4.2		5			4.5	35	30/35	3.4/4.0
	2	0.78	1.04	4.3-**4.5**-4.7		6.6			5.4	45	38/43	3.9/4.5
	3	0.72	0.98	4.8-**5.0**-5.2		6.5			5	55	50	4.9
24	1	0.92	0.98	3.8-**4.0**-4.2		3.8			3.9			
	2	0.96		4.3-**4.5**-4.7		4.6			4.7			

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Chlorine Residual in Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine				Before	After		Before	After	
39	1	7	8			1.2-1.5-1.8		1.36						
	2 *					1.2-1.5-1.8		0.01						
25	1 *					**1.8-2.3-2.8**		0.25			0.09			0.07
	2					**1.8-2.3-2.8**		0.97			1.61			
1	1	2.50	2.50			1.2-1.5-1.8		2.48			1.72			
	2					1.2-1.5-1.8		2.03			1.61			
	3					1.2-1.5-1.8		2.08			1.64			
24	1	9.5	6			**1.8-2.3-2.8**		1.5			1.43			
	2					**1.8-2.3-2.8**		1.47			1.88			

*line malfuction

Site Visit: 12Sep22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Ortho-P within Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
							Before	After		Before	After	
39	1		0.98	3.8-**4.0**-4.2		22.4			4.2			
	2		1	4.3-**4.5**-4.7		4.6						
25	1	0.76	1.05	3.8-**4.0**-4.2		4.9			3.8			
	2	1.03	1	4.3-**4.5**-4.7		4.9			4.1			
1	1	0.73	0.98	3.8-**4.0**-4.2		4.6			4.2			
	2	0.73	1.05	4.3-**4.5**-4.7		6.3	43	39	4.9		42/50/45/43	3.9/3.7/4.8
	3	0.95	1	4.8-**5.0**-5.2		4.9			4.9			
24	1	0.43	0.95	3.8-**4.0**-4.2					3.8			
	2	0.55	0.95	4.3-**4.5**-4.7					4.5			

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Chlorine Residual in Range, Yes/No	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine				Before	After		Before	After	
39	1	5.5	7			1.2-1.5-1.8		1		95	1.26			
	2 *					1.2-1.5-1.8		0						
25	1 *	3.25	6.75	8.25	11.75	**1.8-2.3-2.8**		0						
	2 *					**1.8-2.3-2.8**		0						
1	1	5.50	5.50	10.50		1.2-1.5-1.8		1.54	60		1.21			1.15
	2					1.2-1.5-1.8		1.14	75		0.9			
	3					1.2-1.5-1.8		1.05	85		1.23			
24	1	8.75	10.25			**1.8-2.3-2.8**		2.89			1.52			
	2					**1.8-2.3-2.8**		1.89			1.85			

*line malfuction

Site Visit: 15Sep22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
						Before	After		Before	After	
39	1	0.96		3.8-**4.0**-4.2	0.4*						
	2	0.98		4.3-**4.5**-4.7	*						
25	1			3.8-**4.0**-4.2							
	2			4.3-**4.5**-4.7							
1	1	0.8	0.92	3.8-**4.0**-4.2	3.9			3.6	32	36	4.2
	2	0.73	0.95	4.3-**4.5**-4.7	5.4	43	36	3.6	36	45/40	5.0/4.4
	3	0.86	0.89	4.8-**5.0**-5.2	5.8	35	30	3.5	30	45/47	4.7/5.0
24	1	1.05	1.06	3.8-**4.0**-4.2	3	35	46	4.5	46	41	4.2
	2	1.17	1.12	4.3-**4.5**-4.7	5.7	45	35	3.5	45	35	4.4

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine			Before	After		Before	After	
39	1					1.2-1.5-1.8	5.36			1.25			
	2 *					1.2-1.5-1.8	0.00*						
25	1 *					**1.8-2.3-2.8**							
	2 *					**1.8-2.3-2.8**							
1	1					1.2-1.5-1.8	1.84			1.63			
	2					1.2-1.5-1.8	5.71			1.49			
	3					1.2-1.5-1.8	4.01			1.75			
24	1					**1.8-2.3-2.8**	0.05*			0.02			
	2					**1.8-2.3-2.8**	1.47			2.41			

*line malfuction

Site Visit: 19Sep22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
						Before	After		Before	After	
39	1	1.07	1.05	3.8-4.0-4.2	0.4*						
	2	1.06	1.05	4.3-4.5-4.7	0.6*						
25	1	0.81	1.07	3.8-4.0-4.2	2	27	57	3.6	57	65	3.8
	2	1.07	1.07	4.3-4.5-4.7	3.7	40		4.9			
1	1	0.74	0.74	3.8-4.0-4.2	4.3	35	32	3.6	32	35/32/27	4.4/4.4/4.4/3.6
	2	0.76	0.76	4.3-4.5-4.7	4.9	40	36	4.4			
	3	0.67	0.67	4.8-5.0-5.2	6.1	45	35	4.1	35	40/35	5.6/4.9
24	1	0.81	0.81	3.8-4.0-4.2	4.5	45	30	3.2	30	40/30	5.3/4.1
	2	1.05	1.02	4.3-4.5-4.7	4.7						

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine			Before	After		Before	After	
39	1	4.5	8.5			1.2-1.5-1.8	1.09	70	77	1.29			
	2					1.2-1.5-1.8	0.00*						
25	1	6.5	3.5		7.75	**1.8-2.3-2.8**	2.37			1.92			
	2					**1.8-2.3-2.8**	1.62	80	90	1.89			
1	1	7.25	7.50			1.2-1.5-1.8	0.54	60	80	0.59*			
	2					1.2-1.5-1.8	1.96	90	70	1.76			
	3					1.2-1.5-1.8	2.05	85	60	1.85			
24	1	7.5	9			**1.8-2.3-2.8**	0.59						
	2					**1.8-2.3-2.8**							

*line malfuction

Site Visit: 22Sep22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
						Before	After		Before	After	
39	1	0.95	0.95	3.8-4.0-4.2	0.5			0.9			
	2	0.9	0.9	4.3-4.5-4.7	1.9			0.8			
25	1	1.23	1.05	3.8-4.0-4.2	0.8			0.00*	60	80	
	2	0.97	1.07	4.3-4.5-4.7	6.5			6.3	80	60	4.7
1	1	0.88		3.8-4.0-4.2	3.8						
	2	0.88		4.3-4.5-4.7	5	35	31	4	31	33	4.3
	3	0.8		4.8-5.0-5.2	4.9						
24	1	0.83	0.8	3.8-4.0-4.2	10.5	30	15	1.6	15	35	3.2/4.1
	2	1.07	1.04	4.3-4.5-4.7	8.3			3.9			4.6

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine			Before	After		Before	After	
39	1	4.5	7.5			1.2-1.5-1.8	1.25						
	2					1.2-1.5-1.8	0.5*						
25	1	5.5	6.5			**1.8-2.3-2.8**	0.99*			0.62		100	
	2					**1.8-2.3-2.8**	0.62*			0.56	60	100	1.23
1	1	6.13	6.00			1.2-1.5-1.8	2.82	85	45	1.31			
	2					1.2-1.5-1.8	1.32						
	3					1.2-1.5-1.8	1.13	60	75	2.01	80	70	1.75
24	1	7	8.5			**1.8-2.3-2.8**	1.62						
	2					**1.8-2.3-2.8**	2.57						

*line malfuction

Site Visit: 26Sep22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
						Before	After		Before	After	
39	1	1	1.05	3.8-4.0-4.2	5.8	90	62	4.2			
	2	1.09	1.11	4.3-4.5-4.7	3.4	90	100	0			
25	1	0.84	1	3.8-4.0-4.2	1.2			0			
	2	1.25	1	4.3-4.5-4.7	3.4			4.3			
1	1	0.94		3.8-4.0-4.2	2.5	28	45	5			3.5/4.3/4.0
	2	0.94		4.3-4.5-4.7	3.6	35	43	4.2			4.6
	3	0.84		4.8-5.0-5.2	3.3	40	60	6.1	60	49	5.2
24	1	0.83		3.8-4.0-4.2	5.2	40	30	3.6			3.8
	2	1		4.3-4.5-4.7	5.6			4.5			

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine			Before	After		Before	After	
39	1					1.2-1.5-1.8	1.62						
	2					1.2-1.5-1.8	1.59						
25	1					**1.8-2.3-2.8**	3.03			2.31			
	2					**1.8-2.3-2.8**	1.02			1.34			
1	1					1.2-1.5-1.8	1.26						
	2					1.2-1.5-1.8	0.95	70	90	1.64			
	3					1.2-1.5-1.8	1.31						
24	1					**1.8-2.3-2.8**	1.23			1.19			
	2					**1.8-2.3-2.8**	1.69			1.69			

*line malfuction

Site Visit: 29Sep22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
						Before	After		Before	After	
39	1	1.05		3.8-4.0-4.2							
	2	1.07		4.3-4.5-4.7	0.4	60	90	0.9			
25	1	1		3.8-4.0-4.2							
	2	0.82	1.04	4.3-4.5-4.7		60	55	3.9	55	65	4.7
1	1	0.68		3.8-4.0-4.2	5.7	35	30	4.4			3.8
	2	0.68		4.3-4.5-4.7	6.1	45	35	4.5			
	3	0.66		4.8-5.0-5.2	6.5			5.3			
24	1	1.11	1.11	3.8-4.0-4.2	3.1			3.2			4.3/4.2
	2	1.07		4.3-4.5-4.7	4			4.4			

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine			Before	After		Before	After	
39	1	3.5	5			1.2-1.5-1.8							
	2					1.2-1.5-1.8	1.05			0.97			
25	1	4ish	3.25	9.5	8.25	**1.8-2.3-2.8**							
	2					**1.8-2.3-2.8**	1			1.36			
1	1	3.50	2.50	8.28	7.75	1.2-1.5-1.8	1.6			1.68			
	2					1.2-1.5-1.8	2.51	90	60	1.78			
	3					1.2-1.5-1.8	1.65						
24	1	5.75	5.75			**1.8-2.3-2.8**							
	2					**1.8-2.3-2.8**							

*line malfuction

Site Visit: 03Oct22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
						Before	After		Before	After	
39	1	1.07		3.8-4.0-4.2	*						
	2	1.05		4.3-4.5-4.7	*						
25	1	0.6	0.98	3.8-4.0-4.2	5.4	65	70	+			
	2	0.83	1.05	4.3-4.5-4.7	0.3			4.7			
1	1	0.85		3.8-4.0-4.2	3.6			3.4		35/31	4.9/3.2/4.4/3.5
	2	0.88		4.3-4.5-4.7	4.3						
	3	0.82		4.8-5.0-5.2	3.6			3.4			4.6/8.7/5.4/5.1
24	1	1.07	1.05	3.8-4.0-4.2	2.6	45	70	5.9	70	45	3.6/4.3
	2	1.05	1.03	4.3-4.5-4.7	4.6						

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine			Before	After		Before	After	
39	1	3	1.5	8	6.5	1.2-1.5-1.8							
	2					1.2-1.5-1.8							
25	1	9	6.25			**1.8-2.3-2.8**	0.3*						
	2					**1.8-2.3-2.8**	0*						
1	1	7.00	6.00			1.2-1.5-1.8	0.2*						
	2					1.2-1.5-1.8	0.3*						
	3					1.2-1.5-1.8	0.38*						
24	1					**1.8-2.3-2.8**	0.01*						
	2					**1.8-2.3-2.8**	0.01*						

*line malfuction

\+ value in range but not recorded

Site Visit: 06Oct22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
						Before	After		Before	After	
39	1	1.07		3.8-4.0-4.2	0.01						
	2	1.07		4.3-4.5-4.7	4.3						
25	1	0.1	0.98	3.8-4.0-4.2							
	2	0.33	0.98	4.3-4.5-4.7							
1	1			3.8-4.0-4.2		31	29	3.9			
	2			4.3-4.5-4.7				4.7			
	3			4.8-5.0-5.2							
24	1			3.8-4.0-4.2	5.3			4.2			
	2			4.3-4.5-4.7							

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine			Before	After		Before	After	
39	1	7.5	4.5			1.2-1.5-1.8							
	2					1.2-1.5-1.8							
25	1	8	3.5			**1.8-2.3-2.8**							
	2					**1.8-2.3-2.8**							
1	1	4.50	3.00	9.00	8.00	1.2-1.5-1.8							
	2					1.2-1.5-1.8							
	3					1.2-1.5-1.8							
24	1	3.5	3	8.5	8	**1.8-2.3-2.8**							
	2					**1.8-2.3-2.8**							

*line malfuction

\+ value in range but not recorded

Site Visit: 13Oct22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
						Before	After		Before	After	
39	1	0.9		3.8-4.0-4.2							
	2	1.05		4.3-4.5-4.7							
25	1	0.5	1.05	3.8-4.0-4.2							
	2	0.75	1.05	4.3-4.5-4.7				4.7			
1	1			3.8-4.0-4.2	3.4	29	33	4.1			
	2			4.3-4.5-4.7	4.1	39	44	4.9	44	41	4.6
	3			4.8-5.0-5.2	5.6	43	39	4.6	39	42	5.1
24	1			3.8-4.0-4.2	4.4	35	31	3.3	31	37/43/45	3.2/3.6/3.4/4.2
	2			4.3-4.5-4.7							

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine			Before	After		Before	After	
39	1	7.5	4			1.2-1.5-1.8							
	2					1.2-1.5-1.8							
25	1	7.5	2.5		7.5	**1.8-2.3-2.8**							
	2					**1.8-2.3-2.8**							
1	1	8.00	5.00			1.2-1.5-1.8							
	2					1.2-1.5-1.8							
	3					1.2-1.5-1.8							
24	1	8.25	8			**1.8-2.3-2.8**							
	2					**1.8-2.3-2.8**							

*line malfuction

+ value in range but not recorded

Site Visit: 17Oct22

Pump Station #	Rack	GPM Initial	GPM Final	Ortho-P Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L	Adjust Chemical Feed Pump Speed		Ortho-P after Adjustment mg/L
						Before	After		Before	After	
39	1			3.8-4.0-4.2							
	2			4.3-4.5-4.7							
25	1	1.17	1.03	3.8-4.0-4.2							
	2	0.87	1.03	4.3-4.5-4.7	6.3	70	63	3.75			
1	1			3.8-4.0-4.2							
	2			4.3-4.5-4.7							
	3			4.8-5.0-5.2	5.6	45	38	4.2	38	45	5.3
24	1			3.8-4.0-4.2	>5.0	50	45	6	45	32	3.6
	2			4.3-4.5-4.7	4.98	45	38	3.2	38	45	4.8

Pump Station #	Rack	Tank Level (gal)		Solution added to tank (Gal)		Chlorine Residual Range, mg/L	Initial Conc	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L	Adjust Chemical Feed Pump Speed		Chlorine Residual after Adjustment, mg/L
		Ortho	Chlorine	Ortho	Chlorine			Before	After		Before	After	
39	1					1.2-1.5-1.8							
	2					1.2-1.5-1.8							
25	1					**1.8-2.3-2.8**							
	2					**1.8-2.3-2.8**							
1	1					1.2-1.5-1.8							
	2					1.2-1.5-1.8							
	3					1.2-1.5-1.8							
24	1					**1.8-2.3-2.8**							
	2					**1.8-2.3-2.8**							

*line malfuction

\+ value in range but not recorded

APPENDIX D – SOLUBILITY COLOR AND TURBIDITY MEASUREMENTS

Number of Exposure Days:	0	3	7	10	14	17	21	24	28	31	35	38	42	45	49	52	56	59	63	66
Sampling Event Number																				
Date	8/15/22	8/18/22	8/22/22	8/25/22	8/29/22	9/1/22	9/5/22	9/8/22	9/12/22	9/15/22	9/19/22	9/22/22	9/26/22	9/29/22	10/3/22	10/6/22	10/10/22	10/13/22	10/17/22	10/20/22
Exposure Days		3		7		6		7		7		7		7		7	4	3	4	7
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Station 1 - Raw																				
Time		11:58		12:33		11:57		12:50		12:04		12:04		12:20		11:30	11:32	11:32	11:32	11:08
Exposure Days		0.50		0.02		-0.03		0.04		-0.03		0.00		0.01		-0.03	0.00	0.00	0.00	-0.02
Iron mg/L		0.3		0.13		0.39												0.18		
Field Dissol mg/L		0.2		0.34		0.24		0.23		0.24		0.27		0.33		0.23		0.16		0.61
Color, PtCoU		15	16	4	69	3	26	11	13	18	15	16	0	91	6	36	0	33	0	31
Turbidity, ntu		1.64	1.39	1.54	1.75	1.97	1.26	1.59	0.45	3.53	1.02	1.55	2.52	2.61	299	2.13	0.54	1.63	0.52	1.76
Total P mg/L		0.26		0.52		0.15		0.15		0.15		0.15		0.15		45.99	0.15			
Ortho P mg/L		0.09		0.28		0.09		0.09		0.09		0.09		0.09		0.092	0.09			
Field Orthc mg/L																				
Field Orthc mg/L																				
Station 1 - Rack 1																				
Time		12:00		12:35		11:58		12:52		12:06		12:06		12:22		12:04	11:34	11:34	11:34	11:10
Exposure Days		0.5		0.02		-0.03		0.04		-0.03		0.00		0.01		-0.01	-0.02	0.00	0.00	-0.02
Iron mg/L		16		13		15												7.9		
µg/L																				
Field Dissol mg/L		0.18		0.27		0.19		0.22		0.7		0.19		0.17		0.17		0.12		0.11
Color, PtCoU		500	500	500	25	500	25	500	25	500	415	500	242	500	423	500	307	383	500	396
Turbidity, ntu		129	116	85.3	128	140	126	136	245	155	80.6	94.8	40.4	56	78.8	25	62.1	66.2	121	80.7
Total P-Lab mg/L		13.49		58.25		9.5		16.56		16.56		20.24		64.39		3.99	42.9			
Ortho P-La mg/L		9.4		34				59		8.7		13		42		47	26			
Field Orthc mg/L	11.3	8.5	7.1	2.9	4.8	3.8	4	5	4.6	3.9	4.3	3.8	2.5	5.7	3.6	-		3.4		
Field Orthc mg/L	7.4	6.1	3.8	4.1	3.9	-	3.5	4	4.2	4.2	3.6	3.8	4	3.8	3.5	3.9		4.1		
Station 1 - Rack 2																				
Time		12:03		12:38		11:59		12:52		12:08		12:08		12:24		12:06	11:36	11:36	11:36	11:12
Exposure Days		0.50		0.02		-0.03		0.04		-0.03		0.00		0.01		-0.01	-0.02	0.00	0.00	-0.02
Iron mg/L		18		15		14												9.6		
µg/L																				
Field Dissol mg/L		0.16		0.2		0.38		0.22		0.76		0.19		0.16		0.17		0.11		0.08
Color, PtCoU		500	500	500	25	500	25	273	25	500	306	500	295	500	478	500	500	500	317	414
Turbidity, ntu		106	84.3	110	119	110	94.5	51.2	86.6	116	60.2	106	46.3	53.9	88.3	63	106	102	71	68.3
Total P-Lab mg/L		1.26		67.452		82.78		52.12		24.53		24.22		45.99		64.39	39.9			
Ortho P-La mg/L		6.4		45		46		18		14		15		27		45	25			
Field Orthc mg/L	6	5.8	12.6	8.8	5	23.4	9.3	6.6	6.3	5.4	4.9	5	3.6	6.1	4.3			4.1		
Field Orthc mg/L	6	-	4.6	4.1	4.5	4.4	4.4	4.5	4.8	4.4	4.4	4.3	4.6	4.5	-	4.7		4.6		
Station 1 - Rack 3																				
Time		12:05		12:40		12:00		12:54		12:10		12:10		12:26		12:08	11:38	11:38	11:38	11:14
Exposure Days		0.50		0.02		-0.03		0.04		-0.03		0.00		0.01		-0.01	-0.02	0.00	0.00	-0.02
Iron mg/L		19		15		13												9.9		
µg/L																				
Field Dissol mg/L		0.17		0.21		0.19		0.25		0.56		0.17		0.15		0.18		0.2		0.23
Color, PtCoU		500	500	500	25	500	25	500	25	500	323	500	252	500	500	500	346	435	171	500
Turbidity, ntu		94.4	95.4	129	122	134	104	122	117	108	56.2	97	3.76	82.3	79.9	45.8	58.9	59.7	44.3	102
Total P-Lab mg/L		10.42		52.12				82.78		21.16		20.24		88.91		98.112	17			
Ortho P-La mg/L		7.5		26		7.1		43		13		13		48		57	31			
Field Orthc mg/L	5.2	6.8	6.8	4.2	6.4	5.1	6.5	6.5	4.9	5.8	6.1	4.9	3.3	6.5	3.6			5.6	5.65	
Field Orthc mg/L	6	5.7	4.8	5	5.2	-	5.9	4.9	4.9	5	4.9	4.9	5.2	5.3	5.1			5.1	5.3	

Number of Exposure Days:	0	3	7	10	14	17	21	24	28	31	35	38	42	45	49	52	56	59	63	66
Sampling Event Number																				
Date	8/15/22	8/18/22	8/22/22	8/25/22	8/29/22	9/1/22	9/5/22	9/8/22	9/12/22	9/15/22	9/19/22	9/22/22	9/26/22	9/29/22	10/3/22	10/6/22	10/10/22	10/13/22	10/17/22	10/20/22
Exposure Days		3		7		6		7		7		7		7		7	4	3	4	7
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Station 24-Raw																				
Time		14:25		15:58		14:28		15:40		14:56		13:52		10:06		14:52	11:36	13:24	14:32	13:12
Exposure Days		0.60		0.06		-0.06		0.05		-0.03		-0.04		-0.16		0.20	-0.14	0.075	0.05	-0.01
Iron mg/L		1.1		1.1		1.2												0.68		
µg/L																				
Field Dissol mg/L		0.94		1.29		1.12		1.2		2.2		1.88		1.02		0.99		0.88		1.08
Color, PtCoU		15	45	25	15	14	15	17	11	29	15	64	0	242	6	40	104	39	0	6
Turbidity, ntu		2.52	1.57	2.81	4.47	4.69	1.26	4.63	0.99	2.36	1.03	3.31	3.76	5.17	1.29	3.63	4.31	2.74	1.91	2.73
Total P mg/L		0.48		0.66		0.93		1.86		1.44		0.52		0.12		0.45	1.53			
Ortho P mg/L		0.2		0.4		0.71		1.5		0.93		0.43		0.12		0.23	1.3			
Field Orthc mg/L																				
Field Orthc mg/L																				
Station 24-Rack 1																				
Time		14:27		16:00		14:29		########		14:58		14:02		10:08		14:54	11:38	13:26	14:34	13:14
Exposure Days		0.60		0.06		-0.06		0.05		-0.03		-0.04		-0.16		0.20	-0.14	0.08	0.05	-0.01
Iron mg/L		17		9.5		9.6												5.8		
µg/L																				
Field Dissol mg/L		1.01		1.03		1.05		0.99		0.95		1.01		0.95		0.86		0.99		1.08
Color, PtCoU		246	315	332	320	305	319	301	343	321	294	446	219	500	261	307	307	295	150	203
Turbidity, ntu		76.2	98	54	74.4	66.5	49.5	71.3	67.8	59.2	69	43.2	54	54.8	45.2	41.5	42.5	38	25.2	56.1
Total P-Lab mg/L		18.3		8.7		12.6		10.5		10.2		10.12		2.88		8.4	10.5			
Ortho P-La mg/L		15		6.6		10		9.4		7.2		8.7		1.7		7	8.9			
Field Orthc mg/L	2.4	11	4.66	5.3	3.7	3.9	4.6	3.8		3	4.5	10.5	5.2	3.1	2.6	5.3		4.4	5	
Field Orthc mg/L	6	6.5	3.7	4	3.9	4.1	3.8	3.9	3.8	4.2	4.1	4.1	3.8	4.2	4.3	4.2		4.2	3.6	
Station 24- Rack 2																				
Time		14:30		16:04		14:30		15:44		15:00		14:04		10:10		11:56	13:40	13:28	14:36	13:16
Exposure Days		0.60		0.07		-0.07		0.05		-0.03		-0.04		-0.16		0.07	0.07	-0.01	0.05	-0.01
Iron mg/L		17		10		10												7.6		
µg/L																				
Field Dissol mg/L		1.04		1.07		1.03		1.01		2.28		1.05		0.96		1.04		0.74		0.86
Color, PtCoU		305	319	282	368	345	378	500	396	354	297	400	212	500	261	320	227	378	275	250
Turbidity, ntu		73.2	93	58.1	71	67.2	67.3	130	78.8	69.7	68.8	56.5	42.6	60.6	43.8	55.9	45.6	61.8	78.5	42.5
Total P-Lab mg/L		12.6		11.7		15		12.3		9.6		13.80		12.9		16.5	22			
Ortho P-La mg/L		11		9.3		12		11		7.1		11		11		13	27.9			
Field Orthc mg/L	4.9	10.2	4.27	7.1	3.8	4.7	5.1	4.6		5.7	4.7	8.3	5.6	4	4.6				4.98	
Field Orthc mg/L	5.8	6.3	4.8	5	4.5	4.7	4.8	4.7	4.5	4.4	4.7	4.6	4.5	4.4	4.6				4.8	

Value changed from >500 to 500 for graphing
Value changed from >25 to 25 for graphing
Value changed from <15 to 15
Value changed from <0 to 0 for graphing

APPENDIX E – COUPON WEIGHT LOSS REPORT

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	CDA122	ID Number	E1491
Initial Weight	13.2356	Installed	8/15/2022
Final Weight	13.1975	Removed	10/24/2022
Weight Loss	0.0381	Hours Exposed	1680
Density (g/cm3)	8.9400	Surface Area (in2)	3.3691

Mils Per Year : 0.4025
Comments : EVEN ETCH
Location : PUMP STATION 39 RACK 1D/KALAMAZOO CITY

Alloy	CDA122	ID Number	E1492
Initial Weight	13.2130	Installed	8/15/2022
Final Weight	13.1796	Removed	10/24/2022
Weight Loss	0.0334	Hours Exposed	1680
Density (g/cm3)	8.9400	Surface Area (in2)	3.3691

Mils Per Year : 0.3528
Comments : EVEN ETCH
Location : PUMP STATION 39 RACK 2D/KALAMAZOO CITY

Alloy	CDA122	ID Number	E1493
Initial Weight	13.2505	Installed	8/15/2022
Final Weight	13.2002	Removed	10/24/2022
Weight Loss	0.0503	Hours Exposed	1680
Density (g/cm3)	8.9400	Surface Area (in2)	3.3691

Mils Per Year : 0.5314
Comments : EVEN ETCH
Location : PUMP STATION 25 RACK 1D/KALAMAZOO CITY

Alloy	CDA122	ID Number	E1494
Initial Weight	13.2433	Installed	8/15/2022
Final Weight	13.1967	Removed	10/24/2022
Weight Loss	0.0466	Hours Exposed	1680
Density (g/cm3)	8.9400	Surface Area (in2)	3.3691

Mils Per Year : 0.4923
Comments : EVEN ETCH
Location : PUMP STATION 25 RACK 2D/KALAMAZOO CITY

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	CDA122	ID Number	E1495
Initial Weight	13.2304	Installed	8/15/2022
Final Weight	13.1925	Removed	10/24/2022
Weight Loss	0.0379	Hours Exposed	1680
Density (g/cm3)	8.9400	Surface Area (in2)	3.3691

Mils Per Year : 0.4004
Comments : EVEN ETCH
Location : PUMP STATION 1 RACK 1D/KALAMAZOO CITY

Alloy	CDA122	ID Number	E1496
Initial Weight	13.2338	Installed	8/15/2022
Final Weight	13.1889	Removed	10/24/2022
Weight Loss	0.0449	Hours Exposed	1680
Density (g/cm3)	8.9400	Surface Area (in2)	3.3691

Mils Per Year : 0.4743
Comments : EVEN ETCH
Location : PUMP STATION 1 RACK 2D/KALAMAZOO CITY

Alloy	CDA122	ID Number	E1497
Initial Weight	13.2329	Installed	8/15/2022
Final Weight	13.1935	Removed	10/24/2022
Weight Loss	0.0394	Hours Exposed	1680
Density (g/cm3)	8.9400	Surface Area (in2)	3.3691

Mils Per Year : 0.4162
Comments : EVEN ETCH
Location : PUMP STATION 1 RACK 3D/KALAMAZOO CITY

Alloy	CDA122	ID Number	E1498
Initial Weight	13.2317	Installed	8/15/2022
Final Weight	13.1978	Removed	10/24/2022
Weight Loss	0.0339	Hours Exposed	1680
Density (g/cm3)	8.9400	Surface Area (in2)	3.3691

Mils Per Year : 0.3581
Comments : EVEN ETCH
Location : PUMP STATION 24 RACK 1D/KALAMAZOO CITY

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	CDA122	ID Number	E1499
Initial Weight	13.2317	Installed	8/15/2022
Final Weight	13.1964	Removed	10/24/2022
Weight Loss	0.0353	Hours Exposed	1680
Density (g/cm3)	8.9400	Surface Area (in2)	3.3691

Mils Per Year : 0.3729
Comments : EVEN ETCH
Location : PUMP STATION 24 RACK 2D/KALAMAZOO CITY

Alloy	DC	ID Number	01
Initial Weight	11.8731	Installed	8/15/2022
Final Weight	11.4274	Removed	10/24/2022
Weight Loss	0.4457	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 5.8464
Comments : EVEN ETCH
Location : PUMP STATION 39 RACK 1A/KALAMAZOO CITY

Alloy	DC	ID Number	02
Initial Weight	11.8699	Installed	8/15/2022
Final Weight	11.4444	Removed	10/24/2022
Weight Loss	0.4255	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 5.5814
Comments : EVEN ETCH
Location : PUMP STATION 39 RACK 2A/KALAMAZOO CITY

Alloy	DC	ID Number	03
Initial Weight	11.8593	Installed	8/15/2022
Final Weight	11.7098	Removed	10/24/2022
Weight Loss	0.1495	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 1.9610
Comments : EVEN ETCH
Location : PUMP STATION 25 RACK 1A/KALAMAZOO CITY

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	DC	ID Number	04
Initial Weight	11.8008	Installed	8/15/2022
Final Weight	11.6433	Removed	10/24/2022
Weight Loss	0.1575	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 2.0660
Comments : EVEN ETCH
Location : PUMP STATION 25 RACK 2A/KALAMAZOO CITY

Alloy	DC	ID Number	05
Initial Weight	11.8331	Installed	8/15/2022
Final Weight	11.6670	Removed	10/25/2022
Weight Loss	0.1661	Hours Exposed	1704
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 2.1481
Comments : EVEN ETCH
Location : PUMP STATION 1 RACK 1A/KALAMAZOO CITY

Alloy	DC	ID Number	06
Initial Weight	11.8036	Installed	8/15/2022
Final Weight	11.6580	Removed	10/24/2022
Weight Loss	0.1456	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 1.9099
Comments : EVEN ETCH
Location : PUMP STATION 1 RACK 2A/KALAMAZOO CITY

Alloy	DC	ID Number	07
Initial Weight	11.8235	Installed	8/15/2022
Final Weight	11.6706	Removed	10/24/2022
Weight Loss	0.1529	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 2.0056
Comments : EVEN ETCH
Location : PUMP STATION 1 RACK 3A/KALAMAZOO CITY

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	DC	ID Number	08
Initial Weight	11.8003	Installed	8/15/2022
Final Weight	11.6382	Removed	10/24/2022
Weight Loss	0.1621	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 2.1263
Comments : EVEN ETCH
Location : PUMP STATION 24 RACK 1A/KALAMAZOO CITY

Alloy	DC	ID Number	09
Initial Weight	11.6067	Installed	8/15/2022
Final Weight	11.4737	Removed	10/24/2022
Weight Loss	0.1330	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 1.7446
Comments : EVEN ETCH
Location : PUMP STATION 24 RACK 2A/KALAMAZOO CITY

Alloy	DC	ID Number	10
Initial Weight	11.8300	Installed	8/15/2022
Final Weight	11.6839	Removed	10/24/2022
Weight Loss	0.1461	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 1.9164
Comments : EVEN ETCH
Location : SOLUBILITY PS 1 RACK 1/KALAMAZOO CITY

Alloy	DC	ID Number	11
Initial Weight	11.8565	Installed	8/15/2022
Final Weight	11.7233	Removed	10/24/2022
Weight Loss	0.1332	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 1.7472
Comments : EVEN ETCH
Location : SOLUBILITY PS 1 RACK 2/KALAMAZOO CITY

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	DC	ID Number	12
Initial Weight	11.8210	Installed	8/15/2022
Final Weight	11.6904	Removed	10/24/2022
Weight Loss	0.1306	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 1.7131
Comments : EVEN ETCH
Location : SOLUBILITY PS 1 RACK 3/KALAMAZOO CITY

Alloy	DC	ID Number	13
Initial Weight	11.8318	Installed	8/15/2022
Final Weight	11.7496	Removed	10/24/2022
Weight Loss	0.0822	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 1.0782
Comments : EVEN ETCH
Location : SOLUBILITY PS 24 RACK 1/KALAMAZOO CITY

Alloy	DC	ID Number	14
Initial Weight	11.8759	Installed	8/15/2022
Final Weight	11.7849	Removed	10/24/2022
Weight Loss	0.0910	Hours Exposed	1680
Density (g/cm3)	7.2000	Surface Area (in2)	3.3691

Mils Per Year : 1.1937
Comments : EVEN ETCH
Location : SOLUBILITY PS 24 RACK 2/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6050
Initial Weight	17.8579	Installed	8/15/2022
Final Weight	17.8418	Removed	10/24/2022
Weight Loss	0.0161	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.1340
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 39 RACK 1B/KALAMAZOO CITY

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	LEAD	ID Number	B6051
Initial Weight	18.3441	Installed	8/15/2022
Final Weight	18.3315	Removed	10/24/2022
Weight Loss	0.0126	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.1048
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 39 RACK 1C/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6052
Initial Weight	17.8941	Installed	8/15/2022
Final Weight	17.8841	Removed	10/24/2022
Weight Loss	0.0100	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0832
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 39 RACK 2B/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6053
Initial Weight	18.4686	Installed	8/15/2022
Final Weight	18.4586	Removed	10/24/2022
Weight Loss	0.0100	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0832
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 39 RACK 2C/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6054
Initial Weight	17.9882	Installed	8/15/2022
Final Weight	17.9702	Removed	10/24/2022
Weight Loss	0.0180	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.1498
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 25 RACK 1B/KALAMAZOO CITY

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	LEAD	ID Number	B6055
Initial Weight	18.0944	Installed	8/15/2022
Final Weight	18.0814	Removed	10/25/2022
Weight Loss	0.0130	Hours Exposed	1704
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.1067
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 25 RACK 1C/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6056
Initial Weight	17.9754	Installed	8/15/2022
Final Weight	17.9695	Removed	10/24/2022
Weight Loss	0.0059	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0491
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 25 RACK 2B/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6057
Initial Weight	18.1904	Installed	8/15/2022
Final Weight	18.1782	Removed	10/25/2022
Weight Loss	0.0122	Hours Exposed	1704
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.1001
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 25 RACK 2C/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6058
Initial Weight	17.7537	Installed	8/15/2022
Final Weight	17.7424	Removed	10/24/2022
Weight Loss	0.0113	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0940
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 1 RACK 1B/KALAMAZOO CITY

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	LEAD	ID Number	B6059
Initial Weight	18.1881	Installed	8/15/2022
Final Weight	18.1776	Removed	10/24/2022
Weight Loss	0.0105	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0874
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 1 RACK 1C/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6060
Initial Weight	17.8043	Installed	8/15/2022
Final Weight	17.7967	Removed	10/24/2022
Weight Loss	0.0076	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0632
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 1 RACK 2B/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6061
Initial Weight	17.9296	Installed	8/15/2022
Final Weight	17.9218	Removed	10/24/2022
Weight Loss	0.0078	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0649
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 1 RACK 2C/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6062
Initial Weight	18.4087	Installed	8/15/2022
Final Weight	18.4013	Removed	10/24/2022
Weight Loss	0.0074	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0616
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 1 RACK 3B/KALAMAZOO CITY

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	LEAD	ID Number	B6063
Initial Weight	17.7682	Installed	8/15/2022
Final Weight	17.7606	Removed	10/24/2022
Weight Loss	0.0076	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0632
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 1 RACK 3C/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6064
Initial Weight	17.9940	Installed	8/15/2022
Final Weight	17.9848	Removed	10/24/2022
Weight Loss	0.0092	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0766
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 24 RACK 1B/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6065
Initial Weight	17.8959	Installed	8/15/2022
Final Weight	17.8852	Removed	10/24/2022
Weight Loss	0.0107	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0890
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 24 RACK 1C/KALAMAZOO CITY

Alloy	LEAD	ID Number	B6066
Initial Weight	18.1266	Installed	8/15/2022
Final Weight	18.1147	Removed	10/24/2022
Weight Loss	0.0119	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0990
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 24 RACK 2B/KALAMAZOO CITY

Metal Samples,Co., Inc.
Phone: (256) 358-4202
Corrosion Analysis Data Report

Customer : TETRA TECH,INC Shop Order : 220732
Purchase Order: MAIL/JAMES

Alloy	LEAD	ID Number	B6067
Initial Weight	17.9343	Installed	8/15/2022
Final Weight	17.9250	Removed	10/24/2022
Weight Loss	0.0093	Hours Exposed	1680
Density (g/cm3)	11.3500	Surface Area (in2)	3.3691

Mils Per Year : 0.0774
Comments : NO VISIBLE ETCHING
Location : PUMP STATION 24 RACK 2C/KALAMAZOO CITY

APPENDIX F – LABORATORY ANALYSIS REPORTS

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-34743-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
8/29/2022 2:53:07 PM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 8
QC Sample Results 13
QC Association Summary 21
Lab Chronicle 25
Certification Summary 29
Method Summary 30
Sample Summary 31
Chain of Custody 32
Receipt Checklists 39

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Qualifiers

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

General Chemistry

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

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-34743-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-34743-1

Receipt
The samples were received on 8/19/2022 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.6°C

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

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: STAG-S39R1 — Lab Sample ID: 810-34743-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	92		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	230		1.0		ug/L	1		200.8	Total Recoverable
Lead	280		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	7.6		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	10		1.0		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	23		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S39R2 — Lab Sample ID: 810-34743-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	160		1.0		ug/L	1		200.8	Total Recoverable
Lead	740		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	14		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	19		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	43		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: RAW-539 — Lab Sample ID: 810-34743-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	88		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	7.5		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.097		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.25		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.30		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R1 — Lab Sample ID: 810-34743-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	82		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	4.4		1.0		ug/L	1		200.8	Total/NA
Lead	17		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	1.8		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	2.7		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	5.7		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-34743-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	81		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	9.2		1.0		ug/L	1		200.8	Total/NA
Lead	40		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	3.3		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	3.8		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	10		0.46		mg/L	5		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: RAW-S25 — Lab Sample ID: 810-34743-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	81		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	6.0		1.0		ug/L	1		200.8	Total/NA
Phosphorus	0.088		0.050		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-34743-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	99		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	26		1.0		ug/L	1		200.8	Total/NA
Lead	120		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	3.1		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	4.4		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	9.4		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-34743-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	99		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	11		1.0		ug/L	1		200.8	Total/NA
Lead	22		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.1		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	0.41		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	6.4		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-34743-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	99		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	17		1.0		ug/L	1		200.8	Total/NA
Lead	41		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.4		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	3.4		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	7.5		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S1 — Lab Sample ID: 810-34743-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	99		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.0		1.0		ug/L	1		200.8	Total/NA
Phosphorus	0.086		0.050		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-34743-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	58		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	18		1.0		ug/L	1		200.8	Total/NA
Lead	47		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	4.9		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	6.1		0.50		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	15		0.46		mg/L	5		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-34743-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	57		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	19		1.0		ug/L	1		200.8	Total/NA
Lead	44		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	3.6		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	4.2		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	11		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S24 — Lab Sample ID: 810-34743-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	57		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	4.4		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.065		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.16		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.20		0.092		mg/L	1		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-34743-1
Date Collected: 08/18/22 08:05
Matrix: Water
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	92		0.10		mg/L		08/23/22 14:30	08/25/22 16:14	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	230		1.0		ug/L		08/23/22 14:30	08/24/22 13:08	1
Lead	280		0.50		ug/L		08/23/22 14:30	08/24/22 13:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	7.6		0.75		mg/L			08/19/22 16:02	25
Phosphorus	10		1.0		mg/L		08/26/22 08:54	08/26/22 09:18	1
Orthophosphate as PO4	23		2.3		mg/L			08/19/22 16:02	25

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-34743-2
Date Collected: 08/18/22 08:08
Matrix: Water
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		08/23/22 14:30	08/25/22 16:20	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	160		1.0		ug/L		08/23/22 14:30	08/24/22 13:10	1
Lead	740		0.50		ug/L		08/23/22 14:30	08/24/22 13:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	14		0.75		mg/L			08/19/22 16:04	25
Phosphorus	19		1.3		mg/L		08/26/22 07:00	08/26/22 09:14	1
Orthophosphate as PO4	43		2.3		mg/L			08/19/22 16:04	25

Client Sample ID: RAW-539

Lab Sample ID: 810-34743-3
Date Collected: 08/18/22 07:55
Matrix: Water
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	88		0.10		mg/L			08/25/22 19:13	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	7.5		1.0		ug/L			08/24/22 15:42	1
Lead	<0.50		0.50		ug/L			08/24/22 15:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.097		0.030		mg/L			08/19/22 15:40	1
Phosphorus	0.25		0.050		mg/L		08/23/22 08:52	08/23/22 11:55	1
Orthophosphate as PO4	0.30		0.092		mg/L			08/19/22 15:40	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-34743-4
Matrix: Water
Date Collected: 08/18/22 09:55
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	82		0.10		mg/L			08/25/22 18:52	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	4.4		1.0		ug/L			08/24/22 15:44	1
Lead	17		0.50		ug/L			08/24/22 15:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	1.8		0.15		mg/L			08/19/22 16:04	5
Phosphorus	2.7		0.25		mg/L		08/25/22 09:17	08/25/22 11:39	1
Orthophosphate as PO4	5.7		0.46		mg/L			08/19/22 16:04	5

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-34743-5
Matrix: Water
Date Collected: 08/18/22 10:00
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	81		0.10		mg/L			08/25/22 14:59	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	9.2		1.0		ug/L			08/26/22 14:05	1
Lead	40		0.50		ug/L			08/26/22 14:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	3.3		0.15		mg/L			08/19/22 16:05	5
Phosphorus	3.8		0.25		mg/L		08/24/22 09:21	08/24/22 11:37	1
Orthophosphate as PO4	10		0.46		mg/L			08/19/22 16:05	5

Client Sample ID: RAW-S25

Lab Sample ID: 810-34743-6
Matrix: Water
Date Collected: 08/18/22 09:50
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	81		0.10		mg/L			08/25/22 15:06	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	6.0		1.0		ug/L			08/26/22 14:12	1
Lead	<0.50		0.50		ug/L			08/26/22 14:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.030		0.030		mg/L			08/19/22 16:10	1
Phosphorus	0.088		0.050		mg/L		08/23/22 09:18	08/23/22 11:55	1
Orthophosphate as PO4	<0.092		0.092		mg/L			08/19/22 16:10	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-34743-7
Matrix: Water
Date Collected: 08/18/22 12:00
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	99		0.10		mg/L			08/25/22 15:08	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	26		1.0		ug/L			08/26/22 14:14	1
Lead	120		0.50		ug/L			08/26/22 14:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	3.1		0.15		mg/L			08/19/22 16:14	5
Phosphorus	4.4		0.25		mg/L		08/25/22 09:26	08/25/22 11:39	1
Orthophosphate as PO4	9.4		0.46		mg/L			08/19/22 16:14	5

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-34743-8
Matrix: Water
Date Collected: 08/18/22 12:03
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	99		0.10		mg/L			08/25/22 15:10	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	11		1.0		ug/L			08/26/22 14:16	1
Lead	22		0.50		ug/L			08/26/22 14:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	2.1		0.15		mg/L			08/19/22 16:14	5
Phosphorus	0.41		0.050		mg/L		08/23/22 09:35	08/23/22 11:56	1
Orthophosphate as PO4	6.4		0.46		mg/L			08/19/22 16:14	5

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-34743-9
Matrix: Water
Date Collected: 08/18/22 12:05
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	99		0.10		mg/L			08/25/22 15:12	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	17		1.0		ug/L			08/26/22 14:23	1
Lead	41		0.50		ug/L			08/26/22 14:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	2.4		0.15		mg/L			08/19/22 16:06	5
Phosphorus	3.4		0.25		mg/L		08/25/22 09:35	08/25/22 11:39	1
Orthophosphate as PO4	7.5		0.46		mg/L			08/19/22 16:06	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: RAW-S1

Lab Sample ID: 810-34743-10
Date Collected: 08/18/22 11:58
Matrix: Water
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	99		0.10		mg/L			08/25/22 15:14	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.0		1.0		ug/L			08/26/22 14:25	1
Lead	<0.50		0.50		ug/L			08/26/22 14:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.030		0.030		mg/L			08/19/22 15:42	1
Phosphorus	0.086		0.050		mg/L		08/23/22 09:52	08/23/22 11:56	1
Orthophosphate as PO4	<0.092		0.092		mg/L			08/19/22 15:42	1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-34743-11
Date Collected: 08/18/22 14:27
Matrix: Water
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	58		0.10		mg/L			08/25/22 15:16	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	18		1.0		ug/L			08/26/22 14:28	1
Lead	47		0.50		ug/L			08/26/22 14:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	4.9		0.15		mg/L			08/19/22 16:15	5
Phosphorus	6.1		0.50		mg/L		08/25/22 11:16	08/25/22 11:41	1
Orthophosphate as PO4	15		0.46		mg/L			08/19/22 16:15	5

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-34743-12
Date Collected: 08/18/22 14:30
Matrix: Water
Date Received: 08/19/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	57		0.10		mg/L			08/25/22 15:18	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	19		1.0		ug/L			08/26/22 14:30	1
Lead	44		0.50		ug/L			08/26/22 14:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	3.6		0.15		mg/L			08/19/22 16:15	5
Phosphorus	4.2		0.25		mg/L		08/24/22 09:52	08/24/22 11:37	1
Orthophosphate as PO4	11		0.46		mg/L			08/19/22 16:15	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: RAW-S24

Lab Sample ID: 810-34743-13

Date Collected: 08/18/22 14:25
Date Received: 08/19/22 08:45

Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	57		0.10		mg/L			08/25/22 15:21	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	4.4		1.0		ug/L			08/26/22 14:32	1
Lead	<0.50		0.50		ug/L			08/26/22 14:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.065		0.030		mg/L			08/19/22 15:45	1
Phosphorus	0.16		0.050		mg/L		08/23/22 10:26	08/23/22 11:57	1
Orthophosphate as PO4	0.20		0.092		mg/L			08/19/22 15:45	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-29501/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29501

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			08/25/22 14:51	1

Lab Sample ID: LCS 810-29501/15 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29501

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.89		mg/L		98	85 - 115

Lab Sample ID: LLCS 810-29501/13 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29501

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0942	J	mg/L		94	50 - 150

Lab Sample ID: 810-34743-5 MS — **Client Sample ID: STAG-S25R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29501

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	81		5.00	85.6	4	mg/L		82	70 - 130

Lab Sample ID: 810-34743-5 MSD — **Client Sample ID: STAG-S25R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29501

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	81		5.00	85.5	4	mg/L		81	70 - 130	0	20

Lab Sample ID: MB 810-29507/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29507

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			08/25/22 17:44	1

Lab Sample ID: MB 810-29507/45 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29507

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			08/25/22 18:58	1

Lab Sample ID: LCS 810-29507/15 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29507

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.85		mg/L		97	85 - 115

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: LCS 810-29507/46 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29507

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.89		mg/L		98	85 - 115

Lab Sample ID: LLCS 810-29507/19 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29507

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0906	J	mg/L		91	50 - 150

Lab Sample ID: MB 810-29148/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 29501 — **Prep Batch: 29148**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		08/23/22 14:30	08/25/22 15:35	1

Lab Sample ID: LCS 810-29148/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 29501 — **Prep Batch: 29148**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.94		mg/L		99	85 - 115

Lab Sample ID: LLCS 810-29148/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 29501 — **Prep Batch: 29148**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0941	J	mg/L		94	50 - 150

Lab Sample ID: 810-34743-1 MS — **Client Sample ID: STAG-S39R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 29501 — **Prep Batch: 29148**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	92		5.00	95.8	4	mg/L		75	70 - 130

Lab Sample ID: 810-34743-1 MSD — **Client Sample ID: STAG-S39R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 29501 — **Prep Batch: 29148**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	92		5.00	94.1	4	mg/L		41	70 - 130	2	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-29275/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29275

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			08/24/22 13:53	1
Lead	<0.50		0.50		ug/L			08/24/22 13:53	1

Lab Sample ID: MB 810-29275/29 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29275

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			08/24/22 14:35	1
Lead	<0.50		0.50		ug/L			08/24/22 14:35	1

Lab Sample ID: LCS 810-29275/30 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29275

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	49.9		ug/L		100	85 - 115
Lead	50.0	51.4		ug/L		103	85 - 115

Lab Sample ID: LLCS 810-29275/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29275

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		92	50 - 150
Lead	0.300	0.286	J	ug/L		95	50 - 150

Lab Sample ID: LLCS 810-29275/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29275

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.991	J	ug/L		99	50 - 150

Lab Sample ID: MB 810-29690/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29690

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			08/26/22 12:28	1
Lead	<0.50		0.50		ug/L			08/26/22 12:28	1

Lab Sample ID: MB 810-29690/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29690

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			08/26/22 13:36	1
Lead	<0.50		0.50		ug/L			08/26/22 13:36	1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 810-29690/44 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29690

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	51.0		ug/L		102	85 - 115
Lead	50.0	52.6		ug/L		105	85 - 115

Lab Sample ID: LLCS 810-29690/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29690

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	0.300	0.394	J	ug/L		131	50 - 150

Lab Sample ID: LLCS 810-29690/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29690

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	1.02		ug/L		102	50 - 150

Lab Sample ID: 810-34743-8 MS — **Client Sample ID: STAG-S1R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29690

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	11		50.0	60.4		ug/L		99	70 - 130
Lead	22		50.0	76.4		ug/L		109	70 - 130

Lab Sample ID: 810-34743-8 MSD — **Client Sample ID: STAG-S1R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29690

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	11		50.0	60.4		ug/L		99	70 - 130	0	20
Lead	22		50.0	76.5		ug/L		109	70 - 130	0	20

Lab Sample ID: MB 810-29149/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 29241 — **Prep Batch: 29149**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		08/23/22 14:30	08/24/22 12:22	1
Lead	<0.50		0.50		ug/L		08/23/22 14:30	08/24/22 12:22	1

Lab Sample ID: LCS 810-29149/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 29241 — **Prep Batch: 29149**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	50.0		ug/L		100	85 - 115
Lead	50.0	52.5		ug/L		105	85 - 115

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-29149/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 29241 — **Prep Batch: 29149**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		119	50 - 150
Lead	0.300	0.315	J	ug/L		105	50 - 150

Lab Sample ID: LLCS 810-29149/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 29241 — **Prep Batch: 29149**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	1.02		ug/L		102	50 - 150

Method: SM 4500 P E - Phosphorus

Lab Sample ID: MBL 810-28982/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29044 — **Prep Batch: 28982**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		08/23/22 08:09	08/23/22 11:54	1

Lab Sample ID: LCS 810-28982/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29044 — **Prep Batch: 28982**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.523		mg/L		105	86 - 113

Lab Sample ID: LLCS 810-28982/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29044 — **Prep Batch: 28982**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0620		mg/L		124	50 - 150

Lab Sample ID: MBL 810-29175/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29219 — **Prep Batch: 29175**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		08/24/22 08:21	08/24/22 11:35	1

Lab Sample ID: LCS 810-29175/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29219 — **Prep Batch: 29175**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.535		mg/L		107	86 - 113

Method: SM 4500 P E - Phosphorus (Continued)

Lab Sample ID: LLCS 810-29175/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29219 — **Prep Batch: 29175**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0560		mg/L		112	50 - 150

Lab Sample ID: MBL 810-29363/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29415 — **Prep Batch: 29363**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		08/25/22 08:22	08/25/22 11:38	1

Lab Sample ID: LCS 810-29363/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29415 — **Prep Batch: 29363**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.532		mg/L		106	86 - 113

Lab Sample ID: LLCS 810-29363/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29415 — **Prep Batch: 29363**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0620		mg/L		124	50 - 150

Lab Sample ID: MBL 810-29569/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29603 — **Prep Batch: 29569**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		08/26/22 06:19	08/26/22 09:13	1

Lab Sample ID: LCS 810-29569/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29603 — **Prep Batch: 29569**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.534		mg/L		107	86 - 113

Lab Sample ID: LLCS 810-29569/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 29603 — **Prep Batch: 29569**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0660		mg/L		132	50 - 150

Method: SM 4500 P E - Orthophosphate

Lab Sample ID: MBL 810-28677/31 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			08/19/22 15:50	1
Orthophosphate as PO4	<0.046		0.092		mg/L			08/19/22 15:50	1

Lab Sample ID: MBL 810-28677/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			08/19/22 15:37	1
Orthophosphate as PO4	<0.046		0.092		mg/L			08/19/22 15:37	1

Lab Sample ID: MBL 810-28677/58 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			08/19/22 16:09	1
Orthophosphate as PO4	<0.046		0.092		mg/L			08/19/22 16:09	1

Lab Sample ID: LCS 810-28677/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.503		mg/L		101	84 - 109

Lab Sample ID: LCS 810-28677/30 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.498		mg/L		100	84 - 109

Lab Sample ID: LCS 810-28677/57 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.500		mg/L		100	84 - 109

Lab Sample ID: LLCS 810-28677/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0270	J	mg/L		90	50 - 150

Method: SM 4500 P E - Orthophosphate (Continued)

Lab Sample ID: LLCS 810-28677/29 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho			0.0300	0.0300		mg/L		100	50 - 150		

Lab Sample ID: LLCS 810-28677/56 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho			0.0300	0.0260	J	mg/L		87	50 - 150		

Lab Sample ID: 810-34743-6 MS — **Client Sample ID: RAW-S25**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho	<0.030		0.500	0.536		mg/L		107	75 - 195		

Lab Sample ID: 810-34743-6 MSD — **Client Sample ID: RAW-S25**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 28677

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphate, ortho	<0.030		0.500	0.541		mg/L		108	75 - 195	1	20

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Metals

Prep Batch: 29148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-1	STAG-S39R1	Total Recoverable	Water	200.7	
810-34743-2	STAG-S39R2	Total Recoverable	Water	200.7	
MB 810-29148/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-29148/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-29148/3-A	Lab Control Sample	Total Recoverable	Water	200.7	
810-34743-1 MS	STAG-S39R1	Total Recoverable	Water	200.7	
810-34743-1 MSD	STAG-S39R1	Total Recoverable	Water	200.7	

Prep Batch: 29149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-1	STAG-S39R1	Total Recoverable	Water	200.8	
810-34743-2	STAG-S39R2	Total Recoverable	Water	200.8	
MB 810-29149/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-29149/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-29149/2-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-29149/3-A	Lab Control Sample	Total Recoverable	Water	200.8	

Analysis Batch: 29241

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-1	STAG-S39R1	Total Recoverable	Water	200.8	29149
810-34743-2	STAG-S39R2	Total Recoverable	Water	200.8	29149
MB 810-29149/1-A	Method Blank	Total Recoverable	Water	200.8	29149
LCS 810-29149/6-A	Lab Control Sample	Total Recoverable	Water	200.8	29149
LLCS 810-29149/2-A	Lab Control Sample	Total Recoverable	Water	200.8	29149
LLCS 810-29149/3-A	Lab Control Sample	Total Recoverable	Water	200.8	29149

Analysis Batch: 29275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-3	RAW-539	Total/NA	Water	200.8	
810-34743-4	STAG-S25R1	Total/NA	Water	200.8	
MB 810-29275/13	Method Blank	Total/NA	Water	200.8	
MB 810-29275/29	Method Blank	Total/NA	Water	200.8	
LCS 810-29275/30	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-29275/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-29275/12	Lab Control Sample	Total/NA	Water	200.8	

Analysis Batch: 29501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-1	STAG-S39R1	Total Recoverable	Water	200.7 Rev 4.4	29148
810-34743-2	STAG-S39R2	Total Recoverable	Water	200.7 Rev 4.4	29148
810-34743-5	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	
810-34743-6	RAW-S25	Total/NA	Water	200.7 Rev 4.4	
810-34743-7	STAG-S1R1	Total/NA	Water	200.7 Rev 4.4	
810-34743-8	STAG-S1R2	Total/NA	Water	200.7 Rev 4.4	
810-34743-9	STAG-S1R3	Total/NA	Water	200.7 Rev 4.4	
810-34743-10	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-34743-11	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-34743-12	STAG-S24R2	Total/NA	Water	200.7 Rev 4.4	
810-34743-13	RAW-S24	Total/NA	Water	200.7 Rev 4.4	
MB 810-29148/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	29148
MB 810-29501/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	

Metals (Continued)

Analysis Batch: 29501 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 810-29148/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	29148
LCS 810-29501/15	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-29148/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	29148
LLCS 810-29501/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-34743-1 MS	STAG-S39R1	Total Recoverable	Water	200.7 Rev 4.4	29148
810-34743-1 MSD	STAG-S39R1	Total Recoverable	Water	200.7 Rev 4.4	29148
810-34743-5 MS	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	
810-34743-5 MSD	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	

Analysis Batch: 29507

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-3	RAW-539	Total/NA	Water	200.7 Rev 4.4	
810-34743-4	STAG-S25R1	Total/NA	Water	200.7 Rev 4.4	
MB 810-29507/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-29507/45	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-29507/15	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LCS 810-29507/46	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-29507/19	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	

Analysis Batch: 29690

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-5	STAG-S25R2	Total/NA	Water	200.8	
810-34743-6	RAW-S25	Total/NA	Water	200.8	
810-34743-7	STAG-S1R1	Total/NA	Water	200.8	
810-34743-8	STAG-S1R2	Total/NA	Water	200.8	
810-34743-9	STAG-S1R3	Total/NA	Water	200.8	
810-34743-10	RAW-S1	Total/NA	Water	200.8	
810-34743-11	STAG-S24R1	Total/NA	Water	200.8	
810-34743-12	STAG-S24R2	Total/NA	Water	200.8	
810-34743-13	RAW-S24	Total/NA	Water	200.8	
MB 810-29690/13	Method Blank	Total/NA	Water	200.8	
MB 810-29690/43	Method Blank	Total/NA	Water	200.8	
LCS 810-29690/44	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-29690/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-29690/12	Lab Control Sample	Total/NA	Water	200.8	
810-34743-8 MS	STAG-S1R2	Total/NA	Water	200.8	
810-34743-8 MSD	STAG-S1R2	Total/NA	Water	200.8	

General Chemistry

Analysis Batch: 28677

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-1	STAG-S39R1	Total/NA	Water	SM 4500 P E	
810-34743-2	STAG-S39R2	Total/NA	Water	SM 4500 P E	
810-34743-3	RAW-539	Total/NA	Water	SM 4500 P E	
810-34743-4	STAG-S25R1	Total/NA	Water	SM 4500 P E	
810-34743-5	STAG-S25R2	Total/NA	Water	SM 4500 P E	
810-34743-6	RAW-S25	Total/NA	Water	SM 4500 P E	
810-34743-7	STAG-S1R1	Total/NA	Water	SM 4500 P E	
810-34743-8	STAG-S1R2	Total/NA	Water	SM 4500 P E	
810-34743-9	STAG-S1R3	Total/NA	Water	SM 4500 P E	

General Chemistry (Continued)

Analysis Batch: 28677 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-10	RAW-S1	Total/NA	Water	SM 4500 P E	
810-34743-11	STAG-S24R1	Total/NA	Water	SM 4500 P E	
810-34743-12	STAG-S24R2	Total/NA	Water	SM 4500 P E	
810-34743-13	RAW-S24	Total/NA	Water	SM 4500 P E	
MBL 810-28677/31	Method Blank	Total/NA	Water	SM 4500 P E	
MBL 810-28677/4	Method Blank	Total/NA	Water	SM 4500 P E	
MBL 810-28677/58	Method Blank	Total/NA	Water	SM 4500 P E	
LCS 810-28677/3	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LCS 810-28677/30	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LCS 810-28677/57	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-28677/2	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-28677/29	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-28677/56	Lab Control Sample	Total/NA	Water	SM 4500 P E	
810-34743-6 MS	RAW-S25	Total/NA	Water	SM 4500 P E	
810-34743-6 MSD	RAW-S25	Total/NA	Water	SM 4500 P E	

Prep Batch: 28982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-3	RAW-539	Total/NA	Water	SM 4500 P B	
810-34743-6	RAW-S25	Total/NA	Water	SM 4500 P B	
810-34743-8	STAG-S1R2	Total/NA	Water	SM 4500 P B	
810-34743-10	RAW-S1	Total/NA	Water	SM 4500 P B	
810-34743-13	RAW-S24	Total/NA	Water	SM 4500 P B	
MBL 810-28982/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-28982/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-28982/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 29044

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-3	RAW-539	Total/NA	Water	SM 4500 P E	28982
810-34743-6	RAW-S25	Total/NA	Water	SM 4500 P E	28982
810-34743-8	STAG-S1R2	Total/NA	Water	SM 4500 P E	28982
810-34743-10	RAW-S1	Total/NA	Water	SM 4500 P E	28982
810-34743-13	RAW-S24	Total/NA	Water	SM 4500 P E	28982
MBL 810-28982/4-A	Method Blank	Total/NA	Water	SM 4500 P E	28982
LCS 810-28982/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	28982
LLCS 810-28982/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	28982

Prep Batch: 29175

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-5	STAG-S25R2	Total/NA	Water	SM 4500 P B	
810-34743-12	STAG-S24R2	Total/NA	Water	SM 4500 P B	
MBL 810-29175/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-29175/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-29175/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 29219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-5	STAG-S25R2	Total/NA	Water	SM 4500 P E	29175
810-34743-12	STAG-S24R2	Total/NA	Water	SM 4500 P E	29175
MBL 810-29175/4-A	Method Blank	Total/NA	Water	SM 4500 P E	29175

General Chemistry (Continued)

Analysis Batch: 29219 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 810-29175/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	29175
LLCS 810-29175/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	29175

Prep Batch: 29363

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-4	STAG-S25R1	Total/NA	Water	SM 4500 P B	
810-34743-7	STAG-S1R1	Total/NA	Water	SM 4500 P B	
810-34743-9	STAG-S1R3	Total/NA	Water	SM 4500 P B	
810-34743-11	STAG-S24R1	Total/NA	Water	SM 4500 P B	
MBL 810-29363/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-29363/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-29363/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 29415

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-4	STAG-S25R1	Total/NA	Water	SM 4500 P E	29363
810-34743-7	STAG-S1R1	Total/NA	Water	SM 4500 P E	29363
810-34743-9	STAG-S1R3	Total/NA	Water	SM 4500 P E	29363
810-34743-11	STAG-S24R1	Total/NA	Water	SM 4500 P E	29363
MBL 810-29363/4-A	Method Blank	Total/NA	Water	SM 4500 P E	29363
LCS 810-29363/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	29363
LLCS 810-29363/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	29363

Prep Batch: 29569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-1	STAG-S39R1	Total/NA	Water	SM 4500 P B	
810-34743-2	STAG-S39R2	Total/NA	Water	SM 4500 P B	
MBL 810-29569/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-29569/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-29569/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 29603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-34743-1	STAG-S39R1	Total/NA	Water	SM 4500 P E	29569
810-34743-2	STAG-S39R2	Total/NA	Water	SM 4500 P E	29569
MBL 810-29569/4-A	Method Blank	Total/NA	Water	SM 4500 P E	29569
LCS 810-29569/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	29569
LLCS 810-29569/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	29569

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-34743-1
Matrix: Water
Date Collected: 08/18/22 08:05
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			29148	NB	EA SB	08/23/22 14:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 16:14
Total Recoverable	Prep	200.8			29149	NB	EA SB	08/23/22 14:30
Total Recoverable	Analysis	200.8		1	29241	NB	EA SB	08/24/22 13:08
Total/NA	Analysis	SM 4500 P E		25	28677	JA	EA SB	08/19/22 16:02
Total/NA	Prep	SM 4500 P B			29569	KH	EA SB	08/26/22 08:54
Total/NA	Analysis	SM 4500 P E		1	29603	KH	EA SB	08/26/22 09:18

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-34743-2
Matrix: Water
Date Collected: 08/18/22 08:08
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			29148	NB	EA SB	08/23/22 14:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 16:20
Total Recoverable	Prep	200.8			29149	NB	EA SB	08/23/22 14:30
Total Recoverable	Analysis	200.8		1	29241	NB	EA SB	08/24/22 13:10
Total/NA	Analysis	SM 4500 P E		25	28677	JA	EA SB	08/19/22 16:04
Total/NA	Prep	SM 4500 P B			29569	KH	EA SB	08/26/22 07:00
Total/NA	Analysis	SM 4500 P E		1	29603	KH	EA SB	08/26/22 09:14

Client Sample ID: RAW-539

Lab Sample ID: 810-34743-3
Matrix: Water
Date Collected: 08/18/22 07:55
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29507	AC	EA SB	08/25/22 19:13
Total/NA	Analysis	200.8		1	29275	JK	EA SB	08/24/22 15:42
Total/NA	Analysis	SM 4500 P E		1	28677	JA	EA SB	08/19/22 15:40
Total/NA	Prep	SM 4500 P B			28982	KH	EA SB	08/23/22 08:52
Total/NA	Analysis	SM 4500 P E		1	29044	KH	EA SB	08/23/22 11:55

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-34743-4
Matrix: Water
Date Collected: 08/18/22 09:55
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29507	AC	EA SB	08/25/22 18:52
Total/NA	Analysis	200.8		1	29275	JK	EA SB	08/24/22 15:44
Total/NA	Analysis	SM 4500 P E		5	28677	JA	EA SB	08/19/22 16:04
Total/NA	Prep	SM 4500 P B			29363	KH	EA SB	08/25/22 09:17
Total/NA	Analysis	SM 4500 P E		1	29415	KH	EA SB	08/25/22 11:39

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-34743-5
Date Collected: 08/18/22 10:00
Matrix: Water
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 14:59
Total/NA	Analysis	200.8		1	29690	JK	EA SB	08/26/22 14:05
Total/NA	Analysis	SM 4500 P E		5	28677	JA	EA SB	08/19/22 16:05
Total/NA	Prep	SM 4500 P B			29175	KH	EA SB	08/24/22 09:21
Total/NA	Analysis	SM 4500 P E		1	29219	KH	EA SB	08/24/22 11:37

Client Sample ID: RAW-S25

Lab Sample ID: 810-34743-6
Date Collected: 08/18/22 09:50
Matrix: Water
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 15:06
Total/NA	Analysis	200.8		1	29690	JK	EA SB	08/26/22 14:12
Total/NA	Analysis	SM 4500 P E		1	28677	JA	EA SB	08/19/22 16:10
Total/NA	Prep	SM 4500 P B			28982	KH	EA SB	08/23/22 09:18
Total/NA	Analysis	SM 4500 P E		1	29044	KH	EA SB	08/23/22 11:55

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-34743-7
Date Collected: 08/18/22 12:00
Matrix: Water
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 15:08
Total/NA	Analysis	200.8		1	29690	JK	EA SB	08/26/22 14:14
Total/NA	Analysis	SM 4500 P E		5	28677	JA	EA SB	08/19/22 16:14
Total/NA	Prep	SM 4500 P B			29363	KH	EA SB	08/25/22 09:26
Total/NA	Analysis	SM 4500 P E		1	29415	KH	EA SB	08/25/22 11:39

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-34743-8
Date Collected: 08/18/22 12:03
Matrix: Water
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 15:10
Total/NA	Analysis	200.8		1	29690	JK	EA SB	08/26/22 14:16
Total/NA	Analysis	SM 4500 P E		5	28677	JA	EA SB	08/19/22 16:14
Total/NA	Prep	SM 4500 P B			28982	KH	EA SB	08/23/22 09:35
Total/NA	Analysis	SM 4500 P E		1	29044	KH	EA SB	08/23/22 11:56

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-34743-9
Date Collected: 08/18/22 12:05
Matrix: Water
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 15:12
Total/NA	Analysis	200.8		1	29690	JK	EA SB	08/26/22 14:23
Total/NA	Analysis	SM 4500 P E		5	28677	JA	EA SB	08/19/22 16:06
Total/NA	Prep	SM 4500 P B			29363	KH	EA SB	08/25/22 09:35
Total/NA	Analysis	SM 4500 P E		1	29415	KH	EA SB	08/25/22 11:39

Client Sample ID: RAW-S1

Lab Sample ID: 810-34743-10
Date Collected: 08/18/22 11:58
Matrix: Water
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 15:14
Total/NA	Analysis	200.8		1	29690	JK	EA SB	08/26/22 14:25
Total/NA	Analysis	SM 4500 P E		1	28677	JA	EA SB	08/19/22 15:42
Total/NA	Prep	SM 4500 P B			28982	KH	EA SB	08/23/22 09:52
Total/NA	Analysis	SM 4500 P E		1	29044	KH	EA SB	08/23/22 11:56

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-34743-11
Date Collected: 08/18/22 14:27
Matrix: Water
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 15:16
Total/NA	Analysis	200.8		1	29690	JK	EA SB	08/26/22 14:28
Total/NA	Analysis	SM 4500 P E		5	28677	JA	EA SB	08/19/22 16:15
Total/NA	Prep	SM 4500 P B			29363	KH	EA SB	08/25/22 11:16
Total/NA	Analysis	SM 4500 P E		1	29415	KH	EA SB	08/25/22 11:41

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-34743-12
Date Collected: 08/18/22 14:30
Matrix: Water
Date Received: 08/19/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 15:18
Total/NA	Analysis	200.8		1	29690	JK	EA SB	08/26/22 14:30
Total/NA	Analysis	SM 4500 P E		5	28677	JA	EA SB	08/19/22 16:15
Total/NA	Prep	SM 4500 P B			29175	KH	EA SB	08/24/22 09:52
Total/NA	Analysis	SM 4500 P E		1	29219	KH	EA SB	08/24/22 11:37

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Client Sample ID: RAW-S24

Date Collected: 08/18/22 14:25
Date Received: 08/19/22 08:45

Lab Sample ID: 810-34743-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	29501	AC	EA SB	08/25/22 15:21
Total/NA	Analysis	200.8		1	29690	JK	EA SB	08/26/22 14:32
Total/NA	Analysis	SM 4500 P E		1	28677	JA	EA SB	08/19/22 15:45
Total/NA	Prep	SM 4500 P B			28982	KH	EA SB	08/23/22 10:26
Total/NA	Analysis	SM 4500 P E		1	29044	KH	EA SB	08/23/22 11:57

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Calcium
200.7 Rev 4.4	200.7	Water	Calcium
200.8		Water	Copper
200.8		Water	Lead
200.8	200.8	Water	Copper
200.8	200.8	Water	Lead
SM 4500 P E		Water	Orthophosphate as PO4
SM 4500 P E		Water	Phosphate, ortho
SM 4500 P E	SM 4500 P B	Water	Phosphorus

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
SM 4500 P E	Orthophosphate	SM	EA SB
SM 4500 P E	Phosphorus	SM	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB
SM 4500 P B	Phosphorous, Total and Ortho	SM	EA SB

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-34743-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-34743-1	STAG-S39R1	Water	08/18/22 08:05	08/19/22 08:45
810-34743-2	STAG-S39R2	Water	08/18/22 08:08	08/19/22 08:45
810-34743-3	RAW-539	Water	08/18/22 07:55	08/19/22 08:45
810-34743-4	STAG-S25R1	Water	08/18/22 09:55	08/19/22 08:45
810-34743-5	STAG-S25R2	Water	08/18/22 10:00	08/19/22 08:45
810-34743-6	RAW-S25	Water	08/18/22 09:50	08/19/22 08:45
810-34743-7	STAG-S1R1	Water	08/18/22 12:00	08/19/22 08:45
810-34743-8	STAG-S1R2	Water	08/18/22 12:03	08/19/22 08:45
810-34743-9	STAG-S1R3	Water	08/18/22 12:05	08/19/22 08:45
810-34743-10	RAW-S1	Water	08/18/22 11:58	08/19/22 08:45
810-34743-11	STAG-S24R1	Water	08/18/22 14:27	08/19/22 08:45
810-34743-12	STAG-S24R2	Water	08/18/22 14:30	08/19/22 08:45
810-34743-13	RAW-S24	Water	08/18/22 14:25	08/19/22 08:45

Chain of Custody Record

eurofins Environment Testing America

810-34743 Chain of Custody

	Sampler: ~~Sara Hayes~~ David Beck	Lab PM: Mattheis, Joe	Carrier Tracking No(s): 5789 2152 8581	COC No: 810-13122-4161.1
Client Contact: Mr. James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin: MI	Page: Page 1 of 2
Company: Tetra Tech, Inc.	PWSID:			Job #:
Address: 201 E. Pine St., Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): STD			
State, Zip: FL, 32801	Compliance Project: Δ Yes X No			
Phone: 407-480-3907(Tel) 407-839-3790(Fax)	PO #: Purchase Order not required			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP-AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
STAG-S39R1		805		Water	N	N	X	X	X			
STAG-S39R2		808		Water								
RAW-S39		755		Water								
STAG-S25R1		955		Water								
STAG-S25R2		1000		Water								
RAW-S25		950		Water								
STAG-S1R1		1200		Water								
STAG-S1R2		1203		Water								
STAG-S1R3		1205		Water								
RAW-S1		1158		Water								
STAG-S24R1		1427		Water								

Initial Temp: 2.8
Corrected Temp: 2.6
IR Gun # 18

Possible Hazard Identification
X Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment: Fex Ex

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
D Beck	8/18/22 1700	TT	FEDEX		
			KDu		
			KDu	8-19-22 0845	

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

8/29/2022

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone: 574-233-4777 Fax: 574-233-8207

Chain of Custody Record

eurofins Environment Testing America

8/29/2022

Client Information	Sampler: ~~Sara Hayes~~ David Beck	Lab PM: Mattheis, Joe	Carrier Tracking No(s): 5789 2152 8581	COC No: 810-13122-4161.2
Client Contact: Mr. James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin: MI	Page: Page 2 of 2
Company: Tetra Tech, Inc.	PWSID:			Job #:
Address: 201 E. Pine St., Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): STD			
State, Zip: FL, 32801	Compliance Project: Δ Yes ☒ No			
Phone: 407-480-3907(Tel) 407-839-3790(Fax)	PO #: Purchase Order not required			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Y - Trizma
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP-AES Metals Scan	Total Number of containers	Special Instructions/Note:
				Preservation Code:			D	A	N	D		
STAB - S24R2		1430		Water	N	N	X	X	X			
RAW - S24		1425		Water	N	N	X	X	X			
				Water								
				Water								
				Water								
				Water								
				Water								
				Water								
				Water								

Initial Temp: 2.8
Corrected Temp: 2.6
IR Gun # 18
WET

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment: FedEx

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
D Beck	8/18/22 1700	TT	FedEx		
				8-19-22 0545	

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

810-34743 Chain of Custody

Chain of Custody Record

eurofins Environment Testing America

Sampler: ~~Sara Hayes~~ David Beck	Lab PM: Mattheis, Joe	Carrier Tracking No(s): 5789 2152 8581	COC No: 810-13122-4161.1
Client Contact: Mr. James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin: MI	Page: Page 1 of 2
Company: Tetra Tech, Inc.	PWSID		Job #:
Address: 201 E. Pine St., Ste. 1000	Due Date Requested:		
City: Orlando	TAT Requested (days): STD		
State, Zip: FL, 32801	Compliance Project: Δ Yes ☒ No		
Phone: 407-480-3907(Tel) 407-839-3790(Fax)	PO #: Purchase Order not required		
Email: james.christopher@tetratech.com	WO #:		
Project Name: Kalamazoo Pilot	Project #: 81003039		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP-AES Metals Scan	Total Number of containers	Special Instructions/Note:
				Preservation Code:			D	A	N	D		
STAG-S39R1		805		Water	N	N	X	X	X			
STAG-S39R2		808		Water								
RAW-S39		755		Water								
STAG-S25R1		955		Water								
STAG-S25R2		1000		Water								
RAW-S25		950		Water								
STAG-S1R1		1200		Water								
STAG-S1R2		1203		Water								
STAG-S1R3		1205		Water								
RAW-S1		1158		Water								
STAG-S24R1		1427		Water								

Initial Temp: 2.8
Corrected Temp: 2.6
IR Gun #: 18

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment: Fex Ex
Relinquished by: D Beck	Date/Time: 8/18/22 1700	Company: TT	Received by: FEDEX
Relinquished by:	Date/Time:	Company:	Received by: K Dm
Relinquished by:	Date/Time:	Company:	Received by: K Dm

Received by:	Date/Time:	Company:
Received by:	Date/Time:	Company:
Received by:	Date/Time: 8-14-22 0845	Company:

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

8/29/2022

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone: 574-233-4777 Fax: 574-233-8207

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler: ~~Sara Hayes~~ David Beck	Lab PM: Mattheis, Joe	Carrier Tracking No(s): 5789 2152 8581	COC No: 810-13122-4161.2
Client Contact: Mr. James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin: MI	Page: Page 2 of 2
Company: Tetra Tech, Inc.	PWSID:			Job #:
Address: 201 E. Pine St., Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): STD			
State, Zip: FL, 32801	Compliance Project: Δ Yes ☒ No			
Phone: 407-480-3907(Tel) 407-839-3790(Fax)	PO #: Purchase Order not required			
Email: james christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Y - Trizma
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP-AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
STAG - S24R2		1430		Water	N	N	X	X	X			
RAW - S24		1425		Water	N	N	X	X	X			
				Water								
				Water								
				Water								
				Water								
				Water								
				Water								
				Water								

Initial Temp: 2.8
Corrected Temp: 2.6
IR Gun # 18
WET

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment: FedEx

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
D Beck	8/18/22 1700	TT	FedEx		
				8-19-22 0545	

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

8/29/2022

South Bend, IN
110 S Hill Street
South Bend IN 46617
Phone: 574-233-4777 Fax: 574-233-8207

Chain of Custody Record

Updated

David Beck

eurofins

8/29/2022

Client Information	Sampler: Sam Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s): 5789 2152 8581	COC No: 810-13122-4161.1
Client Contact: Mr. James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin: MI	Page: Page 1 of 2
Company: Tetra Tech, Inc	PWSID:			Job #:
Address: 201 E. Pine St. Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): STD			
State, Zip: FL, 32801	Compliance Project: Δ Yes ☒ No			
Phone: 407-480-3907(Tel) 407-839-3790(Fax)	PO #: Purchase Order not required			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP-AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	D	A	N	D	X	
STAG-S39R1	8/18/22	805	G	Water	N	N	X	X	X			
STAG-S39R2		808		Water								
RAW-S39		755		Water								
STAG-S25R1		955		Water								
STAG-S25R2		1000		Water								
RAW-S25		950		Water								
STAG-S1R1		1200		Water								
STAG-S1R2		1203		Water								
STAG-S1R3		1205		Water								
RAW-S1		1158		Water								
STAG-S24R1		1427		Water								

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment: fex Exp

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
D Q Beck	8/18/22 1700	TT	FEDEX		
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

South Bend, IN
110 S Hill Street
South Bend IN 46617
Phone 574-233-4777 Fax 574-233-8207

Chain of Custody Record

eurofins

Client Information	Sampler: ~~Sara Hayes~~ David Beck	Lab PM: Mattheis, Joe	Carrier Tracking No(s): 5789 2152 8581	COC No: 810-13122-4161 2
Client Contact: Mr. James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin: MI	Page: Page 2 of 2
Company: Tetra Tech, Inc.	PWSID:			Job #:
Address: 201 E. Pine St., Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): STD			
State, Zip: FL, 32801	Compliance Project: Δ Yes ☒ No			
Phone: 407-480-3907(Tel) 407-839-3790(Fax)	PO #: Purchase Order not required			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Y - Trizma
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Wwater, Ssolid, Owaste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP-AES Metals Scan									Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D										
STA8 - S24R2	8/18/22	1430	G	Water	N	N	X	X	X											
RAW - S24	8/18/22	1425	G	Water	N	N	X	X	X											
				Water																
				Water																
				Water																
				Water																
				Water																
				Water																
				Water																

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment: FedEx		
Relinquished by: David Beck	Date/Time: 8/19/22 1700	Company: TT	Received by: Fed Ex	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-34743-1

Login Number: 34743
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-35720-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
9/9/2022 12:57:46 AM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 6
QC Sample Results 7
QC Association Summary 9
Lab Chronicle 10
Certification Summary 12
Method Summary 13
Sample Summary 14
Chain of Custody 15
Receipt Checklists 16

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Qualifiers

Metals

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

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Case Narrative

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Job ID: 810-35720-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-35720-1

Receipt
The samples were received on 8/30/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.4°C

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Client Sample ID: SOL-S1R1 — Lab Sample ID: 810-35720-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	16		0.010		mg/L	1		200.7 Rev 4.4	Total Recoverable

Client Sample ID: SOL-S1R2 — Lab Sample ID: 810-35720-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	18		0.010		mg/L	1		200.7 Rev 4.4	Total Recoverable

Client Sample ID: SOL-S1R3 — Lab Sample ID: 810-35720-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	19		0.010		mg/L	1		200.7 Rev 4.4	Total Recoverable

Client Sample ID: SOL-S24R1 — Lab Sample ID: 810-35720-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	17		0.010		mg/L	1		200.7 Rev 4.4	Total Recoverable

Client Sample ID: SOL-S24R2 — Lab Sample ID: 810-35720-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	17		0.010		mg/L	1		200.7 Rev 4.4	Total Recoverable

Client Sample ID: SOL-S1Raw — Lab Sample ID: 810-35720-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	0.30		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: SOL-S24Raw — Lab Sample ID: 810-35720-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	1.1		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Client Sample ID: SOL-S1R1 — Lab Sample ID: 810-35720-1

Date Collected: 08/19/22 12:10
Date Received: 08/30/22 09:30
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	16		0.010		mg/L		09/06/22 13:30	09/08/22 13:48	1

Client Sample ID: SOL-S1R2 — Lab Sample ID: 810-35720-2

Date Collected: 08/19/22 12:11
Date Received: 08/30/22 09:30
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	18		0.010		mg/L		09/06/22 13:30	09/08/22 13:54	1

Client Sample ID: SOL-S1R3 — Lab Sample ID: 810-35720-3

Date Collected: 08/19/22 12:12
Date Received: 08/30/22 09:30
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	19		0.010		mg/L		09/06/22 13:30	09/08/22 13:56	1

Client Sample ID: SOL-S24R1 — Lab Sample ID: 810-35720-4

Date Collected: 08/19/22 12:13
Date Received: 08/30/22 09:30
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17		0.010		mg/L		09/06/22 13:30	09/08/22 13:58	1

Client Sample ID: SOL-S24R2 — Lab Sample ID: 810-35720-5

Date Collected: 08/19/22 12:14
Date Received: 08/30/22 09:30
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	17		0.010		mg/L		09/06/22 13:30	09/08/22 14:01	1

Client Sample ID: SOL-S1Raw — Lab Sample ID: 810-35720-6

Date Collected: 08/19/22 12:15
Date Received: 08/30/22 09:30
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.30		0.010		mg/L			09/08/22 18:26	1

Client Sample ID: SOL-S24Raw — Lab Sample ID: 810-35720-7

Date Collected: 08/19/22 12:16
Date Received: 08/30/22 09:30
Matrix: Water

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1.1		0.010		mg/L			09/08/22 18:29	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-31090/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L			09/08/22 17:26	1

Lab Sample ID: MB 810-31090/44 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L			09/08/22 18:35	1

Lab Sample ID: LCS 810-31090/15 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5.00	5.03		mg/L		101	85 - 115

Lab Sample ID: LLCS 810-31090/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.0100	0.00880	J	mg/L		88	50 - 150

Lab Sample ID: MB 810-30801/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31026 — **Prep Batch: 30801**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L		09/06/22 13:30	09/08/22 13:39	1

Lab Sample ID: LCS 810-30801/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31026 — **Prep Batch: 30801**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5.00	5.00		mg/L		100	85 - 115

Lab Sample ID: LLCS 810-30801/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31026 — **Prep Batch: 30801**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.0100	0.00870	J	mg/L		87	50 - 150

Lab Sample ID: 810-35720-1 MS — **Client Sample ID: SOL-S1R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31026 — **Prep Batch: 30801**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	16		5.00	21.1		mg/L		97	70 - 130

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: 810-35720-1 MSD
Matrix: Water
Analysis Batch: 31026

Client Sample ID: SOL-S1R1
Prep Type: Total Recoverable
Prep Batch: 30801

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron	16		5.00	21.3		mg/L		101	70 - 130	1	20

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Metals

Prep Batch: 30801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35720-1	SOL-S1R1	Total Recoverable	Water	200.7	
810-35720-2	SOL-S1R2	Total Recoverable	Water	200.7	
810-35720-3	SOL-S1R3	Total Recoverable	Water	200.7	
810-35720-4	SOL-S24R1	Total Recoverable	Water	200.7	
810-35720-5	SOL-S24R2	Total Recoverable	Water	200.7	
MB 810-30801/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-30801/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-30801/2-A	Lab Control Sample	Total Recoverable	Water	200.7	
810-35720-1 MS	SOL-S1R1	Total Recoverable	Water	200.7	
810-35720-1 MSD	SOL-S1R1	Total Recoverable	Water	200.7	

Analysis Batch: 31026

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35720-1	SOL-S1R1	Total Recoverable	Water	200.7 Rev 4.4	30801
810-35720-2	SOL-S1R2	Total Recoverable	Water	200.7 Rev 4.4	30801
810-35720-3	SOL-S1R3	Total Recoverable	Water	200.7 Rev 4.4	30801
810-35720-4	SOL-S24R1	Total Recoverable	Water	200.7 Rev 4.4	30801
810-35720-5	SOL-S24R2	Total Recoverable	Water	200.7 Rev 4.4	30801
MB 810-30801/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	30801
LCS 810-30801/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	30801
LLCS 810-30801/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	30801
810-35720-1 MS	SOL-S1R1	Total Recoverable	Water	200.7 Rev 4.4	30801
810-35720-1 MSD	SOL-S1R1	Total Recoverable	Water	200.7 Rev 4.4	30801

Analysis Batch: 31090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35720-6	SOL-S1Raw	Total/NA	Water	200.7 Rev 4.4	
810-35720-7	SOL-S24Raw	Total/NA	Water	200.7 Rev 4.4	
MB 810-31090/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-31090/44	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-31090/15	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-31090/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Client Sample ID: SOL-S1R1 — Lab Sample ID: 810-35720-1

Date Collected: 08/19/22 12:10 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30801	NB	EA SB	09/06/22 13:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	31026	AC	EA SB	09/08/22 13:48

Client Sample ID: SOL-S1R2 — Lab Sample ID: 810-35720-2

Date Collected: 08/19/22 12:11 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30801	NB	EA SB	09/06/22 13:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	31026	AC	EA SB	09/08/22 13:54

Client Sample ID: SOL-S1R3 — Lab Sample ID: 810-35720-3

Date Collected: 08/19/22 12:12 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30801	NB	EA SB	09/06/22 13:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	31026	AC	EA SB	09/08/22 13:56

Client Sample ID: SOL-S24R1 — Lab Sample ID: 810-35720-4

Date Collected: 08/19/22 12:13 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30801	NB	EA SB	09/06/22 13:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	31026	AC	EA SB	09/08/22 13:58

Client Sample ID: SOL-S24R2 — Lab Sample ID: 810-35720-5

Date Collected: 08/19/22 12:14 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30801	NB	EA SB	09/06/22 13:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	31026	AC	EA SB	09/08/22 14:01

Client Sample ID: SOL-S1Raw — Lab Sample ID: 810-35720-6

Date Collected: 08/19/22 12:15 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 18:26

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Client Sample ID: SOL-S24Raw

Lab Sample ID: 810-35720-7

Date Collected: 08/19/22 12:16

Matrix: Water

Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 18:29

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Iron
200.7 Rev 4.4	200.7	Water	Iron

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35720-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-35720-1	SOL-S1R1	Water	08/19/22 12:10	08/30/22 09:30
810-35720-2	SOL-S1R2	Water	08/19/22 12:11	08/30/22 09:30
810-35720-3	SOL-S1R3	Water	08/19/22 12:12	08/30/22 09:30
810-35720-4	SOL-S24R1	Water	08/19/22 12:13	08/30/22 09:30
810-35720-5	SOL-S24R2	Water	08/19/22 12:14	08/30/22 09:30
810-35720-6	SOL-S1Raw	Water	08/19/22 12:15	08/30/22 09:30
810-35720-7	SOL-S24Raw	Water	08/19/22 12:16	08/30/22 09:30

810-35720 Chain of Custody

Chain of Custody Record

eurofins Environment Testing America

9/9/2022

	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s): 1270 *5789 2156 4693	COC No: 810-13120-4161.1
Client Contact: Mr. James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin: MI	Page: Page 1 of 1
Company: Tetra Tech, Inc.	PWSID:			Job #:
Address: 201 E. Pine St., Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): STD			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: ~~407-490-3907(Tel) 407-839-3790(Fax)~~	PO #: Purchase Order not required			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP-AES Metals Scan Total Iron								Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	D	A	N	D								X	
SOL-S1R1	08/19/22	12:10	G	Water	N	N				X								✓	pH Acceptable
SOL-S1R2		12:~~12~~ 11		Water														✓	
SOL-S1R3		12:~~13~~ 12		Water														✓	
SOL-S24R1		12:~~19~~ 13		Water														✓	Initial Temp: 0.6
SOL-S24R2		12:~~14~~ 14		Water														✓	Corrected Temp: 0.4
SOL-S1Raw		12:~~15~~ 15		Water														✓	IR Gun # 18
SOL-S24Raw		12:~~16~~ 16		Water														✓	
				Water															
				Water															
				Water															
				Water															

Possible Hazard Identification

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Sara Hayes	08/19/22 12:30	TE	Fridge		
Fridge	08/29/22 16:00	TT	Fedex		
				8-30-22 09:30	

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: Wet

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-35720-1

Login Number: 35720
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-35803-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
9/13/2022 1:52:46 PM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 8
QC Sample Results 13
QC Association Summary 19
Lab Chronicle 23
Certification Summary 27
Method Summary 28
Sample Summary 29
Chain of Custody 30
Receipt Checklists 32

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Qualifiers

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

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-35803-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-35803-1

Receipt
The samples were received on 8/30/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.4°C

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

General Chemistry
Method 4500_P_E_Ortho: The following samples were received outside of holding time: STAG-S39R1 (810-35803-1), STAG-S39R2 (810-35803-2), STAGS25R1 (810-35803-3), STAG-S25R2 (810-35803-4), STAG-S1R1 (810-35803-5), STAG-S1R2 (810-35803-6), STAG-S1R3 (810-35803-7), STAG-S24R1 (810-35803-8), STAG-S24R2 (810-35803-9), RAW-S39 (810-35803-10), RAW-S25 (810-35803-11), RAW-S1 (810-35803-12) and RAW-S24 (810-35803-13).

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: STAG-S39R1 — Lab Sample ID: 810-35803-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	91		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	250		1.0		ug/L	1		200.8	Total Recoverable
Lead	510		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	11	H H3	0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	15		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	34	H H3	2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S39R2 — Lab Sample ID: 810-35803-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	180		1.0		ug/L	1		200.8	Total Recoverable
Lead	640		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	21	H H3	0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	30		2.5		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	63	H H3	2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAGS25R1 — Lab Sample ID: 810-35803-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	80		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	17		1.0		ug/L	1		200.8	Total/NA
Lead	5.5		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.6	H H3	0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	3.3		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	7.9	H H3	0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-35803-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	80		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	9.0		1.0		ug/L	1		200.8	Total/NA
Lead	3.0		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	4.0	H H3	0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	0.93		0.10		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	12	H H3	0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-35803-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	44		1.0		ug/L	1		200.8	Total Recoverable
Lead	720		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	11	H H3	0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	19		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	34	H H3	2.3		mg/L	25		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-35803-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	56		1.0		ug/L	1		200.8	Total Recoverable
Lead	540		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	15	H H3	0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	22		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	45	H H3	2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-35803-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	44		1.0		ug/L	1		200.8	Total Recoverable
Lead	450		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	8.6	H H3	0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	17		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	26	H H3	2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-35803-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	56		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	18		1.0		ug/L	1		200.8	Total/NA
Lead	43		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.2	H H3	0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	2.9		0.50		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	6.6	H H3	0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-35803-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	56		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	18		1.0		ug/L	1		200.8	Total/NA
Lead	27		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	3.0	H H3	0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	3.9		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	9.3	H H3	0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S39 — Lab Sample ID: 810-35803-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	88		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	17		1.0		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	0.095	H H3	0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.93		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.29	H H3	0.092		mg/L	1		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: RAW-S25 — Lab Sample ID: 810-35803-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	80		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	2.9		1.0		ug/L	1		200.8	Total/NA
Lead	0.55		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.045	H H3	0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.14		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.14	H H3	0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: RAW-S1 — Lab Sample ID: 810-35803-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	99		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	2.3		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.090	H H3	0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.17		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.28	H H3	0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: RAW-S24 — Lab Sample ID: 810-35803-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	57		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	2.4		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.13	H H3	0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.22		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.40	H H3	0.092		mg/L	1		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-35803-1
Matrix: Water
Date Collected: 08/25/22 07:57
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	91		0.10		mg/L		09/07/22 13:45	09/08/22 19:18	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	250		1.0		ug/L		09/07/22 13:45	09/08/22 18:04	1
Lead	510		0.50		ug/L		09/07/22 13:45	09/08/22 18:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	11	H H3	0.75		mg/L			08/31/22 10:40	25
Phosphorus	15		1.3		mg/L		08/31/22 10:18	08/31/22 13:18	1
Orthophosphate as PO4	34	H H3	2.3		mg/L			08/31/22 10:40	25

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-35803-2
Matrix: Water
Date Collected: 08/25/22 08:00
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		09/07/22 13:45	09/08/22 19:33	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	180		1.0		ug/L		09/07/22 13:45	09/08/22 18:20	1
Lead	640		0.50		ug/L		09/07/22 13:45	09/08/22 18:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	21	H H3	0.75		mg/L			08/31/22 10:42	25
Phosphorus	30		2.5		mg/L		09/02/22 10:40	09/02/22 12:08	1
Orthophosphate as PO4	63	H H3	2.3		mg/L			08/31/22 10:42	25

Client Sample ID: STAGS25R1

Lab Sample ID: 810-35803-3
Matrix: Water
Date Collected: 08/25/22 10:19
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	80		0.10		mg/L			09/08/22 18:50	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	17		1.0		ug/L			09/12/22 13:47	1
Lead	5.5		0.50		ug/L			09/12/22 13:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	2.6	H H3	0.15		mg/L			08/31/22 10:43	5
Phosphorus	3.3		0.25		mg/L		08/31/22 10:39	08/31/22 13:18	1
Orthophosphate as PO4	7.9	H H3	0.46		mg/L			08/31/22 10:43	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-35803-4
Date Collected: 08/25/22 10:22
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	80		0.10		mg/L			09/08/22 18:52	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	9.0		1.0		ug/L			09/12/22 13:45	1
Lead	3.0		0.50		ug/L			09/12/22 13:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	4.0	H H3	0.15		mg/L			08/31/22 10:45	5
Phosphorus	0.93		0.10		mg/L		09/02/22 10:48	09/02/22 12:09	1
Orthophosphate as PO4	12	H H3	0.46		mg/L			08/31/22 10:45	5

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-35803-5
Date Collected: 08/25/22 12:35
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		09/07/22 13:45	09/08/22 19:31	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	44		1.0		ug/L		09/07/22 13:45	09/08/22 18:13	1
Lead	720		0.50		ug/L		09/07/22 13:45	09/08/22 18:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	11	H H3	0.75		mg/L			08/31/22 10:58	25
Phosphorus	19		1.3		mg/L		09/02/22 10:57	09/02/22 12:09	1
Orthophosphate as PO4	34	H H3	2.3		mg/L			08/31/22 10:58	25

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-35803-6
Date Collected: 08/25/22 12:38
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		09/07/22 13:45	09/08/22 19:29	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	56		1.0		ug/L		09/07/22 13:45	09/08/22 18:11	1
Lead	540		0.50		ug/L		09/07/22 13:45	09/08/22 18:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	15	H H3	0.75		mg/L			08/31/22 10:57	25
Phosphorus	22		1.3		mg/L		09/02/22 11:05	09/02/22 12:09	1
Orthophosphate as PO4	45	H H3	2.3		mg/L			08/31/22 10:57	25

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-35803-7
Date Collected: 08/25/22 12:40
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		09/07/22 13:45	09/08/22 19:27	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	44		1.0		ug/L		09/07/22 13:45	09/08/22 18:09	1
Lead	450		0.50		ug/L		09/07/22 13:45	09/08/22 18:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	8.6	H H3	0.75		mg/L			08/31/22 10:57	25
Phosphorus	17		1.3		mg/L		09/09/22 10:45	09/09/22 11:25	1
Orthophosphate as PO4	26	H H3	2.3		mg/L			08/31/22 10:57	25

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-35803-8
Date Collected: 08/25/22 16:00
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	56		0.10		mg/L			09/08/22 18:54	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	18		1.0		ug/L			09/12/22 13:49	1
Lead	43		0.50		ug/L			09/12/22 13:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	2.2	H H3	0.15		mg/L			08/31/22 10:49	5
Phosphorus	2.9		0.50		mg/L		08/31/22 11:44	08/31/22 13:19	1
Orthophosphate as PO4	6.6	H H3	0.46		mg/L			08/31/22 10:49	5

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-35803-9
Date Collected: 08/25/22 16:04
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	56		0.10		mg/L			09/08/22 18:57	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	18		1.0		ug/L			09/12/22 13:52	1
Lead	27		0.50		ug/L			09/12/22 13:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	3.0	H H3	0.15		mg/L			08/31/22 10:55	5
Phosphorus	3.9		0.25		mg/L		08/31/22 11:55	08/31/22 13:20	1
Orthophosphate as PO4	9.3	H H3	0.46		mg/L			08/31/22 10:55	5

Client Sample ID: RAW-S39

Lab Sample ID: 810-35803-10

Date Collected: 08/25/22 07:55
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	88		0.10		mg/L		09/07/22 13:45	09/08/22 19:24	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	17		1.0		ug/L		09/07/22 13:45	09/08/22 18:07	1
Lead	<0.50		0.50		ug/L		09/07/22 13:45	09/08/22 18:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.095	H H3	0.030		mg/L			08/31/22 10:50	1
Phosphorus	0.93		0.050		mg/L		08/31/22 12:06	08/31/22 13:20	1
Orthophosphate as PO4	0.29	H H3	0.092		mg/L			08/31/22 10:50	1

Client Sample ID: RAW-S25

Lab Sample ID: 810-35803-11

Date Collected: 08/25/22 10:15
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	80		0.10		mg/L			09/08/22 18:59	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	2.9		1.0		ug/L			09/12/22 13:54	1
Lead	0.55		0.50		ug/L			09/12/22 13:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.045	H H3	0.030		mg/L			08/31/22 10:53	1
Phosphorus	0.14		0.050		mg/L		08/31/22 12:16	08/31/22 13:20	1
Orthophosphate as PO4	0.14	H H3	0.092		mg/L			08/31/22 10:53	1

Client Sample ID: RAW-S1

Lab Sample ID: 810-35803-12

Date Collected: 08/25/22 12:33
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	99		0.10		mg/L			09/08/22 19:01	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	2.3		1.0		ug/L			09/12/22 14:01	1
Lead	<0.50		0.50		ug/L			09/12/22 14:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.090	H H3	0.030		mg/L			08/31/22 10:56	1
Phosphorus	0.17		0.050		mg/L		08/31/22 12:27	08/31/22 13:20	1
Orthophosphate as PO4	0.28	H H3	0.092		mg/L			08/31/22 10:56	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: RAW-S24

Lab Sample ID: 810-35803-13

Date Collected: 08/25/22 15:58
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	57		0.10		mg/L			09/08/22 19:03	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	2.4		1.0		ug/L			09/12/22 14:03	1
Lead	<0.50		0.50		ug/L			09/12/22 14:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.13	H H3	0.030		mg/L			08/31/22 10:56	1
Phosphorus	0.22		0.050		mg/L		08/31/22 12:38	08/31/22 13:20	1
Orthophosphate as PO4	0.40	H H3	0.092		mg/L			08/31/22 10:56	1

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-31090/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			09/08/22 17:26	1

Lab Sample ID: MB 810-31090/44 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			09/08/22 18:35	1

Lab Sample ID: LCS 810-31090/45 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.85		mg/L		97	85 - 115

Lab Sample ID: LLCS 810-31090/13 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0754	J	mg/L		75	50 - 150

Lab Sample ID: MB 810-30942/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31090 — **Prep Batch: 30942**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		09/07/22 13:45	09/08/22 19:09	1

Lab Sample ID: LCS 810-30942/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31090 — **Prep Batch: 30942**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.80		mg/L		96	85 - 115

Lab Sample ID: LLCS 810-30942/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31090 — **Prep Batch: 30942**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0776	J	mg/L		78	50 - 150

Lab Sample ID: 810-35803-1 MS — **Client Sample ID: STAG-S39R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31090 — **Prep Batch: 30942**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	91		5.00	96.4	4	mg/L		100	70 - 130

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: 810-35803-1 MSD — **Client Sample ID: STAG-S39R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31090 — **Prep Batch: 30942**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	91		5.00	95.3	4	mg/L		78	70 - 130	1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-31364/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/12/22 13:40	1
Lead	<0.50		0.50		ug/L			09/12/22 13:40	1

Lab Sample ID: LCS 810-31364/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	48.6		ug/L		97	85 - 115
Lead	50.0	51.4		ug/L		103	85 - 115

Lab Sample ID: LLCS 810-31364/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31364

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		122	50 - 150
Lead	0.300	0.311	J	ug/L		104	50 - 150

Lab Sample ID: LLCS 810-31364/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31364

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.997	J	ug/L		100	50 - 150

Lab Sample ID: 810-35803-11 MS — **Client Sample ID: RAW-S25**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31364

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	2.9		50.0	52.0		ug/L		98	70 - 130
Lead	0.55		50.0	54.9		ug/L		109	70 - 130

Lab Sample ID: 810-35803-11 MSD — **Client Sample ID: RAW-S25**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31364

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	2.9		50.0	52.2		ug/L		98	70 - 130	0	20
Lead	0.55		50.0	55.2		ug/L		109	70 - 130	0	20

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 810-30943/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31073 — **Prep Batch: 30943**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		09/07/22 13:45	09/08/22 17:48	1
Lead	<0.50		0.50		ug/L		09/07/22 13:45	09/08/22 17:48	1

Lab Sample ID: LCS 810-30943/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31073 — **Prep Batch: 30943**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	49.8		ug/L		100	85 - 115
Lead	50.0	49.3		ug/L		99	85 - 115

Lab Sample ID: LLCS 810-30943/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31073 — **Prep Batch: 30943**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	0.300	0.278	J	ug/L		93	50 - 150

Lab Sample ID: LLCS 810-30943/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31073 — **Prep Batch: 30943**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.593	J	ug/L		59	50 - 150

Lab Sample ID: 810-35803-5 MS — **Client Sample ID: STAG-S1R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31073 — **Prep Batch: 30943**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	44		50.0	91.0		ug/L		93	70 - 130
Lead	720		50.0	758	4	ug/L		68	70 - 130

Lab Sample ID: 810-35803-5 MSD — **Client Sample ID: STAG-S1R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31073 — **Prep Batch: 30943**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	44		50.0	91.3		ug/L		94	70 - 130	0	20
Lead	720		50.0	764	4	ug/L		81	70 - 130	1	20

Method: SM 4500 P E - Phosphorus

Lab Sample ID: MBL 810-30084/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30156 — **Prep Batch: 30084**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		08/31/22 08:52	08/31/22 13:17	1

Method: SM 4500 P E - Phosphorus (Continued)

Lab Sample ID: LCS 810-30084/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30156 — **Prep Batch: 30084**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.527		mg/L		105	86 - 113

Lab Sample ID: LLCS 810-30084/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30156 — **Prep Batch: 30084**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0540		mg/L		108	50 - 150

Lab Sample ID: MBL 810-30545/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30570 — **Prep Batch: 30545**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/02/22 08:04	09/02/22 12:05	1

Lab Sample ID: LCS 810-30545/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30570 — **Prep Batch: 30545**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.517		mg/L		103	86 - 113

Lab Sample ID: LLCS 810-30545/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30570 — **Prep Batch: 30545**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0670		mg/L		134	50 - 150

Lab Sample ID: MBL 810-31129/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31159 — **Prep Batch: 31129**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/09/22 07:55	09/09/22 11:21	1

Lab Sample ID: LCS 810-31129/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31159 — **Prep Batch: 31129**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.477		mg/L		95	86 - 113

Lab Sample ID: LLCS 810-31129/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31159 — **Prep Batch: 31129**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0730		mg/L		146	50 - 150

Method: SM 4500 P E - Orthophosphate

Lab Sample ID: MBL 810-30141/31 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30141

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			08/31/22 10:52	1
Orthophosphate as PO4	<0.046		0.092		mg/L			08/31/22 10:52	1

Lab Sample ID: MBL 810-30141/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30141

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			08/31/22 10:38	1
Orthophosphate as PO4	<0.046		0.092		mg/L			08/31/22 10:38	1

Lab Sample ID: LCS 810-30141/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30141

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.506		mg/L		101	84 - 109

Lab Sample ID: LCS 810-30141/30 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30141

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.510		mg/L		102	84 - 109

Lab Sample ID: LLCS 810-30141/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30141

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0270	J	mg/L		90	50 - 150

Lab Sample ID: LLCS 810-30141/29 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30141

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0290	J	mg/L		97	50 - 150

Lab Sample ID: 810-35803-11 MS — **Client Sample ID: RAW-S25**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30141

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.045	H H3	0.500	0.554		mg/L		102	75 - 195

Method: SM 4500 P E - Orthophosphate (Continued)

Lab Sample ID: 810-35803-11 MSD
Matrix: Water
Analysis Batch: 30141

Client Sample ID: RAW-S25
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphate, ortho	0.045	H H3	0.500	0.556		mg/L		102	75 - 195	0	20

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Metals

Prep Batch: 30942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-1	STAG-S39R1	Total Recoverable	Water	200.7	
810-35803-2	STAG-S39R2	Total Recoverable	Water	200.7	
810-35803-5	STAG-S1R1	Total Recoverable	Water	200.7	
810-35803-6	STAG-S1R2	Total Recoverable	Water	200.7	
810-35803-7	STAG-S1R3	Total Recoverable	Water	200.7	
810-35803-10	RAW-S39	Total Recoverable	Water	200.7	
MB 810-30942/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-30942/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-30942/3-A	Lab Control Sample	Total Recoverable	Water	200.7	
810-35803-1 MS	STAG-S39R1	Total Recoverable	Water	200.7	
810-35803-1 MSD	STAG-S39R1	Total Recoverable	Water	200.7	

Prep Batch: 30943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-1	STAG-S39R1	Total Recoverable	Water	200.8	
810-35803-2	STAG-S39R2	Total Recoverable	Water	200.8	
810-35803-5	STAG-S1R1	Total Recoverable	Water	200.8	
810-35803-6	STAG-S1R2	Total Recoverable	Water	200.8	
810-35803-7	STAG-S1R3	Total Recoverable	Water	200.8	
810-35803-10	RAW-S39	Total Recoverable	Water	200.8	
MB 810-30943/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-30943/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-30943/2-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-30943/3-A	Lab Control Sample	Total Recoverable	Water	200.8	
810-35803-5 MS	STAG-S1R1	Total Recoverable	Water	200.8	
810-35803-5 MSD	STAG-S1R1	Total Recoverable	Water	200.8	

Analysis Batch: 31073

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-1	STAG-S39R1	Total Recoverable	Water	200.8	30943
810-35803-2	STAG-S39R2	Total Recoverable	Water	200.8	30943
810-35803-5	STAG-S1R1	Total Recoverable	Water	200.8	30943
810-35803-6	STAG-S1R2	Total Recoverable	Water	200.8	30943
810-35803-7	STAG-S1R3	Total Recoverable	Water	200.8	30943
810-35803-10	RAW-S39	Total Recoverable	Water	200.8	30943
MB 810-30943/1-A	Method Blank	Total Recoverable	Water	200.8	30943
LCS 810-30943/6-A	Lab Control Sample	Total Recoverable	Water	200.8	30943
LLCS 810-30943/2-A	Lab Control Sample	Total Recoverable	Water	200.8	30943
LLCS 810-30943/3-A	Lab Control Sample	Total Recoverable	Water	200.8	30943
810-35803-5 MS	STAG-S1R1	Total Recoverable	Water	200.8	30943
810-35803-5 MSD	STAG-S1R1	Total Recoverable	Water	200.8	30943

Analysis Batch: 31090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-1	STAG-S39R1	Total Recoverable	Water	200.7 Rev 4.4	30942
810-35803-2	STAG-S39R2	Total Recoverable	Water	200.7 Rev 4.4	30942
810-35803-3	STAGS25R1	Total/NA	Water	200.7 Rev 4.4	
810-35803-4	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	
810-35803-5	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	30942
810-35803-6	STAG-S1R2	Total Recoverable	Water	200.7 Rev 4.4	30942
810-35803-7	STAG-S1R3	Total Recoverable	Water	200.7 Rev 4.4	30942

Metals (Continued)

Analysis Batch: 31090 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-8	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-35803-9	STAG-S24R2	Total/NA	Water	200.7 Rev 4.4	
810-35803-10	RAW-S39	Total Recoverable	Water	200.7 Rev 4.4	30942
810-35803-11	RAW-S25	Total/NA	Water	200.7 Rev 4.4	
810-35803-12	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-35803-13	RAW-S24	Total/NA	Water	200.7 Rev 4.4	
MB 810-30942/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	30942
MB 810-31090/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-31090/44	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-30942/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	30942
LCS 810-31090/45	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-30942/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	30942
LLCS 810-31090/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-35803-1 MS	STAG-S39R1	Total Recoverable	Water	200.7 Rev 4.4	30942
810-35803-1 MSD	STAG-S39R1	Total Recoverable	Water	200.7 Rev 4.4	30942

Analysis Batch: 31364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-3	STAGS25R1	Total/NA	Water	200.8	
810-35803-4	STAG-S25R2	Total/NA	Water	200.8	
810-35803-8	STAG-S24R1	Total/NA	Water	200.8	
810-35803-9	STAG-S24R2	Total/NA	Water	200.8	
810-35803-11	RAW-S25	Total/NA	Water	200.8	
810-35803-12	RAW-S1	Total/NA	Water	200.8	
810-35803-13	RAW-S24	Total/NA	Water	200.8	
MB 810-31364/13	Method Blank	Total/NA	Water	200.8	
LCS 810-31364/14	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-31364/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-31364/12	Lab Control Sample	Total/NA	Water	200.8	
810-35803-11 MS	RAW-S25	Total/NA	Water	200.8	
810-35803-11 MSD	RAW-S25	Total/NA	Water	200.8	

General Chemistry

Prep Batch: 30084

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-1	STAG-S39R1	Total/NA	Water	SM 4500 P B	
810-35803-3	STAGS25R1	Total/NA	Water	SM 4500 P B	
810-35803-8	STAG-S24R1	Total/NA	Water	SM 4500 P B	
810-35803-9	STAG-S24R2	Total/NA	Water	SM 4500 P B	
810-35803-10	RAW-S39	Total/NA	Water	SM 4500 P B	
810-35803-11	RAW-S25	Total/NA	Water	SM 4500 P B	
810-35803-12	RAW-S1	Total/NA	Water	SM 4500 P B	
810-35803-13	RAW-S24	Total/NA	Water	SM 4500 P B	
MBL 810-30084/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-30084/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-30084/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 30141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-1	STAG-S39R1	Total/NA	Water	SM 4500 P E	

General Chemistry (Continued)

Analysis Batch: 30141 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-2	STAG-S39R2	Total/NA	Water	SM 4500 P E	
810-35803-3	STAGS25R1	Total/NA	Water	SM 4500 P E	
810-35803-4	STAG-S25R2	Total/NA	Water	SM 4500 P E	
810-35803-5	STAG-S1R1	Total/NA	Water	SM 4500 P E	
810-35803-6	STAG-S1R2	Total/NA	Water	SM 4500 P E	
810-35803-7	STAG-S1R3	Total/NA	Water	SM 4500 P E	
810-35803-8	STAG-S24R1	Total/NA	Water	SM 4500 P E	
810-35803-9	STAG-S24R2	Total/NA	Water	SM 4500 P E	
810-35803-10	RAW-S39	Total/NA	Water	SM 4500 P E	
810-35803-11	RAW-S25	Total/NA	Water	SM 4500 P E	
810-35803-12	RAW-S1	Total/NA	Water	SM 4500 P E	
810-35803-13	RAW-S24	Total/NA	Water	SM 4500 P E	
MBL 810-30141/31	Method Blank	Total/NA	Water	SM 4500 P E	
MBL 810-30141/4	Method Blank	Total/NA	Water	SM 4500 P E	
LCS 810-30141/3	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LCS 810-30141/30	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-30141/2	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-30141/29	Lab Control Sample	Total/NA	Water	SM 4500 P E	
810-35803-11 MS	RAW-S25	Total/NA	Water	SM 4500 P E	
810-35803-11 MSD	RAW-S25	Total/NA	Water	SM 4500 P E	

Analysis Batch: 30156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-1	STAG-S39R1	Total/NA	Water	SM 4500 P E	30084
810-35803-3	STAGS25R1	Total/NA	Water	SM 4500 P E	30084
810-35803-8	STAG-S24R1	Total/NA	Water	SM 4500 P E	30084
810-35803-9	STAG-S24R2	Total/NA	Water	SM 4500 P E	30084
810-35803-10	RAW-S39	Total/NA	Water	SM 4500 P E	30084
810-35803-11	RAW-S25	Total/NA	Water	SM 4500 P E	30084
810-35803-12	RAW-S1	Total/NA	Water	SM 4500 P E	30084
810-35803-13	RAW-S24	Total/NA	Water	SM 4500 P E	30084
MBL 810-30084/4-A	Method Blank	Total/NA	Water	SM 4500 P E	30084
LCS 810-30084/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	30084
LLCS 810-30084/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	30084

Prep Batch: 30545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-2	STAG-S39R2	Total/NA	Water	SM 4500 P B	
810-35803-4	STAG-S25R2	Total/NA	Water	SM 4500 P B	
810-35803-5	STAG-S1R1	Total/NA	Water	SM 4500 P B	
810-35803-6	STAG-S1R2	Total/NA	Water	SM 4500 P B	
MBL 810-30545/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-30545/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-30545/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 30570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-2	STAG-S39R2	Total/NA	Water	SM 4500 P E	30545
810-35803-4	STAG-S25R2	Total/NA	Water	SM 4500 P E	30545
810-35803-5	STAG-S1R1	Total/NA	Water	SM 4500 P E	30545
810-35803-6	STAG-S1R2	Total/NA	Water	SM 4500 P E	30545

General Chemistry (Continued)

Analysis Batch: 30570 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MBL 810-30545/4-A	Method Blank	Total/NA	Water	SM 4500 P E	30545
LCS 810-30545/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	30545
LLCS 810-30545/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	30545

Prep Batch: 31129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-7	STAG-S1R3	Total/NA	Water	SM 4500 P B	
MBL 810-31129/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-31129/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-31129/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 31159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35803-7	STAG-S1R3	Total/NA	Water	SM 4500 P E	31129
MBL 810-31129/4-A	Method Blank	Total/NA	Water	SM 4500 P E	31129
LCS 810-31129/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31129
LLCS 810-31129/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31129

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-35803-1

Date Collected: 08/25/22 07:57
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 19:18
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 18:04
Total/NA	Analysis	SM 4500 P E		25	30141	JA	EA SB	08/31/22 10:40
Total/NA	Prep	SM 4500 P B			30084	KH	EA SB	08/31/22 10:18
Total/NA	Analysis	SM 4500 P E		1	30156	KH	EA SB	08/31/22 13:18

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-35803-2

Date Collected: 08/25/22 08:00
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 19:33
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 18:20
Total/NA	Analysis	SM 4500 P E		25	30141	JA	EA SB	08/31/22 10:42
Total/NA	Prep	SM 4500 P B			30545	KH	EA SB	09/02/22 10:40
Total/NA	Analysis	SM 4500 P E		1	30570	KH	EA SB	09/02/22 12:08

Client Sample ID: STAGS25R1

Lab Sample ID: 810-35803-3

Date Collected: 08/25/22 10:19
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 18:50
Total/NA	Analysis	200.8		1	31364	JK	EA SB	09/12/22 13:47
Total/NA	Analysis	SM 4500 P E		5	30141	JA	EA SB	08/31/22 10:43
Total/NA	Prep	SM 4500 P B			30084	KH	EA SB	08/31/22 10:39
Total/NA	Analysis	SM 4500 P E		1	30156	KH	EA SB	08/31/22 13:18

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-35803-4

Date Collected: 08/25/22 10:22
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 18:52
Total/NA	Analysis	200.8		1	31364	JK	EA SB	09/12/22 13:45
Total/NA	Analysis	SM 4500 P E		5	30141	JA	EA SB	08/31/22 10:45
Total/NA	Prep	SM 4500 P B			30545	KH	EA SB	09/02/22 10:48
Total/NA	Analysis	SM 4500 P E		1	30570	KH	EA SB	09/02/22 12:09

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-35803-5
Date Collected: 08/25/22 12:35
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 19:31
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 18:13
Total/NA	Analysis	SM 4500 P E		25	30141	JA	EA SB	08/31/22 10:58
Total/NA	Prep	SM 4500 P B			30545	KH	EA SB	09/02/22 10:57
Total/NA	Analysis	SM 4500 P E		1	30570	KH	EA SB	09/02/22 12:09

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-35803-6
Date Collected: 08/25/22 12:38
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 19:29
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 18:11
Total/NA	Analysis	SM 4500 P E		25	30141	JA	EA SB	08/31/22 10:57
Total/NA	Prep	SM 4500 P B			30545	KH	EA SB	09/02/22 11:05
Total/NA	Analysis	SM 4500 P E		1	30570	KH	EA SB	09/02/22 12:09

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-35803-7
Date Collected: 08/25/22 12:40
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 19:27
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 18:09
Total/NA	Analysis	SM 4500 P E		25	30141	JA	EA SB	08/31/22 10:57
Total/NA	Prep	SM 4500 P B			31129	KH	EA SB	09/09/22 10:45
Total/NA	Analysis	SM 4500 P E		1	31159	KH	EA SB	09/09/22 11:25

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-35803-8
Date Collected: 08/25/22 16:00
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 18:54
Total/NA	Analysis	200.8		1	31364	JK	EA SB	09/12/22 13:49
Total/NA	Analysis	SM 4500 P E		5	30141	JA	EA SB	08/31/22 10:49
Total/NA	Prep	SM 4500 P B			30084	KH	EA SB	08/31/22 11:44
Total/NA	Analysis	SM 4500 P E		1	30156	KH	EA SB	08/31/22 13:19

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-35803-9

Date Collected: 08/25/22 16:04
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 18:57
Total/NA	Analysis	200.8		1	31364	JK	EA SB	09/12/22 13:52
Total/NA	Analysis	SM 4500 P E		5	30141	JA	EA SB	08/31/22 10:55
Total/NA	Prep	SM 4500 P B			30084	KH	EA SB	08/31/22 11:55
Total/NA	Analysis	SM 4500 P E		1	30156	KH	EA SB	08/31/22 13:20

Client Sample ID: RAW-S39

Lab Sample ID: 810-35803-10

Date Collected: 08/25/22 07:55
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 19:24
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 18:07
Total/NA	Analysis	SM 4500 P E		1	30141	JA	EA SB	08/31/22 10:50
Total/NA	Prep	SM 4500 P B			30084	KH	EA SB	08/31/22 12:06
Total/NA	Analysis	SM 4500 P E		1	30156	KH	EA SB	08/31/22 13:20

Client Sample ID: RAW-S25

Lab Sample ID: 810-35803-11

Date Collected: 08/25/22 10:15
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 18:59
Total/NA	Analysis	200.8		1	31364	JK	EA SB	09/12/22 13:54
Total/NA	Analysis	SM 4500 P E		1	30141	JA	EA SB	08/31/22 10:53
Total/NA	Prep	SM 4500 P B			30084	KH	EA SB	08/31/22 12:16
Total/NA	Analysis	SM 4500 P E		1	30156	KH	EA SB	08/31/22 13:20

Client Sample ID: RAW-S1

Lab Sample ID: 810-35803-12

Date Collected: 08/25/22 12:33
Matrix: Water
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 19:01
Total/NA	Analysis	200.8		1	31364	JK	EA SB	09/12/22 14:01
Total/NA	Analysis	SM 4500 P E		1	30141	JA	EA SB	08/31/22 10:56
Total/NA	Prep	SM 4500 P B			30084	KH	EA SB	08/31/22 12:27
Total/NA	Analysis	SM 4500 P E		1	30156	KH	EA SB	08/31/22 13:20

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Client Sample ID: RAW-S24

Date Collected: 08/25/22 15:58
Date Received: 08/30/22 09:30

Lab Sample ID: 810-35803-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 19:03
Total/NA	Analysis	200.8		1	31364	JK	EA SB	09/12/22 14:03
Total/NA	Analysis	SM 4500 P E		1	30141	JA	EA SB	08/31/22 10:56
Total/NA	Prep	SM 4500 P B			30084	KH	EA SB	08/31/22 12:38
Total/NA	Analysis	SM 4500 P E		1	30156	KH	EA SB	08/31/22 13:20

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
SM 4500 P E		Water	Orthophosphate as PO4
SM 4500 P E	SM 4500 P B	Water	Phosphorus

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
SM 4500 P E	Orthophosphate	SM	EA SB
SM 4500 P E	Phosphorus	SM	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB
SM 4500 P B	Phosphorous, Total and Ortho	SM	EA SB

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35803-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-35803-1	STAG-S39R1	Water	08/25/22 07:57	08/30/22 09:30
810-35803-2	STAG-S39R2	Water	08/25/22 08:00	08/30/22 09:30
810-35803-3	STAGS25R1	Water	08/25/22 10:19	08/30/22 09:30
810-35803-4	STAG-S25R2	Water	08/25/22 10:22	08/30/22 09:30
810-35803-5	STAG-S1R1	Water	08/25/22 12:35	08/30/22 09:30
810-35803-6	STAG-S1R2	Water	08/25/22 12:38	08/30/22 09:30
810-35803-7	STAG-S1R3	Water	08/25/22 12:40	08/30/22 09:30
810-35803-8	STAG-S24R1	Water	08/25/22 16:00	08/30/22 09:30
810-35803-9	STAG-S24R2	Water	08/25/22 16:04	08/30/22 09:30
810-35803-10	RAW-S39	Water	08/25/22 07:55	08/30/22 09:30
810-35803-11	RAW-S25	Water	08/25/22 10:15	08/30/22 09:30
810-35803-12	RAW-S1	Water	08/25/22 12:33	08/30/22 09:30
810-35803-13	RAW-S24	Water	08/25/22 15:58	08/30/22 09:30

Cross Offs on COC by Client

Chain of Custody Record

eurofins

9/13/2022

810-35803 Chain of Custody

James Christopher	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s): 5789 2156 4693	COC No: 810-13119-4161 1
	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin: MI	Page: Page 1 of 2
Company: Tetra Tech, Inc.	PWSID:			Job #:
Address: 201 E. Pine St., Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): STD			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: 407-480-3907(Tel)	PO #: Purchase Order not required			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Y - Trizma
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate (-)	200.7 - (MOD) ICP-AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
STAG-S39 R1	08.25.22	7:57	G	Water	N	N	x	x	x			
STAG-S39R2		8:00		Water								
STAG-S25R1		10:19		Water								
STAG-~~S25R2~~ S25R2		10:22		Water								
STAG-S1R1		12:35		Water								
STAG-S1R2		12:38		Water								
STAG-S1R3		12:40		Water								
STAG-S24R1		16:00		Water								
STAG-S24R2		16:09		Water								
~~STAG-~~ RAW-S39		7:57		Water								
RAW-S25		10:15		Water								

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements: OK to proceed out of hold per Joe Mattheis

Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by: Mary Clare Griffith	Date/Time: 8/25/22 19:00	Company: Tt	Received by: Fridge	Date/Time:	Company:
Relinquished by: Fridge	Date/Time: 8/29/22 16:00	Company: Tt	Received by: Fed Fedex	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by: Penny Pehlig Wright	Date/Time: 08/30/22 0930	Company: EA

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

pH Acceptable

Cooler Temperature(s) °C and Other Remarks: RECEIVED OUT OF HOLD TIME

Initial Temp: -0.4
Corrected Temp: 0.4
IR Gun # 28 Wet

Ver: 06/08/2021

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone: 574-233-4777 Fax: 574-233-8207

Chain of Custody Record

eurofins

9/13/2022

Client Information	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s): 5789 2156 4693	COC No: 810-13119-4161.2
Client Contact: James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin: MI	Page: Page 2 of 2
Company: Tetra Tech, Inc.	PWSID:			Job #:
Address: 201 E. Pine St., Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): STD			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: 407-480-3907(Tel)	PO #: Purchase Order not required			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate (1)	200.7 - (MOD) ICP-AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
RAW-S 1	08·25·22	12:33	G	Water	N	N	x	x	x			
RAW-S24	1	15:58		Water	N	N	x	x	x			
				Water								
				Water								
				Water								
				Water								
				Water								
				Water								
				Water								

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Mary Clare Griffith	8/25/22 19:00	Tt	Fedex		
Fedex	8/29/22 16:00	Tt	FedEx		
			Perry Pehling Wright	08/30/22 0930	ET

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
pH Acceptable
Cooler Temperature(s) °C and Other Remarks: Wet
Initial Temp: -0.4
Corrected Temp: -0.4
IR Gun # 28
(1) RECEIVED OUT OF HOLD TIME

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-35803-1

Login Number: 35803

List Source: Eurofins Eaton South Bend

List Number: 1

Creator: Pehling-Wright, Penny

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	False	Refer to Job Narrative for details.
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-35721-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
9/9/2022 12:57:48 AM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 6
QC Sample Results 7
QC Association Summary 9
Lab Chronicle 10
Certification Summary 12
Method Summary 13
Sample Summary 14
Chain of Custody 15
Receipt Checklists 16

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Qualifiers

Metals

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

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-35721-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-35721-1

Receipt
The samples were received on 8/30/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.4°C

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Client Sample ID: SOL-S1R1 — Lab Sample ID: 810-35721-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	13		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: SOL-S1R2 — Lab Sample ID: 810-35721-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	15		0.010		mg/L	1		200.7 Rev 4.4	Total Recoverable

Client Sample ID: SOL-S1R3 — Lab Sample ID: 810-35721-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	15		0.010		mg/L	1		200.7 Rev 4.4	Total Recoverable

Client Sample ID: SOL-S24R1 — Lab Sample ID: 810-35721-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	9.5		0.010		mg/L	1		200.7 Rev 4.4	Total Recoverable

Client Sample ID: SOL-S24R2 — Lab Sample ID: 810-35721-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	10		0.010		mg/L	1		200.7 Rev 4.4	Total Recoverable

Client Sample ID: SOL-S1Raw — Lab Sample ID: 810-35721-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	0.13		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: SOL-S24Raw — Lab Sample ID: 810-35721-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	1.1		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Client Sample ID: SOL-S1R1

Lab Sample ID: 810-35721-1
Date Collected: 08/26/22 11:17
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	13		0.010		mg/L			09/08/22 18:39	1

Client Sample ID: SOL-S1R2

Lab Sample ID: 810-35721-2
Date Collected: 08/26/22 11:18
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	15		0.010		mg/L		09/06/22 13:30	09/08/22 14:03	1

Client Sample ID: SOL-S1R3

Lab Sample ID: 810-35721-3
Date Collected: 08/26/22 11:19
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	15		0.010		mg/L		09/06/22 13:30	09/08/22 14:05	1

Client Sample ID: SOL-S24R1

Lab Sample ID: 810-35721-4
Date Collected: 08/26/22 11:20
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	9.5		0.010		mg/L		09/06/22 13:30	09/08/22 14:07	1

Client Sample ID: SOL-S24R2

Lab Sample ID: 810-35721-5
Date Collected: 08/26/22 11:21
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	10		0.010		mg/L		09/06/22 13:30	09/08/22 14:09	1

Client Sample ID: SOL-S1Raw

Lab Sample ID: 810-35721-6
Date Collected: 08/26/22 11:16
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.13		0.010		mg/L			09/08/22 18:46	1

Client Sample ID: SOL-S24Raw

Lab Sample ID: 810-35721-7
Date Collected: 08/26/22 11:15
Matrix: Water
Date Received: 08/30/22 09:30

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1.1		0.010		mg/L			09/08/22 18:48	1

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-31090/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L			09/08/22 17:26	1

Lab Sample ID: MB 810-31090/44 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L			09/08/22 18:35	1

Lab Sample ID: LCS 810-31090/45 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5.00	4.93		mg/L		99	85 - 115

Lab Sample ID: LLCS 810-31090/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.0100	0.00880	J	mg/L		88	50 - 150

Lab Sample ID: 810-35721-1 MS — **Client Sample ID: SOL-S1R1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	13		5.00	17.7		mg/L		92	70 - 130

Lab Sample ID: 810-35721-1 MSD — **Client Sample ID: SOL-S1R1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31090

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron	13		5.00	17.8		mg/L		93	70 - 130	0	20

Lab Sample ID: MB 810-30801/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31026 — **Prep Batch: 30801**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L		09/06/22 13:30	09/08/22 13:39	1

Lab Sample ID: LCS 810-30801/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31026 — **Prep Batch: 30801**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5.00	5.00		mg/L		100	85 - 115

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: LLCS 810-30801/2-A
Matrix: Water
Analysis Batch: 31026

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 30801

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Iron			0.0100	0.00870	J	mg/L		87	50 - 150		

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Metals

Prep Batch: 30801

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35721-2	SOL-S1R2	Total Recoverable	Water	200.7	
810-35721-3	SOL-S1R3	Total Recoverable	Water	200.7	
810-35721-4	SOL-S24R1	Total Recoverable	Water	200.7	
810-35721-5	SOL-S24R2	Total Recoverable	Water	200.7	
MB 810-30801/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-30801/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-30801/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Analysis Batch: 31026

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35721-2	SOL-S1R2	Total Recoverable	Water	200.7 Rev 4.4	30801
810-35721-3	SOL-S1R3	Total Recoverable	Water	200.7 Rev 4.4	30801
810-35721-4	SOL-S24R1	Total Recoverable	Water	200.7 Rev 4.4	30801
810-35721-5	SOL-S24R2	Total Recoverable	Water	200.7 Rev 4.4	30801
MB 810-30801/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	30801
LCS 810-30801/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	30801
LLCS 810-30801/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	30801

Analysis Batch: 31090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-35721-1	SOL-S1R1	Total/NA	Water	200.7 Rev 4.4	
810-35721-6	SOL-S1Raw	Total/NA	Water	200.7 Rev 4.4	
810-35721-7	SOL-S24Raw	Total/NA	Water	200.7 Rev 4.4	
MB 810-31090/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-31090/44	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-31090/45	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-31090/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-35721-1 MS	SOL-S1R1	Total/NA	Water	200.7 Rev 4.4	
810-35721-1 MSD	SOL-S1R1	Total/NA	Water	200.7 Rev 4.4	

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Client Sample ID: SOL-S1R1 — Lab Sample ID: 810-35721-1

Date Collected: 08/26/22 11:17 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 18:39

Client Sample ID: SOL-S1R2 — Lab Sample ID: 810-35721-2

Date Collected: 08/26/22 11:18 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30801	NB	EA SB	09/06/22 13:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	31026	AC	EA SB	09/08/22 14:03

Client Sample ID: SOL-S1R3 — Lab Sample ID: 810-35721-3

Date Collected: 08/26/22 11:19 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30801	NB	EA SB	09/06/22 13:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	31026	AC	EA SB	09/08/22 14:05

Client Sample ID: SOL-S24R1 — Lab Sample ID: 810-35721-4

Date Collected: 08/26/22 11:20 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30801	NB	EA SB	09/06/22 13:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	31026	AC	EA SB	09/08/22 14:07

Client Sample ID: SOL-S24R2 — Lab Sample ID: 810-35721-5

Date Collected: 08/26/22 11:21 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30801	NB	EA SB	09/06/22 13:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	31026	AC	EA SB	09/08/22 14:09

Client Sample ID: SOL-S1Raw — Lab Sample ID: 810-35721-6

Date Collected: 08/26/22 11:16 — **Matrix: Water**
Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 18:46

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Client Sample ID: SOL-S24Raw

Lab Sample ID: 810-35721-7

Date Collected: 08/26/22 11:15

Matrix: Water

Date Received: 08/30/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 18:48

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Iron
200.7 Rev 4.4	200.7	Water	Iron

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-35721-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-35721-1	SOL-S1R1	Water	08/26/22 11:17	08/30/22 09:30
810-35721-2	SOL-S1R2	Water	08/26/22 11:18	08/30/22 09:30
810-35721-3	SOL-S1R3	Water	08/26/22 11:19	08/30/22 09:30
810-35721-4	SOL-S24R1	Water	08/26/22 11:20	08/30/22 09:30
810-35721-5	SOL-S24R2	Water	08/26/22 11:21	08/30/22 09:30
810-35721-6	SOL-S1Raw	Water	08/26/22 11:16	08/30/22 09:30
810-35721-7	SOL-S24Raw	Water	08/26/22 11:15	08/30/22 09:30

810-35721 Chain of Custody

Chain of Custody Record

eurofins

	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s): 1270 5789 2156 4643	COC No: 810-13125-4161.1
Mr. James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin: MI	Page: Page 1 of ~~1~~ 1
Company: Tetra Tech, Inc.	PWSID:			Job #:
Address: 201 E. Pine St., Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): STD			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: ~~407-480-3907(Tel) 407-839-3790(Fax)~~	PO #: Purchase Order not required			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP-AES Metals Scan									Total Number of containers	Special Instructions/Note:
				Preservation Code:			D	A	N	D										
SOL-S1R1	08.26.22	11:17	G	Water	N	N				X										pH Acceptable
SOL-S1R2		11:18		Water																
SOL-S1R3		11:19		Water																
SOL-S24R1		11:20		Water																
SOL-S24R2		11:21		Water																Initial Temp: 0.6
SOL-S1RAW		11:16		Water																Corrected Temp: 0.4
SOL-S24RAW		11:15		Water																IR Gun # 18
				Water																
				Water																
				Water																
				Water																

Total / Iron

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) II

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Mary Clare Griffith	Date/Time: 8/26/22 11:30	Company: Tt	Received by: Fridge	Date/Time:	Company
Relinquished by: Fridge	Date/Time: 8/29/22 1600	Company: Tt	Received by: FedEx	Date/Time:	Company
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time: 8-30.22	Company: 0930

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: Wet

Ver: 06/08/2021

9/9/2022

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-35721-1

Login Number: 35721
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-36201-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
9/16/2022 8:18:13 AM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 8
QC Sample Results 13
QC Association Summary 19
Lab Chronicle 23
Certification Summary 27
Method Summary 28
Sample Summary 29
Chain of Custody 30
Receipt Checklists 32

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Qualifiers

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

General Chemistry

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

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-36201-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-36201-1

Receipt
The samples were received on 9/2/2022 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.4°C

Receipt Exceptions
<EXPLANATION_REQUIRED>
pH adjusted upon receipt.
STAG-S39R1 (810-36201-2)

<EXPLANATION_REQUIRED>
Received additional total phosphorous samples and no orthophosphate samples for certain sites.
RAW-S39 (810-36201-1), STAG-S39R1 (810-36201-2), STAG-S39R2 (810-36201-3), RAW-S25 (810-36201-4), STAG-S25R1 (810-36201-5), STAG-S25R2 (810-36201-6), RAW-S1 (810-36201-7), STAG-S1R1 (810-36201-8), STAG-S1R2 (810-36201-9), STAG-S1R3 (810-36201-10), RAW-S24 (810-36201-11), STAG-S24R1 (810-36201-12) and STAG-S24R2 (810-36201-13)

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

General Chemistry
Method 4500_P_E: <EXPLANATION_REQUIRED>pH adjusted upon receipt.STAG-S39R1 (810-36201-2)

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: RAW-S39 — Lab Sample ID: 810-36201-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	87		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	9.4		1.0		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	0.16		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.47		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.48		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S39R1 — Lab Sample ID: 810-36201-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	93		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	59		1.0		ug/L	1		200.8	Total Recoverable
Lead	430		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	13		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	22		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	41		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S39R2 — Lab Sample ID: 810-36201-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	90		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	49		1.0		ug/L	1		200.8	Total Recoverable
Lead	260		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	15		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	18		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	45		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: RAW-S25 — Lab Sample ID: 810-36201-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	80		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	10		1.0		ug/L	1		200.8	Total/NA
Lead	0.71		0.50		ug/L	1		200.8	Total/NA
Phosphorus	0.18		0.050		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R1 — Lab Sample ID: 810-36201-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	81		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	43		1.0		ug/L	1		200.8	Total/NA
Lead	74		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.7		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	3.6		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	8.1		0.46		mg/L	5		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-36201-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	80		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	79		1.0		ug/L	1		200.8	Total Recoverable
Lead	110		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	4.0		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	5.9		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	12		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S1 — Lab Sample ID: 810-36201-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	97		0.10		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-36201-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	98		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	18		1.0		ug/L	1		200.8	Total/NA
Lead	130		0.50		ug/L	1		200.8	Total/NA
Phosphorus	3.1		0.25		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-36201-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	160		1.0		ug/L	1		200.8	Total Recoverable
Lead	990		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	15		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	27		2.5		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	46		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-36201-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	97		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	12		1.0		ug/L	1		200.8	Total/NA
Lead	59		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.3		0.15		mg/L	5		SM 4500 P E	Total/NA
Orthophosphate as PO4	7.1		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S24 — Lab Sample ID: 810-36201-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	56		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	13		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.23		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.31		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.71		0.092		mg/L	1		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-36201-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	56		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	19		1.0		ug/L	1		200.8	Total/NA
Lead	45		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	3.3		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	4.2		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	10		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-36201-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	57		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	33		1.0		ug/L	1		200.8	Total/NA
Lead	200		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	4.0		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	5.0		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	12		0.46		mg/L	5		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-36201-1
Date Collected: 09/01/22 07:40
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	87		0.10		mg/L		09/07/22 13:45	09/08/22 20:03	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	9.4		1.0		ug/L		09/07/22 13:45	09/08/22 18:52	1
Lead	<0.50		0.50		ug/L		09/07/22 13:45	09/08/22 18:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.16		0.030		mg/L			09/02/22 14:23	1
Phosphorus	0.47		0.050		mg/L		09/14/22 07:41	09/14/22 10:41	1
Orthophosphate as PO4	0.48		0.092		mg/L			09/02/22 14:23	1

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-36201-2
Date Collected: 09/01/22 07:43
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	93		0.10		mg/L		09/07/22 13:45	09/08/22 20:05	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	59		1.0		ug/L		09/07/22 13:45	09/08/22 18:54	1
Lead	430		0.50		ug/L		09/07/22 13:45	09/08/22 18:54	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	13		0.75		mg/L			09/02/22 14:24	25
Phosphorus	22		1.3		mg/L		09/14/22 08:03	09/14/22 10:43	1
Orthophosphate as PO4	41		2.3		mg/L			09/02/22 14:24	25

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-36201-3
Date Collected: 09/01/22 07:45
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	90		0.10		mg/L		09/07/22 13:45	09/08/22 20:07	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	49		1.0		ug/L		09/07/22 13:45	09/08/22 18:56	1
Lead	260		0.50		ug/L		09/07/22 13:45	09/08/22 18:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	15		0.75		mg/L			09/02/22 14:25	25
Phosphorus	18		1.3		mg/L		09/14/22 08:10	09/14/22 10:44	1
Orthophosphate as PO4	45		2.3		mg/L			09/02/22 14:25	25

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: RAW-S25

Lab Sample ID: 810-36201-4
Date Collected: 09/01/22 10:01
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	80		0.10		mg/L			09/12/22 22:10	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	10		1.0		ug/L			09/13/22 13:17	1
Lead	0.71		0.50		ug/L			09/13/22 13:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	0.18		0.050		mg/L		09/14/22 08:17	09/14/22 10:44	1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-36201-5
Date Collected: 09/01/22 10:03
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	81		0.10		mg/L			09/12/22 22:12	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	43		1.0		ug/L			09/13/22 13:19	1
Lead	74		0.50		ug/L			09/13/22 13:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	2.7		0.15		mg/L			09/02/22 14:25	5
Phosphorus	3.6		0.25		mg/L		09/15/22 08:15	09/15/22 11:07	1
Orthophosphate as PO4	8.1		0.46		mg/L			09/02/22 14:25	5

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-36201-6
Date Collected: 09/01/22 10:05
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	80		0.10		mg/L		09/07/22 13:45	09/08/22 20:09	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	79		1.0		ug/L		09/07/22 13:45	09/08/22 18:58	1
Lead	110		0.50		ug/L		09/07/22 13:45	09/08/22 18:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	4.0		0.15		mg/L			09/02/22 14:26	5
Phosphorus	5.9		1.3		mg/L		09/15/22 13:53	09/15/22 16:38	1
Orthophosphate as PO4	12		0.46		mg/L			09/02/22 14:26	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: RAW-S1

Lab Sample ID: 810-36201-7

Date Collected: 09/01/22 11:57
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	97		0.10		mg/L			09/12/22 22:14	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/13/22 11:56	1
Lead	<0.50		0.50		ug/L			09/13/22 11:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.030		0.030		mg/L			09/02/22 14:26	1
Phosphorus	<0.050		0.050		mg/L		09/14/22 08:39	09/14/22 10:44	1
Orthophosphate as PO4	<0.092		0.092		mg/L			09/02/22 14:26	1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-36201-8

Date Collected: 09/01/22 11:58
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	98		0.10		mg/L			09/12/22 22:16	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	18		1.0		ug/L			09/13/22 11:58	1
Lead	130		0.50		ug/L			09/13/22 11:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	3.1		0.25		mg/L		09/15/22 08:35	09/15/22 11:07	1

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-36201-9

Date Collected: 09/01/22 11:59
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		09/07/22 13:45	09/08/22 20:12	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	160		1.0		ug/L		09/07/22 13:45	09/08/22 19:01	1
Lead	990		0.50		ug/L		09/07/22 13:45	09/08/22 19:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	15		0.75		mg/L			09/02/22 14:27	25
Phosphorus	27		2.5		mg/L		09/15/22 08:45	09/15/22 11:08	1
Orthophosphate as PO4	46		2.3		mg/L			09/02/22 14:27	25

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-36201-10
Date Collected: 09/01/22 12:00
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	97		0.10		mg/L			09/12/22 22:18	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	12		1.0		ug/L			09/13/22 12:05	1
Lead	59		0.50		ug/L			09/13/22 12:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	2.3		0.15		mg/L			09/02/22 14:30	5
Orthophosphate as PO4	7.1		0.46		mg/L			09/02/22 14:30	5

Client Sample ID: RAW-S24

Lab Sample ID: 810-36201-11
Date Collected: 09/01/22 14:28
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	56		0.10		mg/L			09/12/22 22:25	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	13		1.0		ug/L			09/13/22 12:07	1
Lead	<0.50		0.50		ug/L			09/13/22 12:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.23		0.030		mg/L			09/02/22 14:28	1
Phosphorus	0.31		0.050		mg/L		09/14/22 09:01	09/14/22 10:45	1
Orthophosphate as PO4	0.71		0.092		mg/L			09/02/22 14:28	1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-36201-12
Date Collected: 09/01/22 14:29
Matrix: Water
Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	56		0.10		mg/L			09/12/22 22:31	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	19		1.0		ug/L			09/13/22 12:14	1
Lead	45		0.50		ug/L			09/13/22 12:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	3.3		0.15		mg/L			09/02/22 14:31	5
Phosphorus	4.2		0.25		mg/L		09/15/22 09:05	09/15/22 11:08	1
Orthophosphate as PO4	10		0.46		mg/L			09/02/22 14:31	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-36201-13

Date Collected: 09/01/22 14:30

Matrix: Water

Date Received: 09/02/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	57		0.10		mg/L			09/12/22 22:33	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	33		1.0		ug/L			09/13/22 12:16	1
Lead	200		0.50		ug/L			09/13/22 12:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	4.0		0.15		mg/L			09/02/22 14:30	5
Phosphorus	5.0		0.25		mg/L		09/15/22 09:15	09/15/22 11:08	1
Orthophosphate as PO4	12		0.46		mg/L			09/02/22 14:30	5

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-31405/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31405

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			09/12/22 20:44	1

Lab Sample ID: MB 810-31405/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31405

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			09/12/22 21:50	1

Lab Sample ID: LCS 810-31405/44 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31405

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.63		mg/L		93	85 - 115

Lab Sample ID: LLCS 810-31405/13 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31405

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0819	J	mg/L		82	50 - 150

Lab Sample ID: 810-36201-11 MS — **Client Sample ID: RAW-S24**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31405

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	56		5.00	60.3	4	mg/L		89	70 - 130

Lab Sample ID: 810-36201-11 MSD — **Client Sample ID: RAW-S24**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31405

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	56		5.00	60.3	4	mg/L		88	70 - 130	0	20

Lab Sample ID: MB 810-30942/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31090 — **Prep Batch: 30942**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		09/07/22 13:45	09/08/22 19:09	1

Lab Sample ID: LCS 810-30942/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31090 — **Prep Batch: 30942**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.80		mg/L		96	85 - 115

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: LLCS 810-30942/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31090 — **Prep Batch: 30942**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0776	J	mg/L		78	50 - 150

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-31510/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31510

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/13/22 10:21	1
Lead	<0.50		0.50		ug/L			09/13/22 10:21	1

Lab Sample ID: MB 810-31510/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31510

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/13/22 11:29	1
Lead	<0.50		0.50		ug/L			09/13/22 11:29	1

Lab Sample ID: LCS 810-31510/44 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31510

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	48.0		ug/L		96	85 - 115
Lead	50.0	52.2		ug/L		104	85 - 115

Lab Sample ID: LLCS 810-31510/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31510

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		109	50 - 150
Lead	0.300	0.326	J	ug/L		109	50 - 150

Lab Sample ID: LLCS 810-31510/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31510

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.938	J	ug/L		94	50 - 150

Lab Sample ID: 810-36201-11 MS — **Client Sample ID: RAW-S24**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31510

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	13		50.0	55.8		ug/L		86	70 - 130
Lead	<0.50		50.0	50.1		ug/L		100	70 - 130

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 810-36201-11 MSD — **Client Sample ID: RAW-S24**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31510

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	13		50.0	56.3		ug/L		87	70 - 130	1	20
Lead	<0.50		50.0	50.4		ug/L		100	70 - 130	1	20

Lab Sample ID: MB 810-31514/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31514

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/13/22 10:32	1
Lead	<0.50		0.50		ug/L			09/13/22 10:32	1

Lab Sample ID: MB 810-31514/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31514

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/13/22 12:00	1
Lead	<0.50		0.50		ug/L			09/13/22 12:00	1

Lab Sample ID: LCS 810-31514/44 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31514

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	50.8		ug/L		102	85 - 115
Lead	50.0	50.4		ug/L		101	85 - 115

Lab Sample ID: LLCS 810-31514/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31514

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		130	50 - 150
Lead	0.300	0.325	J	ug/L		108	50 - 150

Lab Sample ID: LLCS 810-31514/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31514

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	1.35		ug/L		135	50 - 150

Lab Sample ID: MB 810-30943/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31073 — **Prep Batch: 30943**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		09/07/22 13:45	09/08/22 17:48	1
Lead	<0.50		0.50		ug/L		09/07/22 13:45	09/08/22 17:48	1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 810-30943/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31073 — **Prep Batch: 30943**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	49.8		ug/L		100	85 - 115
Lead	50.0	49.3		ug/L		99	85 - 115

Lab Sample ID: LLCS 810-30943/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31073 — **Prep Batch: 30943**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	0.300	0.278	J	ug/L		93	50 - 150

Lab Sample ID: LLCS 810-30943/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31073 — **Prep Batch: 30943**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.593	J	ug/L		59	50 - 150

Method: SM 4500 P E - Phosphorus

Lab Sample ID: MBL 810-31612/12-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31612**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/14/22 07:34	09/14/22 10:41	1

Lab Sample ID: LCS 810-31612/11-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31612**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.496		mg/L		99	86 - 113

Lab Sample ID: LLCS 810-31612/10-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31612**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0440	J	mg/L		88	50 - 150

Lab Sample ID: 810-36201-1 MS — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31612**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.47		0.500	0.993		mg/L		104	61 - 260

Method: SM 4500 P E - Phosphorus (Continued)

Lab Sample ID: 810-36201-1 MSD — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31612**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphorus	0.47		0.500	0.987		mg/L		103	61 - 260	1	20

Lab Sample ID: MBL 810-31776/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31824 — **Prep Batch: 31776**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/15/22 06:45	09/15/22 11:06	1

Lab Sample ID: LCS 810-31776/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31824 — **Prep Batch: 31776**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.487		mg/L		97	86 - 113

Lab Sample ID: LLCS 810-31776/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31824 — **Prep Batch: 31776**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0620		mg/L		124	50 - 150

Lab Sample ID: MBL 810-31891/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31896 — **Prep Batch: 31891**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/15/22 12:10	09/15/22 16:36	1

Lab Sample ID: LCS 810-31891/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31896 — **Prep Batch: 31891**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.509		mg/L		102	86 - 113

Lab Sample ID: LLCS 810-31891/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31896 — **Prep Batch: 31891**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0560		mg/L		112	50 - 150

Method: SM 4500 P E - Orthophosphate

Lab Sample ID: MBL 810-30602/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30602

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			09/02/22 14:23	1
Orthophosphate as PO4	<0.046		0.092		mg/L			09/02/22 14:23	1

Lab Sample ID: LCS 810-30602/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30602

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.493		mg/L		99	84 - 109

Lab Sample ID: LLCS 810-30602/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30602

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0270	J	mg/L		90	50 - 150

Lab Sample ID: 810-36201-1 MS — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30602

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.16		0.500	0.672		mg/L		103	75 - 195

Lab Sample ID: 810-36201-1 MSD — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 30602

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphate, ortho	0.16		0.500	0.669		mg/L		103	75 - 195	0	20

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Metals

Prep Batch: 30942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-1	RAW-S39	Total Recoverable	Water	200.7	
810-36201-2	STAG-S39R1	Total Recoverable	Water	200.7	
810-36201-3	STAG-S39R2	Total Recoverable	Water	200.7	
810-36201-6	STAG-S25R2	Total Recoverable	Water	200.7	
810-36201-9	STAG-S1R2	Total Recoverable	Water	200.7	
MB 810-30942/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-30942/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-30942/3-A	Lab Control Sample	Total Recoverable	Water	200.7	

Prep Batch: 30943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-1	RAW-S39	Total Recoverable	Water	200.8	
810-36201-2	STAG-S39R1	Total Recoverable	Water	200.8	
810-36201-3	STAG-S39R2	Total Recoverable	Water	200.8	
810-36201-6	STAG-S25R2	Total Recoverable	Water	200.8	
810-36201-9	STAG-S1R2	Total Recoverable	Water	200.8	
MB 810-30943/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-30943/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-30943/2-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-30943/3-A	Lab Control Sample	Total Recoverable	Water	200.8	

Analysis Batch: 31073

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-1	RAW-S39	Total Recoverable	Water	200.8	30943
810-36201-2	STAG-S39R1	Total Recoverable	Water	200.8	30943
810-36201-3	STAG-S39R2	Total Recoverable	Water	200.8	30943
810-36201-6	STAG-S25R2	Total Recoverable	Water	200.8	30943
810-36201-9	STAG-S1R2	Total Recoverable	Water	200.8	30943
MB 810-30943/1-A	Method Blank	Total Recoverable	Water	200.8	30943
LCS 810-30943/6-A	Lab Control Sample	Total Recoverable	Water	200.8	30943
LLCS 810-30943/2-A	Lab Control Sample	Total Recoverable	Water	200.8	30943
LLCS 810-30943/3-A	Lab Control Sample	Total Recoverable	Water	200.8	30943

Analysis Batch: 31090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-1	RAW-S39	Total Recoverable	Water	200.7 Rev 4.4	30942
810-36201-2	STAG-S39R1	Total Recoverable	Water	200.7 Rev 4.4	30942
810-36201-3	STAG-S39R2	Total Recoverable	Water	200.7 Rev 4.4	30942
810-36201-6	STAG-S25R2	Total Recoverable	Water	200.7 Rev 4.4	30942
810-36201-9	STAG-S1R2	Total Recoverable	Water	200.7 Rev 4.4	30942
MB 810-30942/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	30942
LCS 810-30942/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	30942
LLCS 810-30942/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	30942

Analysis Batch: 31405

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-4	RAW-S25	Total/NA	Water	200.7 Rev 4.4	
810-36201-5	STAG-S25R1	Total/NA	Water	200.7 Rev 4.4	
810-36201-7	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-36201-8	STAG-S1R1	Total/NA	Water	200.7 Rev 4.4	
810-36201-10	STAG-S1R3	Total/NA	Water	200.7 Rev 4.4	

Metals (Continued)

Analysis Batch: 31405 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-11	RAW-S24	Total/NA	Water	200.7 Rev 4.4	
810-36201-12	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-36201-13	STAG-S24R2	Total/NA	Water	200.7 Rev 4.4	
MB 810-31405/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-31405/43	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-31405/44	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-31405/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-36201-11 MS	RAW-S24	Total/NA	Water	200.7 Rev 4.4	
810-36201-11 MSD	RAW-S24	Total/NA	Water	200.7 Rev 4.4	

Analysis Batch: 31510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-7	RAW-S1	Total/NA	Water	200.8	
810-36201-8	STAG-S1R1	Total/NA	Water	200.8	
810-36201-10	STAG-S1R3	Total/NA	Water	200.8	
810-36201-11	RAW-S24	Total/NA	Water	200.8	
810-36201-12	STAG-S24R1	Total/NA	Water	200.8	
810-36201-13	STAG-S24R2	Total/NA	Water	200.8	
MB 810-31510/13	Method Blank	Total/NA	Water	200.8	
MB 810-31510/43	Method Blank	Total/NA	Water	200.8	
LCS 810-31510/44	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-31510/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-31510/12	Lab Control Sample	Total/NA	Water	200.8	
810-36201-11 MS	RAW-S24	Total/NA	Water	200.8	
810-36201-11 MSD	RAW-S24	Total/NA	Water	200.8	

Analysis Batch: 31514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-4	RAW-S25	Total/NA	Water	200.8	
810-36201-5	STAG-S25R1	Total/NA	Water	200.8	
MB 810-31514/13	Method Blank	Total/NA	Water	200.8	
MB 810-31514/43	Method Blank	Total/NA	Water	200.8	
LCS 810-31514/44	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-31514/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-31514/12	Lab Control Sample	Total/NA	Water	200.8	

General Chemistry

Analysis Batch: 30602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-1	RAW-S39	Total/NA	Water	SM 4500 P E	
810-36201-2	STAG-S39R1	Total/NA	Water	SM 4500 P E	
810-36201-3	STAG-S39R2	Total/NA	Water	SM 4500 P E	
810-36201-5	STAG-S25R1	Total/NA	Water	SM 4500 P E	
810-36201-6	STAG-S25R2	Total/NA	Water	SM 4500 P E	
810-36201-7	RAW-S1	Total/NA	Water	SM 4500 P E	
810-36201-9	STAG-S1R2	Total/NA	Water	SM 4500 P E	
810-36201-10	STAG-S1R3	Total/NA	Water	SM 4500 P E	
810-36201-11	RAW-S24	Total/NA	Water	SM 4500 P E	
810-36201-12	STAG-S24R1	Total/NA	Water	SM 4500 P E	
810-36201-13	STAG-S24R2	Total/NA	Water	SM 4500 P E	

General Chemistry (Continued)

Analysis Batch: 30602 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MBL 810-30602/4	Method Blank	Total/NA	Water	SM 4500 P E	
LCS 810-30602/3	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-30602/2	Lab Control Sample	Total/NA	Water	SM 4500 P E	
810-36201-1 MS	RAW-S39	Total/NA	Water	SM 4500 P E	
810-36201-1 MSD	RAW-S39	Total/NA	Water	SM 4500 P E	

Prep Batch: 31612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-1	RAW-S39	Total/NA	Water	SM 4500 P B	
810-36201-2	STAG-S39R1	Total/NA	Water	SM 4500 P B	
810-36201-3	STAG-S39R2	Total/NA	Water	SM 4500 P B	
810-36201-4	RAW-S25	Total/NA	Water	SM 4500 P B	
810-36201-7	RAW-S1	Total/NA	Water	SM 4500 P B	
810-36201-11	RAW-S24	Total/NA	Water	SM 4500 P B	
MBL 810-31612/12-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-31612/11-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-31612/10-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
810-36201-1 MS	RAW-S39	Total/NA	Water	SM 4500 P B	
810-36201-1 MSD	RAW-S39	Total/NA	Water	SM 4500 P B	

Analysis Batch: 31625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-1	RAW-S39	Total/NA	Water	SM 4500 P E	31612
810-36201-2	STAG-S39R1	Total/NA	Water	SM 4500 P E	31612
810-36201-3	STAG-S39R2	Total/NA	Water	SM 4500 P E	31612
810-36201-4	RAW-S25	Total/NA	Water	SM 4500 P E	31612
810-36201-7	RAW-S1	Total/NA	Water	SM 4500 P E	31612
810-36201-11	RAW-S24	Total/NA	Water	SM 4500 P E	31612
MBL 810-31612/12-A	Method Blank	Total/NA	Water	SM 4500 P E	31612
LCS 810-31612/11-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31612
LLCS 810-31612/10-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31612
810-36201-1 MS	RAW-S39	Total/NA	Water	SM 4500 P E	31612
810-36201-1 MSD	RAW-S39	Total/NA	Water	SM 4500 P E	31612

Prep Batch: 31776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-5	STAG-S25R1	Total/NA	Water	SM 4500 P B	
810-36201-8	STAG-S1R1	Total/NA	Water	SM 4500 P B	
810-36201-9	STAG-S1R2	Total/NA	Water	SM 4500 P B	
810-36201-12	STAG-S24R1	Total/NA	Water	SM 4500 P B	
810-36201-13	STAG-S24R2	Total/NA	Water	SM 4500 P B	
MBL 810-31776/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-31776/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-31776/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 31824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-5	STAG-S25R1	Total/NA	Water	SM 4500 P E	31776
810-36201-8	STAG-S1R1	Total/NA	Water	SM 4500 P E	31776
810-36201-9	STAG-S1R2	Total/NA	Water	SM 4500 P E	31776
810-36201-12	STAG-S24R1	Total/NA	Water	SM 4500 P E	31776

General Chemistry (Continued)

Analysis Batch: 31824 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-13	STAG-S24R2	Total/NA	Water	SM 4500 P E	31776
MBL 810-31776/4-A	Method Blank	Total/NA	Water	SM 4500 P E	31776
LCS 810-31776/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31776
LLCS 810-31776/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31776

Prep Batch: 31891

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-6	STAG-S25R2	Total/NA	Water	SM 4500 P B	
MBL 810-31891/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-31891/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-31891/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 31896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36201-6	STAG-S25R2	Total/NA	Water	SM 4500 P E	31891
MBL 810-31891/4-A	Method Blank	Total/NA	Water	SM 4500 P E	31891
LCS 810-31891/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31891
LLCS 810-31891/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31891

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-36201-1
Date Collected: 09/01/22 07:40
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 20:03
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 18:52
Total/NA	Analysis	SM 4500 P E		1	30602	JA	EA SB	09/02/22 14:23
Total/NA	Prep	SM 4500 P B			31612	KH	EA SB	09/14/22 07:41
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:41

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-36201-2
Date Collected: 09/01/22 07:43
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 20:05
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 18:54
Total/NA	Analysis	SM 4500 P E		25	30602	JA	EA SB	09/02/22 14:24
Total/NA	Prep	SM 4500 P B			31612	KH	EA SB	09/14/22 08:03
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:43

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-36201-3
Date Collected: 09/01/22 07:45
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 20:07
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 18:56
Total/NA	Analysis	SM 4500 P E		25	30602	JA	EA SB	09/02/22 14:25
Total/NA	Prep	SM 4500 P B			31612	KH	EA SB	09/14/22 08:10
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:44

Client Sample ID: RAW-S25

Lab Sample ID: 810-36201-4
Date Collected: 09/01/22 10:01
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31405	AC	EA SB	09/12/22 22:10
Total/NA	Analysis	200.8		1	31514	JK	EA SB	09/13/22 13:17
Total/NA	Prep	SM 4500 P B			31612	KH	EA SB	09/14/22 08:17
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:44

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-36201-5
Date Collected: 09/01/22 10:03
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31405	AC	EA SB	09/12/22 22:12
Total/NA	Analysis	200.8		1	31514	JK	EA SB	09/13/22 13:19
Total/NA	Analysis	SM 4500 P E		5	30602	JA	EA SB	09/02/22 14:25
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 08:15
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:07

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-36201-6
Date Collected: 09/01/22 10:05
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 20:09
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 18:58
Total/NA	Analysis	SM 4500 P E		5	30602	JA	EA SB	09/02/22 14:26
Total/NA	Prep	SM 4500 P B			31891	KH	EA SB	09/15/22 13:53
Total/NA	Analysis	SM 4500 P E		1	31896	KH	EA SB	09/15/22 16:38

Client Sample ID: RAW-S1

Lab Sample ID: 810-36201-7
Date Collected: 09/01/22 11:57
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31405	AC	EA SB	09/12/22 22:14
Total/NA	Analysis	200.8		1	31510	JK	EA SB	09/13/22 11:56
Total/NA	Analysis	SM 4500 P E		1	30602	JA	EA SB	09/02/22 14:26
Total/NA	Prep	SM 4500 P B			31612	KH	EA SB	09/14/22 08:39
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:44

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-36201-8
Date Collected: 09/01/22 11:58
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31405	AC	EA SB	09/12/22 22:16
Total/NA	Analysis	200.8		1	31510	JK	EA SB	09/13/22 11:58
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 08:35
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:07

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-36201-9
Date Collected: 09/01/22 11:59
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			30942	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31090	AC	EA SB	09/08/22 20:12
Total Recoverable	Prep	200.8			30943	NB	EA SB	09/07/22 13:45
Total Recoverable	Analysis	200.8		1	31073	NB	EA SB	09/08/22 19:01
Total/NA	Analysis	SM 4500 P E		25	30602	JA	EA SB	09/02/22 14:27
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 08:45
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:08

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-36201-10
Date Collected: 09/01/22 12:00
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31405	AC	EA SB	09/12/22 22:18
Total/NA	Analysis	200.8		1	31510	JK	EA SB	09/13/22 12:05
Total/NA	Analysis	SM 4500 P E		5	30602	JA	EA SB	09/02/22 14:30

Client Sample ID: RAW-S24

Lab Sample ID: 810-36201-11
Date Collected: 09/01/22 14:28
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31405	AC	EA SB	09/12/22 22:25
Total/NA	Analysis	200.8		1	31510	JK	EA SB	09/13/22 12:07
Total/NA	Analysis	SM 4500 P E		1	30602	JA	EA SB	09/02/22 14:28
Total/NA	Prep	SM 4500 P B			31612	KH	EA SB	09/14/22 09:01
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:45

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-36201-12
Date Collected: 09/01/22 14:29
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31405	AC	EA SB	09/12/22 22:31
Total/NA	Analysis	200.8		1	31510	JK	EA SB	09/13/22 12:14
Total/NA	Analysis	SM 4500 P E		5	30602	JA	EA SB	09/02/22 14:31
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 09:05
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:08

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-36201-13
Date Collected: 09/01/22 14:30
Matrix: Water
Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31405	AC	EA SB	09/12/22 22:33

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-36201-13

Date Collected: 09/01/22 14:30

Matrix: Water

Date Received: 09/02/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.8		1	31510	JK	EA SB	09/13/22 12:16
Total/NA	Analysis	SM 4500 P E		5	30602	JA	EA SB	09/02/22 14:30
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 09:15
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:08

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
SM 4500 P E		Water	Orthophosphate as PO4
SM 4500 P E	SM 4500 P B	Water	Phosphorus

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
SM 4500 P E	Orthophosphate	SM	EA SB
SM 4500 P E	Phosphorus	SM	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB
SM 4500 P B	Phosphorous, Total and Ortho	SM	EA SB

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36201-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-36201-1	RAW-S39	Water	09/01/22 07:40	09/02/22 08:45
810-36201-2	STAG-S39R1	Water	09/01/22 07:43	09/02/22 08:45
810-36201-3	STAG-S39R2	Water	09/01/22 07:45	09/02/22 08:45
810-36201-4	RAW-S25	Water	09/01/22 10:01	09/02/22 08:45
810-36201-5	STAG-S25R1	Water	09/01/22 10:03	09/02/22 08:45
810-36201-6	STAG-S25R2	Water	09/01/22 10:05	09/02/22 08:45
810-36201-7	RAW-S1	Water	09/01/22 11:57	09/02/22 08:45
810-36201-8	STAG-S1R1	Water	09/01/22 11:58	09/02/22 08:45
810-36201-9	STAG-S1R2	Water	09/01/22 11:59	09/02/22 08:45
810-36201-10	STAG-S1R3	Water	09/01/22 12:00	09/02/22 08:45
810-36201-11	RAW-S24	Water	09/01/22 14:28	09/02/22 08:45
810-36201-12	STAG-S24R1	Water	09/01/22 14:29	09/02/22 08:45
810-36201-13	STAG-S24R2	Water	09/01/22 14:30	09/02/22 08:45

South
110 S Hill
South Be
Phone (5

810-36201 Chain of Custody

Chain of Custody Record

eurofins Environment Testing America

9/16/2022

Client I

Client Contact: James Christopher	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):
Company: Tetra Tech	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:
PWSID:			

COC No: 810-13123-4161.1
Page: Page 1 of 2
Job #:

Address: 201 E Pine St. Ste. 1000	Due Date Requested:
City: Orlando	TAT Requested (days):
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)	PO #:
Email: james.christopher@tetratech.com	WO #:
Project Name: Kalamazoo Pilot	Project #: 81003039
Site:	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8 *	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
RAW-S39	9/1/22	7:40	G	W			X	X	X			
STAG-S39R1	9/1/22	7:43	G	W			X	X	X			Tot. phos pH>2
STAG-S39R2	9/1/22	7:45	G	W			X	X	X			
RAW-S25	9/1/22	10:01	G	W			X	X	X			Did not receive Ortho Phos Rcvd 2 Tot. Phos
STAG-S25R1	9/1/22	10:03	G	W			X	X	X			
STAG-S25R2	9/1/22	10:05	G	W			X	X	X			
RAW-S1	9/1/22	11:57	G	W			X	X	X			
STAG-S1R1	9/1/22	11:58	G	W			X	X	X			No ortho phos - 2 Tot. Phos
STAG-S1R2	9/1/22	11:59	G	W			X	X	X			2 Tot. phos
STAG-S1R3	9/1/22	12:00	G	W			X	X	X			No Tot. phos.
RAW-S24	9/1/22	14:28	G	W			X	X	X			

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Sara Hayes	09/01/22 17:00	TT	Fed Ex	09/01/22 17:00	
			Penny Pehling Wright	09/02/22 0845	EEA

Initial Temp: 0.6
Corrected Temp: 1.4
IR Gun #: 28

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: Wet

*pH Acceptable

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

eurofins Environment Testing America

9/16/2022

Client Information	Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:
Client Contact:	Phone:	E-Mail:	State of Origin:	Page: Page 2 of 2
Company:	PWSID:			Job #:
Address:	Due Date Requested:			
City:	TAT Requested (days):			
State, Zip:	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email:	WO #:			
Project Name:	Project #:			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analyses	4500_P_E_OrtHo - Orthophosphate										Total Number of containers	Special Instructions/Note:
			Preservation Code:																	
STAG-S24R1	9/1/22	14:29	G	W			X	X	X											
STAG-S24R2	9/1/22	14:30	G	W			X	X	X											

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Sara Hayes	09-01-22 17:00	TF	FedEx	09-01-22 17:00	
			Penny Perkins Wright	09/02/22 0845	EEA

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

*pH Acceptable

Cooler Temperature(s) °C and Other Remarks:

Initial Temp: 0.6
Corrected Temp: 1.9
IR Gun # 28
Wet

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-36201-1

Login Number: 36201

List Source: Eurofins Eaton South Bend

List Number: 1

Creator: Pehling-Wright, Penny

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-36802-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
9/23/2022 12:52:41 PM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 6
QC Sample Results 7
QC Association Summary 9
Lab Chronicle 10
Certification Summary 12
Method Summary 13
Sample Summary 14
Chain of Custody 15
Receipt Checklists 16

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36802-1

Qualifiers

Metals

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

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-36802-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-36802-1

Receipt
The samples were received on 9/9/2022 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.2°C

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36802-1

Client Sample ID: S1RAW — Lab Sample ID: 810-36802-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	0.39		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: S1R1 — Lab Sample ID: 810-36802-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	15		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: S1R2 — Lab Sample ID: 810-36802-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	14		0.010		mg/L	1		200.7 Rev 4.4	Total Recoverable

Client Sample ID: S1R3 — Lab Sample ID: 810-36802-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	13		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: S24RAW — Lab Sample ID: 810-36802-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	1.2		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: S24R1 — Lab Sample ID: 810-36802-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	9.6		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: S24R2 — Lab Sample ID: 810-36802-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	10		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36802-1

Client Sample ID: S1RAW — Lab Sample ID: 810-36802-1

Date Collected: 09/02/22 09:47 — **Matrix: Water**
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.39		0.010		mg/L			09/15/22 11:51	1

Client Sample ID: S1R1 — Lab Sample ID: 810-36802-2

Date Collected: 09/02/22 09:42 — **Matrix: Water**
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	15		0.010		mg/L			09/15/22 11:57	1

Client Sample ID: S1R2 — Lab Sample ID: 810-36802-3

Date Collected: 09/02/22 09:43 — **Matrix: Water**
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	14		0.010		mg/L		09/15/22 12:30	09/21/22 17:05	1

Client Sample ID: S1R3 — Lab Sample ID: 810-36802-4

Date Collected: 09/02/22 09:44 — **Matrix: Water**
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	13		0.010		mg/L			09/15/22 11:59	1

Client Sample ID: S24RAW — Lab Sample ID: 810-36802-5

Date Collected: 09/02/22 09:48 — **Matrix: Water**
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1.2		0.010		mg/L			09/15/22 12:01	1

Client Sample ID: S24R1 — Lab Sample ID: 810-36802-6

Date Collected: 09/02/22 09:45 — **Matrix: Water**
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	9.6		0.010		mg/L			09/15/22 12:04	1

Client Sample ID: S24R2 — Lab Sample ID: 810-36802-7

Date Collected: 09/02/22 09:46 — **Matrix: Water**
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	10		0.010		mg/L			09/15/22 12:06	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-31853/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L			09/15/22 11:44	1

Lab Sample ID: MB 810-31853/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L			09/15/22 12:51	1

Lab Sample ID: LCS 810-31853/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5.00	5.03		mg/L		101	85 - 115

Lab Sample ID: LLCS 810-31853/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.0100	0.00960	J	mg/L		96	50 - 150

Lab Sample ID: 810-36802-1 MS — **Client Sample ID: S1RAW**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.39		5.00	5.45		mg/L		101	70 - 130

Lab Sample ID: 810-36802-1 MSD — **Client Sample ID: S1RAW**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Iron	0.39		5.00	5.44		mg/L		101	70 - 130	0	20

Lab Sample ID: MB 810-31915/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32098 — **Prep Batch: 31915**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L		09/15/22 12:30	09/16/22 21:48	1

Lab Sample ID: LLCS 810-31915/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32098 — **Prep Batch: 31915**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.0100	0.0106		mg/L		106	50 - 150

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36802-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-31916/1-A
Matrix: Water
Analysis Batch: 32098

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 31916

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L		09/15/22 12:30	09/16/22 22:51	1

Lab Sample ID: MB 810-31916/1-A
Matrix: Water
Analysis Batch: 32526

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 31916

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L		09/15/22 12:30	09/21/22 16:52	1

Lab Sample ID: LCS 810-31916/4-A
Matrix: Water
Analysis Batch: 32098

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 31916

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Iron			5.00	5.08		mg/L		102	85 - 115		

Lab Sample ID: LCS 810-31916/4-A
Matrix: Water
Analysis Batch: 32526

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 31916

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Iron			5.00	5.08		mg/L		102	85 - 115		

Lab Sample ID: LLCS 810-31916/2-A
Matrix: Water
Analysis Batch: 32526

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 31916

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Iron			0.0100	0.0112		mg/L		112	50 - 150		

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36802-1

Metals

Analysis Batch: 31853

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36802-1	S1RAW	Total/NA	Water	200.7 Rev 4.4	
810-36802-2	S1R1	Total/NA	Water	200.7 Rev 4.4	
810-36802-4	S1R3	Total/NA	Water	200.7 Rev 4.4	
810-36802-5	S24RAW	Total/NA	Water	200.7 Rev 4.4	
810-36802-6	S24R1	Total/NA	Water	200.7 Rev 4.4	
810-36802-7	S24R2	Total/NA	Water	200.7 Rev 4.4	
MB 810-31853/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-31853/43	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-31853/14	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-31853/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-36802-1 MS	S1RAW	Total/NA	Water	200.7 Rev 4.4	
810-36802-1 MSD	S1RAW	Total/NA	Water	200.7 Rev 4.4	

Prep Batch: 31915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 810-31915/1-A	Method Blank	Total Recoverable	Water	200.7	
LLCS 810-31915/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Prep Batch: 31916

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36802-3	S1R2	Total Recoverable	Water	200.7	
MB 810-31916/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-31916/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-31916/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Analysis Batch: 32098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 810-31915/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	31915
MB 810-31916/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	31916
LCS 810-31916/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	31916
LLCS 810-31915/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	31915

Analysis Batch: 32526

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36802-3	S1R2	Total Recoverable	Water	200.7 Rev 4.4	31916
MB 810-31916/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	31916
LCS 810-31916/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	31916
LLCS 810-31916/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	31916

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36802-1

Client Sample ID: S1RAW — Lab Sample ID: 810-36802-1

Date Collected: 09/02/22 09:47 — **Matrix: Water**
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 11:51

Client Sample ID: S1R1 — Lab Sample ID: 810-36802-2

Date Collected: 09/02/22 09:42 — **Matrix: Water**
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 11:57

Client Sample ID: S1R2 — Lab Sample ID: 810-36802-3

Date Collected: 09/02/22 09:43 — **Matrix: Water**
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			31916	NB	EA SB	09/15/22 12:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	32526	AC	EA SB	09/21/22 17:05

Client Sample ID: S1R3 — Lab Sample ID: 810-36802-4

Date Collected: 09/02/22 09:44 — **Matrix: Water**
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 11:59

Client Sample ID: S24RAW — Lab Sample ID: 810-36802-5

Date Collected: 09/02/22 09:48 — **Matrix: Water**
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:01

Client Sample ID: S24R1 — Lab Sample ID: 810-36802-6

Date Collected: 09/02/22 09:45 — **Matrix: Water**
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:04

Client Sample ID: S24R2 — Lab Sample ID: 810-36802-7

Date Collected: 09/02/22 09:46 — **Matrix: Water**
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:06

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36802-1

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36802-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Iron
200.7 Rev 4.4	200.7	Water	Iron

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36802-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36802-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-36802-1	S1RAW	Water	09/02/22 09:47	09/09/22 08:45
810-36802-2	S1R1	Water	09/02/22 09:42	09/09/22 08:45
810-36802-3	S1R2	Water	09/02/22 09:43	09/09/22 08:45
810-36802-4	S1R3	Water	09/02/22 09:44	09/09/22 08:45
810-36802-5	S24RAW	Water	09/02/22 09:48	09/09/22 08:45
810-36802-6	S24R1	Water	09/02/22 09:45	09/09/22 08:45
810-36802-7	S24R2	Water	09/02/22 09:46	09/09/22 08:45

810-36802 Chain of Custody

Chain of Custody Record

eurofins Environmental Testing America

9/23/2022

	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: 90822.02
	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1

npany: tra Tech | PWSID:

Job #:

ress: 1 E Pine St. Ste. 1000
: lando
te, Zip: , 32801
one: 7-480-3907 (Tel) 407-839-3790(Fax)
ail: nes.christopher@tetratech.com
ject Name: lamazoo Pilot
#:

Due Date Requested:
TAT Requested (days):
Compliance Project: Δ Yes Δ No
PO #:
WO #:
Project #: 81003039
SSOW#:

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

mple Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
)L-S1RAW	9/2/22	9:47	G	W						X		pH Acceptable 250
)L-S1R1	9/2/22	9:42	G	W						X		pH Acceptable
)L-S1R2	9/2/22	9:43	G	W						X		pH Acceptable
)L-S1R3	9/2/22	9:44	G	W						X		pH Acceptable
)L-S24RAW	9/2/22	9:48	G	W						X		pH Acceptable
)L-S24R1	9/2/22	9:45	G	W						X		pH Acceptable
)L-S24R2	9/2/22	9:46	G	W						X		pH Acceptable

ttial Temp: 0.4
ted Temp: 0.2
Gun # 18

ssible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

liverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: WS

npty Kit Relinquished by:	Date:	Time:	Method of Shipment: FedEx		
inquished by: Sara Hayes	Date/Time: 09-08-22 18:30	Company TT	Received by: FedEx	Date/Time: 09-08-22 18:30	Company ~~18:30~~
inquished by:	Date/Time:	Company	Received by: KDm	Date/Time: 9-9-22 0845	Company
inquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-36802-1

Login Number: 36802
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-36729-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
9/16/2022 11:58:55 AM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 8
QC Sample Results 13
QC Association Summary 19
Lab Chronicle 23
Certification Summary 27
Method Summary 28
Sample Summary 29
Chain of Custody 30
Receipt Checklists 34

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Qualifiers

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

General Chemistry

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

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-36729-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-36729-1

Receipt
The samples were received on 9/9/2022 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.2°C

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

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Client Sample ID: Raw-S39 — Lab Sample ID: 810-36729-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	88		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.6		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.032		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.077		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.098		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S39R1 — Lab Sample ID: 810-36729-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	89		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	60		1.0		ug/L	1		200.8	Total Recoverable
Lead	420		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	6.4		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	6.8		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	20		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S39R2 — Lab Sample ID: 810-36729-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	89		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	14		1.0		ug/L	1		200.8	Total/NA
Lead	190		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	1.3		0.060		mg/L	2		SM 4500 P E	Total/NA
Phosphorus	2.1		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	3.8		0.18		mg/L	2		SM 4500 P E	Total/NA

Client Sample ID: RAW-S25 — Lab Sample ID: 810-36729-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	83		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	4.5		1.0		ug/L	1		200.8	Total/NA
Lead	1.1		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.087		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.16		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.27		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R1 — Lab Sample ID: 810-36729-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	82		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	3.8		1.0		ug/L	1		200.8	Total/NA
Lead	7.9		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	1.7		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	2.0		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	5.2		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-36729-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	83		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	4.9		1.0		ug/L	1		200.8	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: STAG-S25R2 (Continued) — Lab Sample ID: 810-36729-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	5.9		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.5		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	2.8		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	7.5		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S1 — Lab Sample ID: 810-36729-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-36729-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	45		1.0		ug/L	1		200.8	Total Recoverable
Lead	390		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	19		3.0		mg/L	100		SM 4500 P E	Total/NA
Phosphorus	5.4		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	59		9.2		mg/L	100		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-36729-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	96		1.0		ug/L	1		200.8	Total Recoverable
Lead	180		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	5.9		0.30		mg/L	10		SM 4500 P E	Total/NA
Phosphorus	17		5.0		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	18		0.92		mg/L	10		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-36729-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	130		1.0		ug/L	1		200.8	Total Recoverable
Lead	260		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	14		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	27		2.5		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	43		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: RAW-S24 — Lab Sample ID: 810-36729-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	58		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	15		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.48		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.62		0.050		mg/L	1		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Client Sample ID: RAW-S24 (Continued) — Lab Sample ID: 810-36729-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Orthophosphate as PO4	1.5		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-36729-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	58		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	25		1.0		ug/L	1		200.8	Total/NA
Lead	45		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	3.1		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	3.5		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	9.4		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-36729-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	59		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	19		1.0		ug/L	1		200.8	Total/NA
Lead	51		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	3.5		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	4.1		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	11		0.46		mg/L	5		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Client Sample ID: Raw-S39

Lab Sample ID: 810-36729-1
Date Collected: 09/08/22 07:52
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	88		0.10		mg/L			09/15/22 12:08	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.6		1.0		ug/L			09/14/22 21:08	1
Lead	<0.50		0.50		ug/L			09/14/22 21:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.032		0.030		mg/L			09/09/22 15:38	1
Phosphorus	0.077		0.050		mg/L		09/14/22 09:51	09/14/22 10:46	1
Orthophosphate as PO4	0.098		0.092		mg/L			09/09/22 15:38	1

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-36729-2
Date Collected: 09/08/22 07:55
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	89		0.10		mg/L		09/14/22 13:45	09/15/22 16:32	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	60		1.0		ug/L		09/14/22 13:45	09/15/22 17:34	1
Lead	420		0.50		ug/L		09/14/22 13:45	09/15/22 17:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	6.4		0.75		mg/L			09/09/22 15:38	25
Phosphorus	6.8		1.3		mg/L		09/14/22 09:58	09/14/22 10:46	1
Orthophosphate as PO4	20		2.3		mg/L			09/09/22 15:38	25

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-36729-3
Date Collected: 09/08/22 07:57
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	89		0.10		mg/L			09/15/22 12:10	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	14		1.0		ug/L			09/14/22 21:16	1
Lead	190		0.50		ug/L			09/14/22 21:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	1.3		0.060		mg/L			09/09/22 16:00	2
Phosphorus	2.1		0.25		mg/L		09/15/22 09:25	09/15/22 11:08	1
Orthophosphate as PO4	3.8		0.18		mg/L			09/09/22 16:00	2

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Client Sample ID: RAW-S25

Lab Sample ID: 810-36729-4
Date Collected: 09/08/22 10:52
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	83		0.10		mg/L			09/15/22 12:12	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	4.5		1.0		ug/L			09/14/22 21:24	1
Lead	1.1		0.50		ug/L			09/14/22 21:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.087		0.030		mg/L			09/09/22 15:39	1
Phosphorus	0.16		0.050		mg/L		09/14/22 10:13	09/14/22 10:47	1
Orthophosphate as PO4	0.27		0.092		mg/L			09/09/22 15:39	1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-36729-5
Date Collected: 09/08/22 10:55
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	82		0.10		mg/L			09/15/22 12:14	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	3.8		1.0		ug/L			09/14/22 21:27	1
Lead	7.9		0.50		ug/L			09/14/22 21:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	1.7		0.15		mg/L			09/09/22 15:39	5
Phosphorus	2.0		0.25		mg/L		09/15/22 09:35	09/15/22 11:09	1
Orthophosphate as PO4	5.2		0.46		mg/L			09/09/22 15:39	5

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-36729-6
Date Collected: 09/08/22 12:48
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	83		0.10		mg/L			09/15/22 12:21	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	4.9		1.0		ug/L			09/14/22 21:30	1
Lead	5.9		0.50		ug/L			09/14/22 21:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	2.5		0.15		mg/L			09/09/22 15:40	5
Phosphorus	2.8		0.25		mg/L		09/15/22 09:45	09/15/22 11:09	1
Orthophosphate as PO4	7.5		0.46		mg/L			09/09/22 15:40	5

Client Sample ID: RAW-S1

Lab Sample ID: 810-36729-7

Date Collected: 09/08/22 12:50
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L			09/15/22 12:27	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/14/22 21:32	1
Lead	<0.50		0.50		ug/L			09/14/22 21:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.030		0.030		mg/L			09/09/22 15:40	1
Phosphorus	<0.050		0.050		mg/L		09/14/22 07:19	09/14/22 10:49	1
Orthophosphate as PO4	<0.092		0.092		mg/L			09/09/22 15:40	1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-36729-8

Date Collected: 09/08/22 12:52
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		09/14/22 13:45	09/15/22 16:34	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	45		1.0		ug/L		09/14/22 13:45	09/15/22 17:37	1
Lead	390		0.50		ug/L		09/14/22 13:45	09/15/22 17:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	19		3.0		mg/L			09/09/22 16:00	100
Phosphorus	5.4		1.3		mg/L		09/15/22 14:03	09/15/22 16:38	1
Orthophosphate as PO4	59		9.2		mg/L			09/09/22 16:00	100

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-36729-9

Date Collected: 09/08/22 12:52
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		09/14/22 13:45	09/15/22 16:36	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	96		1.0		ug/L		09/14/22 13:45	09/15/22 17:39	1
Lead	180		0.50		ug/L		09/14/22 13:45	09/15/22 17:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	5.9		0.30		mg/L			09/09/22 15:54	10
Phosphorus	17		5.0		mg/L		09/15/22 14:14	09/15/22 16:38	1
Orthophosphate as PO4	18		0.92		mg/L			09/09/22 15:54	10

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-36729-10

Date Collected: 09/08/22 12:54
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		09/14/22 13:45	09/15/22 16:39	1

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	130		1.0		ug/L		09/14/22 13:45	09/15/22 17:41	1
Lead	260		0.50		ug/L		09/14/22 13:45	09/15/22 17:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	14		0.75		mg/L			09/09/22 15:55	25
Phosphorus	27		2.5		mg/L		09/15/22 10:15	09/15/22 11:09	1
Orthophosphate as PO4	43		2.3		mg/L			09/09/22 15:55	25

Client Sample ID: RAW-S24

Lab Sample ID: 810-36729-11

Date Collected: 09/08/22 15:40
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	58		0.10		mg/L			09/15/22 12:29	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	15		1.0		ug/L			09/14/22 21:35	1
Lead	<0.50		0.50		ug/L			09/14/22 21:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	0.48		0.030		mg/L			09/09/22 15:45	1
Phosphorus	0.62		0.050		mg/L		09/14/22 07:57	09/14/22 10:49	1
Orthophosphate as PO4	1.5		0.092		mg/L			09/09/22 15:45	1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-36729-12

Date Collected: 09/08/22 15:42
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	58		0.10		mg/L			09/15/22 12:32	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	25		1.0		ug/L			09/14/22 21:38	1
Lead	45		0.50		ug/L			09/14/22 21:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	3.1		0.15		mg/L			09/09/22 15:45	5
Phosphorus	3.5		0.25		mg/L		09/15/22 10:25	09/15/22 11:10	1
Orthophosphate as PO4	9.4		0.46		mg/L			09/09/22 15:45	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-36729-13

Date Collected: 09/08/22 15:44
Matrix: Water
Date Received: 09/09/22 08:45

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	59		0.10		mg/L			09/15/22 12:34	1

Method: 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	19		1.0		ug/L			09/14/22 21:41	1
Lead	51		0.50		ug/L			09/14/22 21:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	3.5		0.15		mg/L			09/09/22 15:45	5
Phosphorus	4.1		0.25		mg/L		09/15/22 10:35	09/15/22 11:10	1
Orthophosphate as PO4	11		0.46		mg/L			09/09/22 15:45	5

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-31853/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			09/15/22 11:44	1

Lab Sample ID: MB 810-31853/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			09/15/22 12:51	1

Lab Sample ID: LCS 810-31853/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	5.02		mg/L		100	85 - 115

Lab Sample ID: LLCS 810-31853/13 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0999	J	mg/L		100	50 - 150

Lab Sample ID: 810-36729-6 MS — **Client Sample ID: STAG-S25R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	83		5.00	87.1	4	mg/L		92	70 - 130

Lab Sample ID: 810-36729-6 MSD — **Client Sample ID: STAG-S25R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31853

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	83		5.00	87.0	4	mg/L		88	70 - 130	0	20

Lab Sample ID: MB 810-31696/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31903 — **Prep Batch: 31696**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		09/14/22 13:45	09/15/22 15:36	1

Lab Sample ID: LCS 810-31696/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31903 — **Prep Batch: 31696**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	5.04		mg/L		101	85 - 115

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: LLCS 810-31696/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31903 — **Prep Batch: 31696**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		136	50 - 150

Lab Sample ID: LLCS 810-31696/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31903 — **Prep Batch: 31696**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0900	J	mg/L		90	50 - 150

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-31757/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31757

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/14/22 17:49	1
Lead	<0.50		0.50		ug/L			09/14/22 17:49	1

Lab Sample ID: MB 810-31757/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31757

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/14/22 19:11	1
Lead	<0.50		0.50		ug/L			09/14/22 19:11	1

Lab Sample ID: MB 810-31757/73 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31757

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/14/22 20:32	1
Lead	<0.50		0.50		ug/L			09/14/22 20:32	1

Lab Sample ID: LCS 810-31757/74 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31757

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	47.2		ug/L		94	85 - 115
Lead	50.0	48.1		ug/L		96	85 - 115

Lab Sample ID: LLCS 810-31757/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31757

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		118	50 - 150
Lead	0.300	0.287	J	ug/L		96	50 - 150

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-31757/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31757

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Copper			1.00	0.953	J	ug/L		95	50 - 150		

Lab Sample ID: 810-36729-3 MS — **Client Sample ID: STAG-S39R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31757

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Copper	14		50.0	60.5		ug/L		93	70 - 130		
Lead	190		50.0	237		ug/L		96	70 - 130		

Lab Sample ID: 810-36729-3 MSD — **Client Sample ID: STAG-S39R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31757

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	14		50.0	60.4		ug/L		93	70 - 130	0	20
Lead	190		50.0	238		ug/L		98	70 - 130	1	20

Lab Sample ID: MB 810-31699/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31913 — **Prep Batch: 31699**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		09/14/22 13:45	09/15/22 16:36	1
Lead	<0.50		0.50		ug/L		09/14/22 13:45	09/15/22 16:36	1

Lab Sample ID: LCS 810-31699/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31913 — **Prep Batch: 31699**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Copper			50.0	49.7		ug/L		99	85 - 115		
Lead			50.0	52.8		ug/L		106	85 - 115		

Lab Sample ID: LLCS 810-31699/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31913 — **Prep Batch: 31699**

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Lead			0.300	0.286	J	ug/L		95	50 - 150		

Lab Sample ID: LLCS 810-31699/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 31913 — **Prep Batch: 31699**

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Copper			1.00	0.741	J	ug/L		74	50 - 150		

Method: SM 4500 P E - Phosphorus

Lab Sample ID: MBL 810-31612/12-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31612**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/14/22 07:34	09/14/22 10:41	1

Lab Sample ID: LCS 810-31612/11-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31612**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.496		mg/L		99	86 - 113

Lab Sample ID: LLCS 810-31612/10-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31612**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0440	J	mg/L		88	50 - 150

Lab Sample ID: MBL 810-31613/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31613**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/14/22 06:42	09/14/22 10:48	1

Lab Sample ID: LCS 810-31613/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31613**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.491		mg/L		98	86 - 113

Lab Sample ID: LLCS 810-31613/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31625 — **Prep Batch: 31613**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0450	J	mg/L		90	50 - 150

Lab Sample ID: MBL 810-31776/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31824 — **Prep Batch: 31776**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/15/22 06:45	09/15/22 11:06	1

Lab Sample ID: LCS 810-31776/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31824 — **Prep Batch: 31776**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.487		mg/L		97	86 - 113

Method: SM 4500 P E - Phosphorus

Lab Sample ID: LLCS 810-31776/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31824 — **Prep Batch: 31776**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0620		mg/L		124	50 - 150

Lab Sample ID: MBL 810-31891/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31896 — **Prep Batch: 31891**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/15/22 12:10	09/15/22 16:36	1

Lab Sample ID: LCS 810-31891/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31896 — **Prep Batch: 31891**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.509		mg/L		102	86 - 113

Lab Sample ID: LLCS 810-31891/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31896 — **Prep Batch: 31891**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0560		mg/L		112	50 - 150

Method: SM 4500 P E - Orthophosphate

Lab Sample ID: MBL 810-31209/33 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31209

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			09/09/22 15:49	1
Orthophosphate as PO4	<0.046		0.092		mg/L			09/09/22 15:49	1

Lab Sample ID: MBL 810-31209/6 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31209

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			09/09/22 15:38	1
Orthophosphate as PO4	<0.046		0.092		mg/L			09/09/22 15:38	1

Lab Sample ID: LCS 810-31209/32 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31209

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.486		mg/L		97	84 - 109

Method: SM 4500 P E - Orthophosphate (Continued)

Lab Sample ID: LCS 810-31209/5 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31209

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho			0.500	0.491		mg/L		98	84 - 109		

Lab Sample ID: LLCS 810-31209/31 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31209

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho			0.0300	0.0250	J	mg/L		83	50 - 150		

Lab Sample ID: LLCS 810-31209/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31209

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho			0.0300	0.0290	J	mg/L		97	50 - 150		

Lab Sample ID: 810-36729-1 MS — **Client Sample ID: Raw-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31209

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho	0.032		0.500	0.548		mg/L		103	75 - 195		

Lab Sample ID: 810-36729-1 MSD — **Client Sample ID: Raw-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 31209

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphate, ortho	0.032		0.500	0.550		mg/L		104	75 - 195	0	20

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Metals

Prep Batch: 31696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-2	STAG-S39R1	Total Recoverable	Water	200.7	
810-36729-8	STAG-S1R1	Total Recoverable	Water	200.7	
810-36729-9	STAG-S1R2	Total Recoverable	Water	200.7	
810-36729-10	STAG-S1R3	Total Recoverable	Water	200.7	
MB 810-31696/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-31696/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-31696/2-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-31696/3-A	Lab Control Sample	Total Recoverable	Water	200.7	

Prep Batch: 31699

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-2	STAG-S39R1	Total Recoverable	Water	200.8	
810-36729-8	STAG-S1R1	Total Recoverable	Water	200.8	
810-36729-9	STAG-S1R2	Total Recoverable	Water	200.8	
810-36729-10	STAG-S1R3	Total Recoverable	Water	200.8	
MB 810-31699/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-31699/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-31699/2-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-31699/3-A	Lab Control Sample	Total Recoverable	Water	200.8	

Analysis Batch: 31757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-1	Raw-S39	Total/NA	Water	200.8	
810-36729-3	STAG-S39R2	Total/NA	Water	200.8	
810-36729-4	RAW-S25	Total/NA	Water	200.8	
810-36729-5	STAG-S25R1	Total/NA	Water	200.8	
810-36729-6	STAG-S25R2	Total/NA	Water	200.8	
810-36729-7	RAW-S1	Total/NA	Water	200.8	
810-36729-11	RAW-S24	Total/NA	Water	200.8	
810-36729-12	STAG-S24R1	Total/NA	Water	200.8	
810-36729-13	STAG-S24R2	Total/NA	Water	200.8	
MB 810-31757/13	Method Blank	Total/NA	Water	200.8	
MB 810-31757/43	Method Blank	Total/NA	Water	200.8	
MB 810-31757/73	Method Blank	Total/NA	Water	200.8	
LCS 810-31757/74	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-31757/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-31757/12	Lab Control Sample	Total/NA	Water	200.8	
810-36729-3 MS	STAG-S39R2	Total/NA	Water	200.8	
810-36729-3 MSD	STAG-S39R2	Total/NA	Water	200.8	

Analysis Batch: 31853

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-1	Raw-S39	Total/NA	Water	200.7 Rev 4.4	
810-36729-3	STAG-S39R2	Total/NA	Water	200.7 Rev 4.4	
810-36729-4	RAW-S25	Total/NA	Water	200.7 Rev 4.4	
810-36729-5	STAG-S25R1	Total/NA	Water	200.7 Rev 4.4	
810-36729-6	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	
810-36729-7	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-36729-11	RAW-S24	Total/NA	Water	200.7 Rev 4.4	
810-36729-12	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-36729-13	STAG-S24R2	Total/NA	Water	200.7 Rev 4.4	

Metals (Continued)

Analysis Batch: 31853 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 810-31853/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-31853/43	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-31853/14	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-31853/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-36729-6 MS	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	
810-36729-6 MSD	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	

Analysis Batch: 31903

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-2	STAG-S39R1	Total Recoverable	Water	200.7 Rev 4.4	31696
810-36729-8	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	31696
810-36729-9	STAG-S1R2	Total Recoverable	Water	200.7 Rev 4.4	31696
810-36729-10	STAG-S1R3	Total Recoverable	Water	200.7 Rev 4.4	31696
MB 810-31696/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	31696
LCS 810-31696/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	31696
LLCS 810-31696/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	31696
LLCS 810-31696/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	31696

Analysis Batch: 31913

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-2	STAG-S39R1	Total Recoverable	Water	200.8	31699
810-36729-8	STAG-S1R1	Total Recoverable	Water	200.8	31699
810-36729-9	STAG-S1R2	Total Recoverable	Water	200.8	31699
810-36729-10	STAG-S1R3	Total Recoverable	Water	200.8	31699
MB 810-31699/1-A	Method Blank	Total Recoverable	Water	200.8	31699
LCS 810-31699/6-A	Lab Control Sample	Total Recoverable	Water	200.8	31699
LLCS 810-31699/2-A	Lab Control Sample	Total Recoverable	Water	200.8	31699
LLCS 810-31699/3-A	Lab Control Sample	Total Recoverable	Water	200.8	31699

General Chemistry

Analysis Batch: 31209

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-1	Raw-S39	Total/NA	Water	SM 4500 P E	
810-36729-2	STAG-S39R1	Total/NA	Water	SM 4500 P E	
810-36729-3	STAG-S39R2	Total/NA	Water	SM 4500 P E	
810-36729-4	RAW-S25	Total/NA	Water	SM 4500 P E	
810-36729-5	STAG-S25R1	Total/NA	Water	SM 4500 P E	
810-36729-6	STAG-S25R2	Total/NA	Water	SM 4500 P E	
810-36729-7	RAW-S1	Total/NA	Water	SM 4500 P E	
810-36729-8	STAG-S1R1	Total/NA	Water	SM 4500 P E	
810-36729-9	STAG-S1R2	Total/NA	Water	SM 4500 P E	
810-36729-10	STAG-S1R3	Total/NA	Water	SM 4500 P E	
810-36729-11	RAW-S24	Total/NA	Water	SM 4500 P E	
810-36729-12	STAG-S24R1	Total/NA	Water	SM 4500 P E	
810-36729-13	STAG-S24R2	Total/NA	Water	SM 4500 P E	
MBL 810-31209/33	Method Blank	Total/NA	Water	SM 4500 P E	
MBL 810-31209/6	Method Blank	Total/NA	Water	SM 4500 P E	
LCS 810-31209/32	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LCS 810-31209/5	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-31209/31	Lab Control Sample	Total/NA	Water	SM 4500 P E	

General Chemistry (Continued)

Analysis Batch: 31209 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-31209/4	Lab Control Sample	Total/NA	Water	SM 4500 P E	
810-36729-1 MS	Raw-S39	Total/NA	Water	SM 4500 P E	
810-36729-1 MSD	Raw-S39	Total/NA	Water	SM 4500 P E	

Prep Batch: 31612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-1	Raw-S39	Total/NA	Water	SM 4500 P B	
810-36729-2	STAG-S39R1	Total/NA	Water	SM 4500 P B	
810-36729-4	RAW-S25	Total/NA	Water	SM 4500 P B	
MBL 810-31612/12-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-31612/11-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-31612/10-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Prep Batch: 31613

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-7	RAW-S1	Total/NA	Water	SM 4500 P B	
810-36729-11	RAW-S24	Total/NA	Water	SM 4500 P B	
MBL 810-31613/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-31613/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-31613/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 31625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-1	Raw-S39	Total/NA	Water	SM 4500 P E	31612
810-36729-2	STAG-S39R1	Total/NA	Water	SM 4500 P E	31612
810-36729-4	RAW-S25	Total/NA	Water	SM 4500 P E	31612
810-36729-7	RAW-S1	Total/NA	Water	SM 4500 P E	31613
810-36729-11	RAW-S24	Total/NA	Water	SM 4500 P E	31613
MBL 810-31612/12-A	Method Blank	Total/NA	Water	SM 4500 P E	31612
MBL 810-31613/4-A	Method Blank	Total/NA	Water	SM 4500 P E	31613
LCS 810-31612/11-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31612
LCS 810-31613/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31613
LLCS 810-31612/10-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31612
LLCS 810-31613/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31613

Prep Batch: 31776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-3	STAG-S39R2	Total/NA	Water	SM 4500 P B	
810-36729-5	STAG-S25R1	Total/NA	Water	SM 4500 P B	
810-36729-6	STAG-S25R2	Total/NA	Water	SM 4500 P B	
810-36729-10	STAG-S1R3	Total/NA	Water	SM 4500 P B	
810-36729-12	STAG-S24R1	Total/NA	Water	SM 4500 P B	
810-36729-13	STAG-S24R2	Total/NA	Water	SM 4500 P B	
MBL 810-31776/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-31776/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-31776/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 31824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-3	STAG-S39R2	Total/NA	Water	SM 4500 P E	31776
810-36729-5	STAG-S25R1	Total/NA	Water	SM 4500 P E	31776

General Chemistry (Continued)

Analysis Batch: 31824 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-6	STAG-S25R2	Total/NA	Water	SM 4500 P E	31776
810-36729-10	STAG-S1R3	Total/NA	Water	SM 4500 P E	31776
810-36729-12	STAG-S24R1	Total/NA	Water	SM 4500 P E	31776
810-36729-13	STAG-S24R2	Total/NA	Water	SM 4500 P E	31776
MBL 810-31776/4-A	Method Blank	Total/NA	Water	SM 4500 P E	31776
LCS 810-31776/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31776
LLCS 810-31776/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31776

Prep Batch: 31891

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-8	STAG-S1R1	Total/NA	Water	SM 4500 P B	
810-36729-9	STAG-S1R2	Total/NA	Water	SM 4500 P B	
MBL 810-31891/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-31891/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-31891/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 31896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-36729-8	STAG-S1R1	Total/NA	Water	SM 4500 P E	31891
810-36729-9	STAG-S1R2	Total/NA	Water	SM 4500 P E	31891
MBL 810-31891/4-A	Method Blank	Total/NA	Water	SM 4500 P E	31891
LCS 810-31891/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31891
LLCS 810-31891/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	31891

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Client Sample ID: Raw-S39

Lab Sample ID: 810-36729-1
Date Collected: 09/08/22 07:52
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:08
Total/NA	Analysis	200.8		1	31757	NB	EA SB	09/14/22 21:08
Total/NA	Analysis	SM 4500 P E		1	31209	KH	EA SB	09/09/22 15:38
Total/NA	Prep	SM 4500 P B			31612	KH	EA SB	09/14/22 09:51
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:46

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-36729-2
Date Collected: 09/08/22 07:55
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			31696	NB	EA SB	09/14/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31903	AC	EA SB	09/15/22 16:32
Total Recoverable	Prep	200.8			31699	NB	EA SB	09/14/22 13:45
Total Recoverable	Analysis	200.8		1	31913	NB	EA SB	09/15/22 17:34
Total/NA	Analysis	SM 4500 P E		25	31209	KH	EA SB	09/09/22 15:38
Total/NA	Prep	SM 4500 P B			31612	KH	EA SB	09/14/22 09:58
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:46

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-36729-3
Date Collected: 09/08/22 07:57
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:10
Total/NA	Analysis	200.8		1	31757	NB	EA SB	09/14/22 21:16
Total/NA	Analysis	SM 4500 P E		2	31209	KH	EA SB	09/09/22 16:00
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 09:25
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:08

Client Sample ID: RAW-S25

Lab Sample ID: 810-36729-4
Date Collected: 09/08/22 10:52
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:12
Total/NA	Analysis	200.8		1	31757	NB	EA SB	09/14/22 21:24
Total/NA	Analysis	SM 4500 P E		1	31209	KH	EA SB	09/09/22 15:39
Total/NA	Prep	SM 4500 P B			31612	KH	EA SB	09/14/22 10:13
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:47

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-36729-5
Date Collected: 09/08/22 10:55
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:14
Total/NA	Analysis	200.8		1	31757	NB	EA SB	09/14/22 21:27
Total/NA	Analysis	SM 4500 P E		5	31209	KH	EA SB	09/09/22 15:39
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 09:35
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:09

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-36729-6
Date Collected: 09/08/22 12:48
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:21
Total/NA	Analysis	200.8		1	31757	NB	EA SB	09/14/22 21:30
Total/NA	Analysis	SM 4500 P E		5	31209	KH	EA SB	09/09/22 15:40
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 09:45
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:09

Client Sample ID: RAW-S1

Lab Sample ID: 810-36729-7
Date Collected: 09/08/22 12:50
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:27
Total/NA	Analysis	200.8		1	31757	NB	EA SB	09/14/22 21:32
Total/NA	Analysis	SM 4500 P E		1	31209	KH	EA SB	09/09/22 15:40
Total/NA	Prep	SM 4500 P B			31613	KH	EA SB	09/14/22 07:19
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:49

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-36729-8
Date Collected: 09/08/22 12:52
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			31696	NB	EA SB	09/14/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31903	AC	EA SB	09/15/22 16:34
Total Recoverable	Prep	200.8			31699	NB	EA SB	09/14/22 13:45
Total Recoverable	Analysis	200.8		1	31913	NB	EA SB	09/15/22 17:37
Total/NA	Analysis	SM 4500 P E		100	31209	KH	EA SB	09/09/22 16:00
Total/NA	Prep	SM 4500 P B			31891	KH	EA SB	09/15/22 14:03
Total/NA	Analysis	SM 4500 P E		1	31896	KH	EA SB	09/15/22 16:38

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-36729-9

Date Collected: 09/08/22 12:52
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			31696	NB	EA SB	09/14/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31903	AC	EA SB	09/15/22 16:36
Total Recoverable	Prep	200.8			31699	NB	EA SB	09/14/22 13:45
Total Recoverable	Analysis	200.8		1	31913	NB	EA SB	09/15/22 17:39
Total/NA	Analysis	SM 4500 P E		10	31209	KH	EA SB	09/09/22 15:54
Total/NA	Prep	SM 4500 P B			31891	KH	EA SB	09/15/22 14:14
Total/NA	Analysis	SM 4500 P E		1	31896	KH	EA SB	09/15/22 16:38

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-36729-10

Date Collected: 09/08/22 12:54
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			31696	NB	EA SB	09/14/22 13:45
Total Recoverable	Analysis	200.7 Rev 4.4		1	31903	AC	EA SB	09/15/22 16:39
Total Recoverable	Prep	200.8			31699	NB	EA SB	09/14/22 13:45
Total Recoverable	Analysis	200.8		1	31913	NB	EA SB	09/15/22 17:41
Total/NA	Analysis	SM 4500 P E		25	31209	KH	EA SB	09/09/22 15:55
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 10:15
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:09

Client Sample ID: RAW-S24

Lab Sample ID: 810-36729-11

Date Collected: 09/08/22 15:40
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:29
Total/NA	Analysis	200.8		1	31757	NB	EA SB	09/14/22 21:35
Total/NA	Analysis	SM 4500 P E		1	31209	KH	EA SB	09/09/22 15:45
Total/NA	Prep	SM 4500 P B			31613	KH	EA SB	09/14/22 07:57
Total/NA	Analysis	SM 4500 P E		1	31625	KH	EA SB	09/14/22 10:49

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-36729-12

Date Collected: 09/08/22 15:42
Matrix: Water
Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:32
Total/NA	Analysis	200.8		1	31757	NB	EA SB	09/14/22 21:38
Total/NA	Analysis	SM 4500 P E		5	31209	KH	EA SB	09/09/22 15:45
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 10:25
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:10

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-36729-13

Date Collected: 09/08/22 15:44

Matrix: Water

Date Received: 09/09/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	31853	AC	EA SB	09/15/22 12:34
Total/NA	Analysis	200.8		1	31757	NB	EA SB	09/14/22 21:41
Total/NA	Analysis	SM 4500 P E		5	31209	KH	EA SB	09/09/22 15:45
Total/NA	Prep	SM 4500 P B			31776	KH	EA SB	09/15/22 10:35
Total/NA	Analysis	SM 4500 P E		1	31824	KH	EA SB	09/15/22 11:10

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Calcium
200.7 Rev 4.4	200.7	Water	Calcium
200.8		Water	Copper
200.8		Water	Lead
200.8	200.8	Water	Copper
200.8	200.8	Water	Lead
SM 4500 P E		Water	Orthophosphate as PO4
SM 4500 P E		Water	Phosphate, ortho
SM 4500 P E	SM 4500 P B	Water	Phosphorus

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
SM 4500 P E	Orthophosphate	SM	EA SB
SM 4500 P E	Phosphorus	SM	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB
SM 4500 P B	Phosphorous, Total and Ortho	SM	EA SB

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-36729-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-36729-1	Raw-S39	Water	09/08/22 07:52	09/09/22 08:45
810-36729-2	STAG-S39R1	Water	09/08/22 07:55	09/09/22 08:45
810-36729-3	STAG-S39R2	Water	09/08/22 07:57	09/09/22 08:45
810-36729-4	RAW-S25	Water	09/08/22 10:52	09/09/22 08:45
810-36729-5	STAG-S25R1	Water	09/08/22 10:55	09/09/22 08:45
810-36729-6	STAG-S25R2	Water	09/08/22 12:48	09/09/22 08:45
810-36729-7	RAW-S1	Water	09/08/22 12:50	09/09/22 08:45
810-36729-8	STAG-S1R1	Water	09/08/22 12:52	09/09/22 08:45
810-36729-9	STAG-S1R2	Water	09/08/22 12:52	09/09/22 08:45
810-36729-10	STAG-S1R3	Water	09/08/22 12:54	09/09/22 08:45
810-36729-11	RAW-S24	Water	09/08/22 15:40	09/09/22 08:45
810-36729-12	STAG-S24R1	Water	09/08/22 15:42	09/09/22 08:45
810-36729-13	STAG-S24R2	Water	09/08/22 15:44	09/09/22 08:45

810-36729 Chain of Custody

Chain of Custody Record

eurofins Environment Testing America

9/16/2022

Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: 90822.01
Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: Page 1 of 2
			Job #:

nes Christopher

npany: tra Tech

PWSID:

dress: 1 E Pine St. Ste. 1000

lando

te, Zip: , 32801

one: 7-480-2007 (Tel) 407-839-3790(Fax)

all: nes.christopher@tetratech.com

ject Name: lamazoo Pilot

Due Date Requested:

TAT Requested (days):

Compliance Project: Δ Yes Δ No

PO #:

WO #:

Project #: 81003039

SSOW#:

Analysis Requested

pH Acceptable
metals & T.phos
250

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, ~~V - MCAA~~, ~~W - pH 4-5~~, Z - other (specify)

Other:

mple Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan								Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D									
W-S39	9/8/22	7:52	G	W			X	X	X										
AG-S39R1	9/8/22	7:55	G	W			X	X	X										
AG-S39R2	9/8/22	7:57	G	W			X	X	X										
W-S25 2 Bottles for T.Phos	9/8/22	10:52	G	W			X	X	X										
AG-S25R1	9/8/22	10:55	G	W			X	X	X										
AG-S25R2	9/8/22	12:48	G	W			X	X	X										
W-S1	9/8/22	12:50	G	W			X	X	X										
AG-S1R1 NO T. Phos Bottle	9/8/22	12:52	G	W			X	X	X										
AG-S1R2	9/8/22	12:52	G	W			X	X	X										
AG-S1R3	9/8/22	12:54	G	W			X	X	X										
W-S24	9/8/22	15:40	G	W			X	X	X										

Initial Temp: 0.7
Cooled Temp: 0.2
IR Gun #: 18
WJ

ssible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

liverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

npty Kit Relinquished by:	Date:	Time:	Method of Shipment: FedEx		
inquished by: Sara Hayes	Date/Time: 09.08.22 18:30	Company	Received by: FedEx	Date/Time: 09.08.22	Company
inquished by:	Date/Time:	Company	Received by:	Date/Time: 9-9-22 0545	Company
inquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Δ Yes Δ No

outh Bend, IN
0 S Hill Street
uth Bend, IN 46617
one (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

eurofins Environment Testing America

9/16/2022

ient Information	Sampler:	Lab PM:	Carrier Tracking No(s):	COC No: 90822.01
ent Contact:	Phone:	E-Mail:	State of Origin:	Page: Page 2 of 2
npany:	PWSID:			Job #:
dress:	Due Date Requested:			
	TAT Requested (days):			
te, Zip:	Compliance Project: Δ Yes Δ No			
one:	PO #:			
ail:	WO #:			
ject Name:	Project #:			
	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

mple Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
AG-S24R1	9/8/22	15:42	G	W			X	X	X			
AG-S24R2	9/8/22	15:44	G	W			X	X	X			

ssible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

liverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

pty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
inquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
inquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

eurofins

Client Information	Sampler: Sara Hayes	Lab PM: Matthews, Joe	Carrier Tracking No(s):	COC No: 90822 01
Client Contact: James Christopher	Phone:	E-Mail: Joe.Matthews@et.eurofinsus.com	State of Origin:	Page: Page 1 of 2
Company: Tetra Tech	PWSID:			Job #:
Address: 201 E Pine St. Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days):			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)	PO #:			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
RAW-S39	9/8/22	7:52	G	W			X	X	X			
STAG-S39R1	9/8/22	7:55	G	W			X	X	X			
STAG-S39R2	9/8/22	7:57	G	W			X	X	X			
RAW-S25	9/8/22	10:52	G	W			X	X	X			
STAG-S25R1	9/8/22	10:55	G	W			X	X	X			
STAG-S25R2	9/8/22	12:48	G	W			X	X	X			
RAW-S1	9/8/22	12:50	G	W			X	X	X			
STAG-S1R1	9/8/22	12:52	G	W			X	X	X			
STAG-S1R2	9/8/22	12:52	G	W			X	X	X			
STAG-S1R3	9/8/22	12:54	G	W			X	X	X			
RAW-S24	9/8/22	15:40	G	W			X	X	X			

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Sara Hayes	09-08-22	TT	FedEx	09-08-22	
				9-9-22 0845	

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks

UPDATED COC KD 9-15-22

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler:	Lab PM:	Carrier Tracking No(s):	COC No: 90822.01
Client Contact:	Phone:	E-Mail:	State of Origin:	Page: Page 2 of 2
Company:	PWSID:			Job #:
Address:	Due Date Requested:			
City:	TAT Requested (days):			
State, Zip:	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email:	WO #:			
Project Name:	Project #:			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes:	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan									Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X													X	
STAG-S24R1	9/8/22	15:42	G	W			X	X	X											
STAG-S24R2	9/8/22	15:44	G	W			X	X	X											

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-36729-1

Login Number: 36729
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-37614-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
10/7/2022 12:39:44 PM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 7
QC Sample Results 11
QC Association Summary 18
Lab Chronicle 22
Certification Summary 25
Method Summary 26
Sample Summary 27
Chain of Custody 28
Receipt Checklists 31

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Qualifiers

Metals

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
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.

General Chemistry

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

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-37614-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-37614-1

Receipt
The samples were received on 9/16/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.4°C

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

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Client Sample ID: RAW-S39 — Lab Sample ID: 810-37614-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	88		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	3.1		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.044		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.16		0.10		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.13		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAT-S39-R1 — Lab Sample ID: 810-37614-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	90		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	78		1.0		ug/L	1		200.8	Total Recoverable
Lead	480		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	3.7		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	4.9		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	11		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAT-S39-R2 — Lab Sample ID: 810-37614-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	88		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	3.2		1.0		ug/L	1		200.8	Total/NA
Lead	72		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.38		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.60		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	1.2		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: RAW-S1 — Lab Sample ID: 810-37614-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.0		1.0		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-37614-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	14		1.0		ug/L	1		200.8	Total Recoverable
Lead	290		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	2.9		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	5.4		0.50		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	8.7		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-37614-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	29		1.0		ug/L	1		200.8	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: STAG-S1R2 (Continued) — Lab Sample ID: 810-37614-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	210		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	4.5		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	8.0		0.50		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	14		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-37614-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	25		1.0		ug/L	1		200.8	Total Recoverable
Lead	160		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	4.2		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	6.9		0.50		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	13		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S24 — Lab Sample ID: 810-37614-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	58		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	220		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.30		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.48		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.93		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-37614-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	59		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	97		1.0		ug/L	1		200.8	Total/NA
Lead	190		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.4		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	3.4		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	7.2		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-37614-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	59		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	53		1.0		ug/L	1		200.8	Total/NA
Lead	160		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.3		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	3.2		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	7.1		0.46		mg/L	5		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-37614-1
Date Collected: 09/15/22 07:40
Matrix: Water
Date Received: 09/16/22 09:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	88		0.10		mg/L			09/25/22 18:21	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	3.1		1.0		ug/L			09/22/22 20:08	1
Lead	<0.50		0.50		ug/L			09/22/22 20:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.044		0.030		mg/L			09/16/22 15:21	1
Phosphorus (SM 4500 P E)	0.16		0.10		mg/L		09/19/22 08:40	09/19/22 11:42	1
Orthophosphate as PO4 (SM 4500 P E)	0.13		0.092		mg/L			09/16/22 15:21	1

Client Sample ID: STAT-S39-R1

Lab Sample ID: 810-37614-2
Date Collected: 09/15/22 07:42
Matrix: Water
Date Received: 09/16/22 09:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	90		0.10		mg/L		09/22/22 13:50	09/25/22 23:21	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	78		1.0		ug/L		09/22/22 13:50	09/23/22 22:26	1
Lead	480		0.50		ug/L		09/22/22 13:50	09/23/22 14:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	3.7		0.15		mg/L			09/16/22 16:21	5
Phosphorus (SM 4500 P E)	4.9		0.25		mg/L		09/19/22 08:52	09/19/22 11:42	1
Orthophosphate as PO4 (SM 4500 P E)	11		0.46		mg/L			09/16/22 16:21	5

Client Sample ID: STAT-S39-R2

Lab Sample ID: 810-37614-3
Date Collected: 09/15/22 07:44
Matrix: Water
Date Received: 09/16/22 09:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	88		0.10		mg/L			09/25/22 18:28	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	3.2		1.0		ug/L			09/22/22 20:15	1
Lead	72		0.50		ug/L			09/22/22 20:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.38		0.030		mg/L			09/16/22 15:25	1
Phosphorus (SM 4500 P E)	0.60		0.050		mg/L		09/19/22 09:04	09/19/22 11:42	1
Orthophosphate as PO4 (SM 4500 P E)	1.2		0.092		mg/L			09/16/22 15:25	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Client Sample ID: RAW-S1

Lab Sample ID: 810-37614-4
Date Collected: 09/15/22 12:04
Matrix: Water
Date Received: 09/16/22 09:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L			09/25/22 18:30	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.0		1.0		ug/L			09/22/22 20:17	1
Lead	<0.50		0.50		ug/L			09/22/22 20:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	<0.030		0.030		mg/L			09/16/22 15:27	1
Phosphorus (SM 4500 P E)	<0.050		0.050		mg/L		09/19/22 09:16	09/19/22 11:42	1
Orthophosphate as PO4 (SM 4500 P E)	<0.092		0.092		mg/L			09/16/22 15:27	1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-37614-5
Date Collected: 09/15/22 12:06
Matrix: Water
Date Received: 09/16/22 09:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		09/22/22 13:50	09/25/22 23:29	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	14		1.0		ug/L		09/22/22 13:50	09/23/22 22:28	1
Lead	290		0.50		ug/L		09/22/22 13:50	10/05/22 21:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	2.9		0.15		mg/L			09/16/22 16:21	5
Phosphorus (SM 4500 P E)	5.4		0.50		mg/L		09/24/22 11:39	09/24/22 13:03	1
Orthophosphate as PO4 (SM 4500 P E)	8.7		0.46		mg/L			09/16/22 16:21	5

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-37614-6
Date Collected: 09/15/22 12:08
Matrix: Water
Date Received: 09/16/22 09:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		09/22/22 13:50	09/25/22 23:36	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	29		1.0		ug/L		09/22/22 13:50	09/23/22 22:30	1
Lead	210		0.50		ug/L		09/22/22 13:50	09/23/22 14:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	4.5		0.15		mg/L			09/16/22 16:22	5
Phosphorus (SM 4500 P E)	8.0		0.50		mg/L		09/19/22 09:41	09/19/22 11:42	1
Orthophosphate as PO4 (SM 4500 P E)	14		0.46		mg/L			09/16/22 16:22	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-37614-7
Date Collected: 09/15/22 12:10
Matrix: Water
Date Received: 09/16/22 09:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		09/22/22 13:50	09/25/22 23:38	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	25		1.0		ug/L		09/22/22 13:50	09/23/22 22:33	1
Lead	160		0.50		ug/L		09/22/22 13:50	09/23/22 14:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	4.2		0.15		mg/L			09/16/22 16:07	5
Phosphorus (SM 4500 P E)	6.9		0.50		mg/L		09/19/22 09:53	09/19/22 11:43	1
Orthophosphate as PO4 (SM 4500 P E)	13		0.46		mg/L			09/16/22 16:07	5

Client Sample ID: RAW-S24

Lab Sample ID: 810-37614-8
Date Collected: 09/15/22 14:56
Matrix: Water
Date Received: 09/16/22 09:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	58		0.10		mg/L			09/25/22 18:32	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	220		1.0		ug/L			09/22/22 20:19	1
Lead	<0.50		0.50		ug/L			09/22/22 20:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.30		0.030		mg/L			09/16/22 16:08	1
Phosphorus (SM 4500 P E)	0.48		0.050		mg/L		09/19/22 10:41	09/19/22 11:43	1
Orthophosphate as PO4 (SM 4500 P E)	0.93		0.092		mg/L			09/16/22 16:08	1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-37614-9
Date Collected: 09/15/22 14:58
Matrix: Water
Date Received: 09/16/22 09:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	59		0.10		mg/L			09/25/22 18:34	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	97		1.0		ug/L			09/22/22 20:21	1
Lead	190		0.50		ug/L			09/22/22 20:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	2.4		0.15		mg/L			09/16/22 16:02	5
Phosphorus (SM 4500 P E)	3.4		0.25		mg/L		09/19/22 10:05	09/19/22 11:43	1
Orthophosphate as PO4 (SM 4500 P E)	7.2		0.46		mg/L			09/16/22 16:02	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-37614-10

Date Collected: 09/15/22 15:00
Date Received: 09/16/22 09:30

Matrix: Water

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	59		0.10		mg/L			09/25/22 18:36	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	53		1.0		ug/L			09/22/22 20:24	1
Lead	160		0.50		ug/L			09/22/22 20:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	2.3		0.15		mg/L			09/16/22 16:20	5
Phosphorus (SM 4500 P E)	3.2		0.25		mg/L		09/19/22 10:17	09/19/22 11:43	1
Orthophosphate as PO4 (SM 4500 P E)	7.1		0.46		mg/L			09/16/22 16:20	5

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-32875/12
Matrix: Water
Analysis Batch: 32875

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			09/25/22 18:15	1

Lab Sample ID: MB 810-32875/43
Matrix: Water
Analysis Batch: 32875

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			09/25/22 19:22	1

Lab Sample ID: LCS 810-32875/14
Matrix: Water
Analysis Batch: 32875

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.95		mg/L		99	85 - 115

Lab Sample ID: LLCS 810-32875/13
Matrix: Water
Analysis Batch: 32875

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

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0952	J	mg/L		95	50 - 150

Lab Sample ID: 810-37614-1 MS
Matrix: Water
Analysis Batch: 32875

Client Sample ID: RAW-S39
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	88		5.00	93.1	4	mg/L		94	70 - 130

Lab Sample ID: 810-37614-1 MSD
Matrix: Water
Analysis Batch: 32875

Client Sample ID: RAW-S39
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	88		5.00	93.1	4	mg/L		96	70 - 130	0	20

Lab Sample ID: MB 810-32680/1-A
Matrix: Water
Analysis Batch: 32889

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 32680

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		09/22/22 13:50	09/25/22 22:47	1

Lab Sample ID: LCS 810-32680/4-A
Matrix: Water
Analysis Batch: 32889

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 32680

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	5.00		mg/L		100	85 - 115

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: LLCS 810-32680/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32889 — **Prep Batch: 32680**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		147	50 - 150

Lab Sample ID: LLCS 810-32680/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32889 — **Prep Batch: 32680**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021	*+	mg/L		168	50 - 150

Lab Sample ID: LLCS 810-32680/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 33178 — **Prep Batch: 32680**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		160	50 - 150

Lab Sample ID: LLCS 810-32680/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32889 — **Prep Batch: 32680**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0760	J	mg/L		76	50 - 150

Lab Sample ID: 810-37614-5 MS — **Client Sample ID: STAG-S1R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32889 — **Prep Batch: 32680**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	100		5.00	106	4	mg/L		58	70 - 130

Lab Sample ID: 810-37614-5 MS — **Client Sample ID: STAG-S1R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 33178 — **Prep Batch: 32680**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	100		5.00	105	4	mg/L		58	70 - 130

Lab Sample ID: 810-37614-5 MSD — **Client Sample ID: STAG-S1R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32889 — **Prep Batch: 32680**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	100		5.00	108	4	mg/L		101	70 - 130	2	20

Lab Sample ID: 810-37614-5 MSD — **Client Sample ID: STAG-S1R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 33178 — **Prep Batch: 32680**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	100		5.00	107	4	mg/L		95	70 - 130	2	20

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-32500/23-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 33178

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			09/27/22 15:40	1

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-32683/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32683

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/22/22 18:24	1
Lead	<0.50		0.50		ug/L			09/22/22 18:24	1

Lab Sample ID: MB 810-32683/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32683

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			09/22/22 19:31	1
Lead	<0.50		0.50		ug/L			09/22/22 19:31	1

Lab Sample ID: LCS 810-32683/44 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32683

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	48.4		ug/L		97	85 - 115
Lead	50.0	50.1		ug/L		100	85 - 115

Lab Sample ID: LLCS 810-32683/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32683

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		108	50 - 150
Lead	0.300	0.333	J	ug/L		111	50 - 150

Lab Sample ID: LLCS 810-32683/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32683

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.973	J	ug/L		97	50 - 150

Lab Sample ID: 810-37614-1 MS — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32683

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	3.1		50.0	52.3		ug/L		98	70 - 130
Lead	<0.50		50.0	53.9		ug/L		108	70 - 130

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 810-37614-1 MSD — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32683

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	3.1		50.0	52.8		ug/L		99	70 - 130	1	20
Lead	<0.50		50.0	54.1		ug/L		108	70 - 130	0	20

Lab Sample ID: MB 810-32681/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32800 — **Prep Batch: 32681**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		09/22/22 13:50	09/23/22 13:39	1
Lead	<0.50		0.50		ug/L		09/22/22 13:50	09/23/22 13:39	1

Lab Sample ID: MB 810-32681/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32848 — **Prep Batch: 32681**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		09/22/22 13:50	09/23/22 22:14	1

Lab Sample ID: LCS 810-32681/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32800 — **Prep Batch: 32681**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	49.9		ug/L		100	85 - 115
Lead	50.0	51.4		ug/L		103	85 - 115

Lab Sample ID: LCS 810-32681/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32848 — **Prep Batch: 32681**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	50.0		ug/L		100	85 - 115

Lab Sample ID: LLCS 810-32681/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32800 — **Prep Batch: 32681**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	0.300	0.307	J	ug/L		102	50 - 150

Lab Sample ID: LLCS 810-32681/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32848 — **Prep Batch: 32681**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		93	50 - 150

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-32681/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32800 — **Prep Batch: 32681**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	1.11		ug/L		111	50 - 150

Lab Sample ID: LLCS 810-32681/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 32848 — **Prep Batch: 32681**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	1.02		ug/L		102	50 - 150

Method: SM 4500 P E - Phosphorus

Lab Sample ID: MBL 810-32167/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32206 — **Prep Batch: 32167**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/19/22 07:52	09/19/22 11:41	1

Lab Sample ID: LCS 810-32167/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32206 — **Prep Batch: 32167**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.513		mg/L		103	86 - 113

Lab Sample ID: LLCS 810-32167/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32206 — **Prep Batch: 32167**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0590		mg/L		118	50 - 150

Lab Sample ID: MBL 810-32853/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32861 — **Prep Batch: 32853**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		09/24/22 09:24	09/24/22 13:01	1

Lab Sample ID: LCS 810-32853/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 32861 — **Prep Batch: 32853**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.507		mg/L		101	86 - 113

Method: SM 4500 P E - Phosphorus (Continued)

Lab Sample ID: LLCS 810-32853/2-A
Matrix: Water
Analysis Batch: 32861

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32853

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0550		mg/L		110	50 - 150

Method: SM 4500 P E - Orthophosphate

Lab Sample ID: MBL 810-32061/4
Matrix: Water
Analysis Batch: 32061

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			09/16/22 15:16	1
Orthophosphate as PO4	<0.046		0.092		mg/L			09/16/22 15:16	1

Lab Sample ID: LCS 810-32061/3
Matrix: Water
Analysis Batch: 32061

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.506		mg/L		101	84 - 109

Lab Sample ID: LLCS 810-32061/2
Matrix: Water
Analysis Batch: 32061

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

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0280	J	mg/L		93	50 - 150

Lab Sample ID: MBL 810-32067/32
Matrix: Water
Analysis Batch: 32067

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			09/16/22 16:11	1
Orthophosphate as PO4	<0.046		0.092		mg/L			09/16/22 16:11	1

Lab Sample ID: MBL 810-32067/4
Matrix: Water
Analysis Batch: 32067

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			09/16/22 15:54	1
Orthophosphate as PO4	<0.046		0.092		mg/L			09/16/22 15:54	1

Lab Sample ID: LCS 810-32067/3
Matrix: Water
Analysis Batch: 32067

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.502		mg/L		100	84 - 109

Method: SM 4500 P E - Orthophosphate (Continued)

Lab Sample ID: LCS 810-32067/30
Matrix: Water
Analysis Batch: 32067

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho			0.500	0.501		mg/L		100	84 - 109		

Lab Sample ID: LLCS 810-32067/2
Matrix: Water
Analysis Batch: 32067

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

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho			0.0300	0.0280	J	mg/L		93	50 - 150		

Lab Sample ID: LLCS 810-32067/29
Matrix: Water
Analysis Batch: 32067

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

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho			0.0300	0.0250	J	mg/L		83	50 - 150		

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Metals

Filtration Batch: 32500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 810-32500/23-A	Method Blank	Total Recoverable	Water	Filtration	

Prep Batch: 32680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-2	STAT-S39-R1	Total Recoverable	Water	200.7	
810-37614-5	STAG-S1R1	Total Recoverable	Water	200.7	
810-37614-6	STAG-S1R2	Total Recoverable	Water	200.7	
810-37614-7	STAG-S1R3	Total Recoverable	Water	200.7	
MB 810-32680/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-32680/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-32680/2-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-32680/3-A	Lab Control Sample	Total Recoverable	Water	200.7	
810-37614-5 MS	STAG-S1R1	Total Recoverable	Water	200.7	
810-37614-5 MSD	STAG-S1R1	Total Recoverable	Water	200.7	

Prep Batch: 32681

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-2	STAT-S39-R1	Total Recoverable	Water	200.8	
810-37614-5	STAG-S1R1	Total Recoverable	Water	200.8	
810-37614-6	STAG-S1R2	Total Recoverable	Water	200.8	
810-37614-7	STAG-S1R3	Total Recoverable	Water	200.8	
MB 810-32681/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-32681/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-32681/2-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-32681/3-A	Lab Control Sample	Total Recoverable	Water	200.8	

Analysis Batch: 32683

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-1	RAW-S39	Total/NA	Water	200.8	
810-37614-3	STAT-S39-R2	Total/NA	Water	200.8	
810-37614-4	RAW-S1	Total/NA	Water	200.8	
810-37614-8	RAW-S24	Total/NA	Water	200.8	
810-37614-9	STAG-S24R1	Total/NA	Water	200.8	
810-37614-10	STAG-S24R2	Total/NA	Water	200.8	
MB 810-32683/13	Method Blank	Total/NA	Water	200.8	
MB 810-32683/43	Method Blank	Total/NA	Water	200.8	
LCS 810-32683/44	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-32683/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-32683/12	Lab Control Sample	Total/NA	Water	200.8	
810-37614-1 MS	RAW-S39	Total/NA	Water	200.8	
810-37614-1 MSD	RAW-S39	Total/NA	Water	200.8	

Analysis Batch: 32800

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-2	STAT-S39-R1	Total Recoverable	Water	200.8	32681
810-37614-6	STAG-S1R2	Total Recoverable	Water	200.8	32681
810-37614-7	STAG-S1R3	Total Recoverable	Water	200.8	32681
MB 810-32681/1-A	Method Blank	Total Recoverable	Water	200.8	32681
LCS 810-32681/6-A	Lab Control Sample	Total Recoverable	Water	200.8	32681
LLCS 810-32681/2-A	Lab Control Sample	Total Recoverable	Water	200.8	32681
LLCS 810-32681/3-A	Lab Control Sample	Total Recoverable	Water	200.8	32681

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Metals

Analysis Batch: 32848

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-2	STAT-S39-R1	Total Recoverable	Water	200.8	32681
810-37614-5	STAG-S1R1	Total Recoverable	Water	200.8	32681
810-37614-6	STAG-S1R2	Total Recoverable	Water	200.8	32681
810-37614-7	STAG-S1R3	Total Recoverable	Water	200.8	32681
MB 810-32681/1-A	Method Blank	Total Recoverable	Water	200.8	32681
LCS 810-32681/6-A	Lab Control Sample	Total Recoverable	Water	200.8	32681
LLCS 810-32681/2-A	Lab Control Sample	Total Recoverable	Water	200.8	32681
LLCS 810-32681/3-A	Lab Control Sample	Total Recoverable	Water	200.8	32681

Analysis Batch: 32875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-1	RAW-S39	Total/NA	Water	200.7 Rev 4.4	
810-37614-3	STAT-S39-R2	Total/NA	Water	200.7 Rev 4.4	
810-37614-4	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-37614-8	RAW-S24	Total/NA	Water	200.7 Rev 4.4	
810-37614-9	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-37614-10	STAG-S24R2	Total/NA	Water	200.7 Rev 4.4	
MB 810-32875/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-32875/43	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-32875/14	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-32875/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-37614-1 MS	RAW-S39	Total/NA	Water	200.7 Rev 4.4	
810-37614-1 MSD	RAW-S39	Total/NA	Water	200.7 Rev 4.4	

Analysis Batch: 32889

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-2	STAT-S39-R1	Total Recoverable	Water	200.7 Rev 4.4	32680
810-37614-5	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	32680
810-37614-6	STAG-S1R2	Total Recoverable	Water	200.7 Rev 4.4	32680
810-37614-7	STAG-S1R3	Total Recoverable	Water	200.7 Rev 4.4	32680
MB 810-32680/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	32680
LCS 810-32680/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	32680
LLCS 810-32680/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	32680
LLCS 810-32680/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	32680
LLCS 810-32680/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	32680
810-37614-5 MS	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	32680
810-37614-5 MSD	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	32680

Analysis Batch: 33178

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 810-32500/23-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	32500
LLCS 810-32680/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	32680
810-37614-5 MS	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	32680
810-37614-5 MSD	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	32680

Analysis Batch: 34309

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-5	STAG-S1R1	Total Recoverable	Water	200.8	32681

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

General Chemistry

Analysis Batch: 32061

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-1	RAW-S39	Total/NA	Water	SM 4500 P E	
810-37614-3	STAT-S39-R2	Total/NA	Water	SM 4500 P E	
810-37614-4	RAW-S1	Total/NA	Water	SM 4500 P E	
MBL 810-32061/4	Method Blank	Total/NA	Water	SM 4500 P E	
LCS 810-32061/3	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-32061/2	Lab Control Sample	Total/NA	Water	SM 4500 P E	

Analysis Batch: 32067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-2	STAT-S39-R1	Total/NA	Water	SM 4500 P E	
810-37614-5	STAG-S1R1	Total/NA	Water	SM 4500 P E	
810-37614-6	STAG-S1R2	Total/NA	Water	SM 4500 P E	
810-37614-7	STAG-S1R3	Total/NA	Water	SM 4500 P E	
810-37614-8	RAW-S24	Total/NA	Water	SM 4500 P E	
810-37614-9	STAG-S24R1	Total/NA	Water	SM 4500 P E	
810-37614-10	STAG-S24R2	Total/NA	Water	SM 4500 P E	
MBL 810-32067/32	Method Blank	Total/NA	Water	SM 4500 P E	
MBL 810-32067/4	Method Blank	Total/NA	Water	SM 4500 P E	
LCS 810-32067/3	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LCS 810-32067/30	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-32067/2	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-32067/29	Lab Control Sample	Total/NA	Water	SM 4500 P E	

Prep Batch: 32167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-1	RAW-S39	Total/NA	Water	SM 4500 P B	
810-37614-2	STAT-S39-R1	Total/NA	Water	SM 4500 P B	
810-37614-3	STAT-S39-R2	Total/NA	Water	SM 4500 P B	
810-37614-4	RAW-S1	Total/NA	Water	SM 4500 P B	
810-37614-6	STAG-S1R2	Total/NA	Water	SM 4500 P B	
810-37614-7	STAG-S1R3	Total/NA	Water	SM 4500 P B	
810-37614-8	RAW-S24	Total/NA	Water	SM 4500 P B	
810-37614-9	STAG-S24R1	Total/NA	Water	SM 4500 P B	
810-37614-10	STAG-S24R2	Total/NA	Water	SM 4500 P B	
MBL 810-32167/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-32167/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-32167/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 32206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-1	RAW-S39	Total/NA	Water	SM 4500 P E	32167
810-37614-2	STAT-S39-R1	Total/NA	Water	SM 4500 P E	32167
810-37614-3	STAT-S39-R2	Total/NA	Water	SM 4500 P E	32167
810-37614-4	RAW-S1	Total/NA	Water	SM 4500 P E	32167
810-37614-6	STAG-S1R2	Total/NA	Water	SM 4500 P E	32167
810-37614-7	STAG-S1R3	Total/NA	Water	SM 4500 P E	32167
810-37614-8	RAW-S24	Total/NA	Water	SM 4500 P E	32167
810-37614-9	STAG-S24R1	Total/NA	Water	SM 4500 P E	32167
810-37614-10	STAG-S24R2	Total/NA	Water	SM 4500 P E	32167
MBL 810-32167/4-A	Method Blank	Total/NA	Water	SM 4500 P E	32167
LCS 810-32167/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	32167

General Chemistry (Continued)

Analysis Batch: 32206 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-32167/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	32167

Prep Batch: 32853

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-5	STAG-S1R1	Total/NA	Water	SM 4500 P B	
MBL 810-32853/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-32853/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-32853/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 32861

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-37614-5	STAG-S1R1	Total/NA	Water	SM 4500 P E	32853
MBL 810-32853/4-A	Method Blank	Total/NA	Water	SM 4500 P E	32853
LCS 810-32853/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	32853
LLCS 810-32853/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	32853

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Client Sample ID: RAW-S39 — Lab Sample ID: 810-37614-1

Date Collected: 09/15/22 07:40
Date Received: 09/16/22 09:30
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	32875	AC	EA SB	09/25/22 18:21
Total/NA	Analysis	200.8		1	32683	NB	EA SB	09/22/22 20:08
Total/NA	Analysis	SM 4500 P E		1	32061	JA	EA SB	09/16/22 15:21
Total/NA	Prep	SM 4500 P B			32167	KH	EA SB	09/19/22 08:40
Total/NA	Analysis	SM 4500 P E		1	32206	KH	EA SB	09/19/22 11:42

Client Sample ID: STAT-S39-R1 — Lab Sample ID: 810-37614-2

Date Collected: 09/15/22 07:42
Date Received: 09/16/22 09:30
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			32680	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.7 Rev 4.4		1	32889	AC	EA SB	09/25/22 23:21
Total Recoverable	Prep	200.8			32681	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.8		1	32800	NB	EA SB	09/23/22 14:17
Total Recoverable	Prep	200.8			32681	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.8		1	32848	NB	EA SB	09/23/22 22:26
Total/NA	Analysis	SM 4500 P E		5	32067	JA	EA SB	09/16/22 16:21
Total/NA	Prep	SM 4500 P B			32167	KH	EA SB	09/19/22 08:52
Total/NA	Analysis	SM 4500 P E		1	32206	KH	EA SB	09/19/22 11:42

Client Sample ID: STAT-S39-R2 — Lab Sample ID: 810-37614-3

Date Collected: 09/15/22 07:44
Date Received: 09/16/22 09:30
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	32875	AC	EA SB	09/25/22 18:28
Total/NA	Analysis	200.8		1	32683	NB	EA SB	09/22/22 20:15
Total/NA	Analysis	SM 4500 P E		1	32061	JA	EA SB	09/16/22 15:25
Total/NA	Prep	SM 4500 P B			32167	KH	EA SB	09/19/22 09:04
Total/NA	Analysis	SM 4500 P E		1	32206	KH	EA SB	09/19/22 11:42

Client Sample ID: RAW-S1 — Lab Sample ID: 810-37614-4

Date Collected: 09/15/22 12:04
Date Received: 09/16/22 09:30
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	32875	AC	EA SB	09/25/22 18:30
Total/NA	Analysis	200.8		1	32683	NB	EA SB	09/22/22 20:17
Total/NA	Analysis	SM 4500 P E		1	32061	JA	EA SB	09/16/22 15:27
Total/NA	Prep	SM 4500 P B			32167	KH	EA SB	09/19/22 09:16
Total/NA	Analysis	SM 4500 P E		1	32206	KH	EA SB	09/19/22 11:42

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-37614-5
Date Collected: 09/15/22 12:06
Matrix: Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			32680	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.7 Rev 4.4		1	32889	AC	EA SB	09/25/22 23:29
Total Recoverable	Prep	200.8			32681	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.8		1	32848	NB	EA SB	09/23/22 22:28
Total Recoverable	Prep	200.8			32681	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.8		1	34309	NB	EA SB	10/05/22 21:00
Total/NA	Analysis	SM 4500 P E		5	32067	JA	EA SB	09/16/22 16:21
Total/NA	Prep	SM 4500 P B			32853	KH	EA SB	09/24/22 11:39
Total/NA	Analysis	SM 4500 P E		1	32861	KH	EA SB	09/24/22 13:03

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-37614-6
Date Collected: 09/15/22 12:08
Matrix: Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			32680	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.7 Rev 4.4		1	32889	AC	EA SB	09/25/22 23:36
Total Recoverable	Prep	200.8			32681	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.8		1	32800	NB	EA SB	09/23/22 14:31
Total Recoverable	Prep	200.8			32681	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.8		1	32848	NB	EA SB	09/23/22 22:30
Total/NA	Analysis	SM 4500 P E		5	32067	JA	EA SB	09/16/22 16:22
Total/NA	Prep	SM 4500 P B			32167	KH	EA SB	09/19/22 09:41
Total/NA	Analysis	SM 4500 P E		1	32206	KH	EA SB	09/19/22 11:42

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-37614-7
Date Collected: 09/15/22 12:10
Matrix: Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			32680	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.7 Rev 4.4		1	32889	AC	EA SB	09/25/22 23:38
Total Recoverable	Prep	200.8			32681	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.8		1	32800	NB	EA SB	09/23/22 14:33
Total Recoverable	Prep	200.8			32681	NB	EA SB	09/22/22 13:50
Total Recoverable	Analysis	200.8		1	32848	NB	EA SB	09/23/22 22:33
Total/NA	Analysis	SM 4500 P E		5	32067	JA	EA SB	09/16/22 16:07
Total/NA	Prep	SM 4500 P B			32167	KH	EA SB	09/19/22 09:53
Total/NA	Analysis	SM 4500 P E		1	32206	KH	EA SB	09/19/22 11:43

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Client Sample ID: RAW-S24

Lab Sample ID: 810-37614-8
Date Collected: 09/15/22 14:56
Matrix: Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	32875	AC	EA SB	09/25/22 18:32
Total/NA	Analysis	200.8		1	32683	NB	EA SB	09/22/22 20:19
Total/NA	Analysis	SM 4500 P E		1	32067	JA	EA SB	09/16/22 16:08
Total/NA	Prep	SM 4500 P B			32167	KH	EA SB	09/19/22 10:41
Total/NA	Analysis	SM 4500 P E		1	32206	KH	EA SB	09/19/22 11:43

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-37614-9
Date Collected: 09/15/22 14:58
Matrix: Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	32875	AC	EA SB	09/25/22 18:34
Total/NA	Analysis	200.8		1	32683	NB	EA SB	09/22/22 20:21
Total/NA	Analysis	SM 4500 P E		5	32067	JA	EA SB	09/16/22 16:02
Total/NA	Prep	SM 4500 P B			32167	KH	EA SB	09/19/22 10:05
Total/NA	Analysis	SM 4500 P E		1	32206	KH	EA SB	09/19/22 11:43

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-37614-10
Date Collected: 09/15/22 15:00
Matrix: Water
Date Received: 09/16/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	32875	AC	EA SB	09/25/22 18:36
Total/NA	Analysis	200.8		1	32683	NB	EA SB	09/22/22 20:24
Total/NA	Analysis	SM 4500 P E		5	32067	JA	EA SB	09/16/22 16:20
Total/NA	Prep	SM 4500 P B			32167	KH	EA SB	09/19/22 10:17
Total/NA	Analysis	SM 4500 P E		1	32206	KH	EA SB	09/19/22 11:43

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Calcium
200.7 Rev 4.4	200.7	Water	Calcium
200.8		Water	Copper
200.8		Water	Lead
200.8	200.8	Water	Copper
200.8	200.8	Water	Lead
SM 4500 P E		Water	Orthophosphate as PO4
SM 4500 P E		Water	Phosphate, ortho
SM 4500 P E	SM 4500 P B	Water	Phosphorus

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
SM 4500 P E	Orthophosphate	SM	EA SB
SM 4500 P E	Phosphorus	SM	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB
SM 4500 P B	Phosphorous, Total and Ortho	SM	EA SB

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-37614-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-37614-1	RAW-S39	Water	09/15/22 07:40	09/16/22 09:30
810-37614-2	STAT-S39-R1	Water	09/15/22 07:42	09/16/22 09:30
810-37614-3	STAT-S39-R2	Water	09/15/22 07:44	09/16/22 09:30
810-37614-4	RAW-S1	Water	09/15/22 12:04	09/16/22 09:30
810-37614-5	STAG-S1R1	Water	09/15/22 12:06	09/16/22 09:30
810-37614-6	STAG-S1R2	Water	09/15/22 12:08	09/16/22 09:30
810-37614-7	STAG-S1R3	Water	09/15/22 12:10	09/16/22 09:30
810-37614-8	RAW-S24	Water	09/15/22 14:56	09/16/22 09:30
810-37614-9	STAG-S24R1	Water	09/15/22 14:58	09/16/22 09:30
810-37614-10	STAG-S24R2	Water	09/15/22 15:00	09/16/22 09:30

Chain of Custody Record

eurofins Environment Testing America

810-37614 Chain of Custody

Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: 91522.01
Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Job #:			

Client Information

Client Contact: James Christopher
Company: Tetra Tech
Address: 201 E Pine St. Ste. 1000
City: Orlando
State, Zip: FL, 32801
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)
Email: james christopher@tetratech.com
Project Name: Kalamazoo Pilot
Site:

PWSID:

Due Date Requested:
TAT Requested (days):
Compliance Project: Δ Yes Δ No
PO #:
WO #:
Project #: 81003039
SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan										Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D											
RAW-S39	9/15/22	7:40	G	W			X	X	X												
STAG-S39R1	9/15/22	7:42	G	W			X	X	X												
STAG-S39R2	9/15/22	7:44	G	W			X	X	X												
RAW-S1	9/15/22	12:04	G	W			X	X	X												
STAG-S1R1	9/15/22	12:06	G	W			X	X	X												
STAG-S1R2	9/15/22	12:08	G	W			X	X	X												
STAG-S1R3	9/15/22	12:10	G	W			X	X	X												
RAW-S24	9/15/22	14:56	G	W			X	X	X												
STAG-S24R1	9/15/22	14:58	G	W			X	X	X												
STAG-S24R2	9/15/22	15:00	G	W			X	X	X												

Initial Temp: 1.6
Corrected Temp: 1.4
IR Gun #: 18

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Sara Hayes	Date/Time: 09-15-22 19:30	Company	Received by: FedEx	Date/Time: 09-15-22 1830	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by: K [illegible]	Date/Time: 9-30-22	Company: 0930

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: WK

Client Contact:	Phone:	E-Mail:	State of Origin:	Page: Page 2 of 2
Company:	PWSID:			Job #:
Address:	Due Date Requested:			
City:	TAT Requested (days):			
State, Zip:	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email:	WO #:			
Project Name:	Project #:			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
STAG-S24R1	9/8/22	14:58	G	W			X	X	X			
STAG-S24R2	9/8/22	15:00	G	W			X	X	X			

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:		Time:	Method of Shipment:	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

)-37616 Chain of Custody

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: 90822.02
Client Contact: ames Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
ompany: etra Tech	PWSID:			Job #:
ddress: 01 E Pine St. Ste. 1000	Due Date Requested:			
ity: Orlando	TAT Requested (days):			
tate, Zip: L, 32801	Compliance Project: Δ Yes Δ No			
hone: 07-480-3907 (Tel) 407-839-3790(Fax)	PO #:			
mail: ames.christopher@tetratech.com	WO #:			
roject Name: Kalamazoo Pilot	Project #: 81003039			
ite:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan										Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D											
SOL-S1RAW	9/9/22	11:26	G	W						X											
SOL-S1R1	9/9/22	11:27	G	W						X											
SOL-S1R2	9/9/22	11:28	G	W						X											
SOL-S1R3	9/9/22	11:29	G	W						X											
SOL-S24RAW	9/9/22	11:30	G	W						X											
SOL-S24R1	9/9/22	11:31	G	W						X											
SOL-S24R2	9/9/22	11:32	G	W						X											

Initial Temp: 1.6
Corrected Temp: 1.4
IR Gun # 18

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment		
Relinquished by: Sarah Hayes	Date/Time: 09.09.22 / 11:40	Company	Received by: Cold Storage	Date/Time: 09.09.22 / 11:40	Company
Relinquished by: Cold Storage	Date/Time: 09.15.22 18:30	Company	Received by: Fed Ex	Date/Time: 09.15.22 18:30	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 09.16.22	Company 0930

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

10/7/2022

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-37614-1

Login Number: 37614
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-39728-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
10/12/2022 11:28:09 AM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 8
QC Sample Results 13
QC Association Summary 19
Lab Chronicle 23
Certification Summary 27
Method Summary 28
Sample Summary 29
Chain of Custody 30
Receipt Checklists 32

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Qualifiers

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

General Chemistry

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

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-39728-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-39728-1

Receipt
The samples were received on 9/30/2022 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.0°C

Metals
Method 200.8: The continuing calibration verification (CCV) analyzed in 810-34785 was outside the method criteria of + 10 % but within + 15% for lead. As indicated in the reference method, this continuing calibration verification (CCV) will be used at the closing CCV and previous samples will not be reanalyzed.

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

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: RAW-S39 — Lab Sample ID: 810-39728-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	87		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.7		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.039		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.093		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.12		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S39R1 — Lab Sample ID: 810-39728-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	96		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	230		1.0		ug/L	1		200.8	Total Recoverable
Lead	2300		5.0		ug/L	10		200.8	Total Recoverable
Phosphate, ortho	12		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	17		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	37		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S39R2 — Lab Sample ID: 810-39728-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	91		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	37		1.0		ug/L	1		200.8	Total Recoverable
Lead	740		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	1.7		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	2.1		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	5.1		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S25 — Lab Sample ID: 810-39728-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	82		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	2.8		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.039		0.030		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.12		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R1 — Lab Sample ID: 810-39728-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	82		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	110		1.0		ug/L	1		200.8	Total/NA
Lead	170		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.55		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.96		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	1.7		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-39728-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	81		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	13		1.0		ug/L	1		200.8	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: STAG-S25R2 (Continued) — Lab Sample ID: 810-39728-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	7.6		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	3.6		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	4.3		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	11		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S1 — Lab Sample ID: 810-39728-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	98		0.10		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-39728-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	57		1.0		ug/L	1		200.8	Total Recoverable
Lead	690		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	14		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	21		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	42		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-39728-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	80		1.0		ug/L	1		200.8	Total Recoverable
Lead	170		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	8.9		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	15		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	27		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-39728-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	130		1.0		ug/L	1		200.8	Total Recoverable
Lead	410		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	16		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	29		2.5		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	48		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: RAW-S24 — Lab Sample ID: 810-39728-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	58		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	22		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.14		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.48		0.050		mg/L	1		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: RAW-S24 (Continued) — Lab Sample ID: 810-39728-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Orthophosphate as PO4	0.44		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-39728-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	57		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	11		1.0		ug/L	1		200.8	Total/NA
Lead	57		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.0		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	2.6		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	6.1		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-39728-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	57		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	18		1.0		ug/L	1		200.8	Total/NA
Lead	89		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.2		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	2.9		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	6.7		0.46		mg/L	5		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-39728-1
Date Collected: 09/29/22 07:46
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	87		0.10		mg/L			10/09/22 20:19	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.7		1.0		ug/L			10/10/22 12:14	1
Lead	<0.50		0.50		ug/L			10/10/22 12:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.039		0.030		mg/L			09/30/22 15:56	1
Phosphorus (SM 4500 P E)	0.093		0.050		mg/L		10/07/22 08:59	10/07/22 09:50	1
Orthophosphate as PO4 (SM 4500 P E)	0.12		0.092		mg/L			09/30/22 15:56	1

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-39728-2
Date Collected: 09/29/22 07:48
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	96		0.10		mg/L		10/04/22 15:30	10/07/22 18:09	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	230		1.0		ug/L		10/04/22 15:30	10/05/22 14:44	1
Lead	2300		5.0		ug/L		10/04/22 15:30	10/05/22 15:25	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	12		0.75		mg/L			09/30/22 16:18	25
Phosphorus (SM 4500 P E)	17		1.3		mg/L		10/07/22 09:07	10/07/22 09:50	1
Orthophosphate as PO4 (SM 4500 P E)	37		2.3		mg/L			09/30/22 16:18	25

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-39728-3
Date Collected: 09/29/22 07:50
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	91		0.10		mg/L		10/04/22 15:30	10/07/22 18:11	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	37		1.0		ug/L		10/04/22 15:30	10/05/22 14:46	1
Lead	740		0.50		ug/L		10/04/22 15:30	10/05/22 14:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	1.7		0.15		mg/L			09/30/22 16:09	5
Phosphorus (SM 4500 P E)	2.1		0.25		mg/L		10/07/22 09:16	10/07/22 09:51	1
Orthophosphate as PO4 (SM 4500 P E)	5.1		0.46		mg/L			09/30/22 16:09	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: RAW-S25

Lab Sample ID: 810-39728-4
Date Collected: 09/29/22 10:06
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	82		0.10		mg/L			10/09/22 20:26	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	2.8		1.0		ug/L			10/10/22 12:17	1
Lead	<0.50		0.50		ug/L			10/10/22 12:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.039		0.030		mg/L			09/30/22 15:59	1
Phosphorus (SM 4500 P E)	<0.050		0.050		mg/L		10/07/22 09:24	10/07/22 09:51	1
Orthophosphate as PO4 (SM 4500 P E)	0.12		0.092		mg/L			09/30/22 15:59	1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-39728-5
Date Collected: 09/29/22 10:08
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	82		0.10		mg/L			10/09/22 20:28	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	110		1.0		ug/L			10/10/22 12:20	1
Lead	170		0.50		ug/L			10/10/22 12:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.55		0.030		mg/L			09/30/22 15:59	1
Phosphorus (SM 4500 P E)	0.96		0.050		mg/L		10/07/22 08:07	10/07/22 09:49	1
Orthophosphate as PO4 (SM 4500 P E)	1.7		0.092		mg/L			09/30/22 15:59	1

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-39728-6
Date Collected: 09/29/22 10:10
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	81		0.10		mg/L			10/09/22 20:30	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	13		1.0		ug/L			10/10/22 12:22	1
Lead	7.6		0.50		ug/L			10/10/22 12:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	3.6		0.15		mg/L			09/30/22 16:09	5
Phosphorus (SM 4500 P E)	4.3		0.25		mg/L		10/07/22 06:41	10/07/22 09:52	1
Orthophosphate as PO4 (SM 4500 P E)	11		0.46		mg/L			09/30/22 16:09	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: RAW-S1

Lab Sample ID: 810-39728-7
Date Collected: 09/29/22 12:20
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	98		0.10		mg/L			10/09/22 20:32	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/10/22 12:31	1
Lead	<0.50		0.50		ug/L			10/10/22 12:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	<0.030		0.030		mg/L			09/30/22 16:00	1
Phosphorus (SM 4500 P E)	<0.050		0.050		mg/L		10/07/22 06:50	10/07/22 09:53	1
Orthophosphate as PO4 (SM 4500 P E)	<0.092		0.092		mg/L			09/30/22 16:00	1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-39728-8
Date Collected: 09/29/22 12:22
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		10/04/22 15:30	10/07/22 18:13	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	57		1.0		ug/L		10/04/22 15:30	10/05/22 14:49	1
Lead	690		0.50		ug/L		10/04/22 15:30	10/05/22 14:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	14		0.75		mg/L			09/30/22 16:18	25
Phosphorus (SM 4500 P E)	21		1.3		mg/L		10/07/22 06:59	10/07/22 09:53	1
Orthophosphate as PO4 (SM 4500 P E)	42		2.3		mg/L			09/30/22 16:18	25

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-39728-9
Date Collected: 09/29/22 12:24
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		10/04/22 15:30	10/07/22 18:15	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	80		1.0		ug/L		10/04/22 15:30	10/05/22 14:51	1
Lead	170		0.50		ug/L		10/04/22 15:30	10/05/22 14:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	8.9		0.75		mg/L			09/30/22 16:19	25
Phosphorus (SM 4500 P E)	15		1.3		mg/L		10/07/22 07:07	10/07/22 09:53	1
Orthophosphate as PO4 (SM 4500 P E)	27		2.3		mg/L			09/30/22 16:19	25

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-39728-10
Date Collected: 09/29/22 12:26
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		10/04/22 15:30	10/07/22 18:17	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	130		1.0		ug/L		10/04/22 15:30	10/05/22 14:53	1
Lead	410		0.50		ug/L		10/04/22 15:30	10/05/22 14:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	16		0.75		mg/L			09/30/22 16:19	25
Phosphorus (SM 4500 P E)	29		2.5		mg/L		10/12/22 08:54	10/12/22 11:40	1
Orthophosphate as PO4 (SM 4500 P E)	48		2.3		mg/L			09/30/22 16:19	25

Client Sample ID: RAW-S24

Lab Sample ID: 810-39728-11
Date Collected: 09/29/22 14:24
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	58		0.10		mg/L			10/09/22 20:34	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	22		1.0		ug/L			10/10/22 12:33	1
Lead	<0.50		0.50		ug/L			10/10/22 12:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.14		0.030		mg/L			09/30/22 16:03	1
Phosphorus (SM 4500 P E)	0.48		0.050		mg/L		10/07/22 07:24	10/07/22 10:00	1
Orthophosphate as PO4 (SM 4500 P E)	0.44		0.092		mg/L			09/30/22 16:03	1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-39728-12
Date Collected: 09/29/22 14:26
Matrix: Water
Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	57		0.10		mg/L			10/09/22 20:37	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	11		1.0		ug/L			10/10/22 12:36	1
Lead	57		0.50		ug/L			10/10/22 12:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	2.0		0.15		mg/L			09/30/22 16:12	5
Phosphorus (SM 4500 P E)	2.6		0.25		mg/L		10/07/22 07:33	10/07/22 10:01	1
Orthophosphate as PO4 (SM 4500 P E)	6.1		0.46		mg/L			09/30/22 16:12	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-39728-13

Date Collected: 09/29/22 14:28

Matrix: Water

Date Received: 09/30/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	57		0.10		mg/L			10/09/22 20:39	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	18		1.0		ug/L			10/10/22 12:39	1
Lead	89		0.50		ug/L			10/10/22 12:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	2.2		0.15		mg/L			09/30/22 16:15	5
Phosphorus (SM 4500 P E)	2.9		0.25		mg/L		10/07/22 07:41	10/07/22 10:01	1
Orthophosphate as PO4 (SM 4500 P E)	6.7		0.46		mg/L			09/30/22 16:15	5

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-34713/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34713

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/09/22 19:04	1

Lab Sample ID: MB 810-34713/45 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34713

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/09/22 20:15	1

Lab Sample ID: LCS 810-34713/46 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34713

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	5.08		mg/L		102	85 - 115

Lab Sample ID: LLCS 810-34713/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34713

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		146	50 - 150

Lab Sample ID: LLCS 810-34713/13 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34713

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0814	J	mg/L		81	50 - 150

Lab Sample ID: 810-39728-1 MS — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34713

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	87		5.00	91.4	4	mg/L		81	70 - 130

Lab Sample ID: 810-39728-1 MSD — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34713

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	87		5.00	91.5	4	mg/L		82	70 - 130	0	20

Lab Sample ID: MB 810-34082/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 34675 — **Prep Batch: 34082**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		10/04/22 15:30	10/07/22 17:49	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: LCS 810-34082/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 34675 — **Prep Batch: 34082**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.88		mg/L		98	85 - 115

Lab Sample ID: LLCS 810-34082/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 34675 — **Prep Batch: 34082**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		59	50 - 150

Lab Sample ID: LLCS 810-34082/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 34675 — **Prep Batch: 34082**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0694	J	mg/L		69	50 - 150

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-34785/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34785

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/10/22 10:06	1
Lead	<0.50		0.50		ug/L			10/10/22 10:06	1

Lab Sample ID: MB 810-34785/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34785

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/10/22 11:28	1
Lead	<0.50		0.50		ug/L			10/10/22 11:28	1

Lab Sample ID: LCS 810-34785/44 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34785

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	48.1		ug/L		96	85 - 115
Lead	50.0	47.8		ug/L		96	85 - 115

Lab Sample ID: LLCS 810-34785/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34785

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	1.03		ug/L		103	50 - 150

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 810-39728-6 MS — **Client Sample ID: STAG-S25R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34785

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Copper	13		50.0	58.6		ug/L		90	70 - 130		
Lead	7.6		50.0	55.4		ug/L		96	70 - 130		

Lab Sample ID: 810-39728-6 MSD — **Client Sample ID: STAG-S25R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34785

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	13		50.0	59.4		ug/L		92	70 - 130	1	20
Lead	7.6		50.0	55.8		ug/L		96	70 - 130	1	20

Lab Sample ID: MB 810-34083/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 34235 — **Prep Batch: 34083**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		10/04/22 15:30	10/05/22 14:19	1
Lead	<0.50		0.50		ug/L		10/04/22 15:30	10/05/22 14:19	1

Lab Sample ID: LCS 810-34083/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 34235 — **Prep Batch: 34083**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	51.7		ug/L		103	85 - 115
Lead	50.0	52.7		ug/L		105	85 - 115

Lab Sample ID: LLCS 810-34083/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 34235 — **Prep Batch: 34083**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		113	50 - 150
Lead	0.300	0.299	J	ug/L		100	50 - 150

Lab Sample ID: LLCS 810-34083/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 34235 — **Prep Batch: 34083**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	1.06		ug/L		106	50 - 150

Method: SM 4500 P E - Phosphorus

Lab Sample ID: MBL 810-34535/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34563 — **Prep Batch: 34535**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		10/07/22 06:07	10/07/22 09:47	1

Method: SM 4500 P E - Phosphorus (Continued)

Lab Sample ID: LCS 810-34535/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34563 — **Prep Batch: 34535**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.500		mg/L		100	86 - 113

Lab Sample ID: LLCS 810-34535/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34563 — **Prep Batch: 34535**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0680		mg/L		136	50 - 150

Lab Sample ID: MBL 810-34536/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34563 — **Prep Batch: 34536**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		10/07/22 06:07	10/07/22 09:52	1

Lab Sample ID: LCS 810-34536/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34563 — **Prep Batch: 34536**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.496		mg/L		99	86 - 113

Lab Sample ID: LLCS 810-34536/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34563 — **Prep Batch: 34536**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0680		mg/L		136	50 - 150

Lab Sample ID: MBL 810-34997/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35028 — **Prep Batch: 34997**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		10/12/22 08:14	10/12/22 11:39	1

Lab Sample ID: LCS 810-34997/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35028 — **Prep Batch: 34997**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.502		mg/L		100	86 - 113

Lab Sample ID: LLCS 810-34997/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35028 — **Prep Batch: 34997**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0670		mg/L		134	50 - 150

Method: SM 4500 P E - Orthophosphate

Lab Sample ID: MBL 810-33672/31 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 33672

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			09/30/22 16:15	1
Orthophosphate as PO4	<0.046		0.092		mg/L			09/30/22 16:15	1

Lab Sample ID: MBL 810-33672/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 33672

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			09/30/22 15:56	1
Orthophosphate as PO4	<0.046		0.092		mg/L			09/30/22 15:56	1

Lab Sample ID: LCS 810-33672/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 33672

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.491		mg/L		98	84 - 109

Lab Sample ID: LCS 810-33672/30 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 33672

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.493		mg/L		99	84 - 109

Lab Sample ID: LLCS 810-33672/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 33672

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0270	J	mg/L		90	50 - 150

Lab Sample ID: LLCS 810-33672/29 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 33672

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0280	J	mg/L		93	50 - 150

Lab Sample ID: 810-39728-1 MS — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 33672

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.039		0.500	0.561		mg/L		104	75 - 195

Method: SM 4500 P E - Orthophosphate (Continued)

Lab Sample ID: 810-39728-1 MSD — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 33672

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphate, ortho	0.039		0.500	0.562		mg/L		105	75 - 195	0	20

Lab Sample ID: 810-39728-13 MS — **Client Sample ID: STAG-S24R1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 33672

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Phosphate, ortho	2.2		2.50	4.74		mg/L		102	75 - 195		

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Metals

Prep Batch: 34082

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-2	STAG-S39R1	Total Recoverable	Water	200.7	
810-39728-3	STAG-S39R2	Total Recoverable	Water	200.7	
810-39728-8	STAG-S1R1	Total Recoverable	Water	200.7	
810-39728-9	STAG-S1R2	Total Recoverable	Water	200.7	
810-39728-10	STAG-S1R3	Total Recoverable	Water	200.7	
MB 810-34082/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-34082/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-34082/2-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-34082/3-A	Lab Control Sample	Total Recoverable	Water	200.7	

Prep Batch: 34083

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-2	STAG-S39R1	Total Recoverable	Water	200.8	
810-39728-3	STAG-S39R2	Total Recoverable	Water	200.8	
810-39728-8	STAG-S1R1	Total Recoverable	Water	200.8	
810-39728-9	STAG-S1R2	Total Recoverable	Water	200.8	
810-39728-10	STAG-S1R3	Total Recoverable	Water	200.8	
MB 810-34083/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-34083/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-34083/2-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-34083/3-A	Lab Control Sample	Total Recoverable	Water	200.8	

Analysis Batch: 34235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-2	STAG-S39R1	Total Recoverable	Water	200.8	34083
810-39728-2	STAG-S39R1	Total Recoverable	Water	200.8	34083
810-39728-3	STAG-S39R2	Total Recoverable	Water	200.8	34083
810-39728-8	STAG-S1R1	Total Recoverable	Water	200.8	34083
810-39728-9	STAG-S1R2	Total Recoverable	Water	200.8	34083
810-39728-10	STAG-S1R3	Total Recoverable	Water	200.8	34083
MB 810-34083/1-A	Method Blank	Total Recoverable	Water	200.8	34083
LCS 810-34083/6-A	Lab Control Sample	Total Recoverable	Water	200.8	34083
LLCS 810-34083/2-A	Lab Control Sample	Total Recoverable	Water	200.8	34083
LLCS 810-34083/3-A	Lab Control Sample	Total Recoverable	Water	200.8	34083

Analysis Batch: 34675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-2	STAG-S39R1	Total Recoverable	Water	200.7 Rev 4.4	34082
810-39728-3	STAG-S39R2	Total Recoverable	Water	200.7 Rev 4.4	34082
810-39728-8	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	34082
810-39728-9	STAG-S1R2	Total Recoverable	Water	200.7 Rev 4.4	34082
810-39728-10	STAG-S1R3	Total Recoverable	Water	200.7 Rev 4.4	34082
MB 810-34082/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	34082
LCS 810-34082/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	34082
LLCS 810-34082/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	34082
LLCS 810-34082/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	34082

Analysis Batch: 34713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-1	RAW-S39	Total/NA	Water	200.7 Rev 4.4	
810-39728-4	RAW-S25	Total/NA	Water	200.7 Rev 4.4	

Metals (Continued)

Analysis Batch: 34713 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-5	STAG-S25R1	Total/NA	Water	200.7 Rev 4.4	
810-39728-6	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	
810-39728-7	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-39728-11	RAW-S24	Total/NA	Water	200.7 Rev 4.4	
810-39728-12	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-39728-13	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
MB 810-34713/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-34713/45	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-34713/46	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-34713/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-34713/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-39728-1 MS	RAW-S39	Total/NA	Water	200.7 Rev 4.4	
810-39728-1 MSD	RAW-S39	Total/NA	Water	200.7 Rev 4.4	

Analysis Batch: 34785

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-1	RAW-S39	Total/NA	Water	200.8	
810-39728-4	RAW-S25	Total/NA	Water	200.8	
810-39728-5	STAG-S25R1	Total/NA	Water	200.8	
810-39728-6	STAG-S25R2	Total/NA	Water	200.8	
810-39728-7	RAW-S1	Total/NA	Water	200.8	
810-39728-11	RAW-S24	Total/NA	Water	200.8	
810-39728-12	STAG-S24R1	Total/NA	Water	200.8	
810-39728-13	STAG-S24R1	Total/NA	Water	200.8	
MB 810-34785/13	Method Blank	Total/NA	Water	200.8	
MB 810-34785/43	Method Blank	Total/NA	Water	200.8	
LCS 810-34785/44	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-34785/12	Lab Control Sample	Total/NA	Water	200.8	
810-39728-6 MS	STAG-S25R2	Total/NA	Water	200.8	
810-39728-6 MSD	STAG-S25R2	Total/NA	Water	200.8	

General Chemistry

Analysis Batch: 33672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-1	RAW-S39	Total/NA	Water	SM 4500 P E	
810-39728-2	STAG-S39R1	Total/NA	Water	SM 4500 P E	
810-39728-3	STAG-S39R2	Total/NA	Water	SM 4500 P E	
810-39728-4	RAW-S25	Total/NA	Water	SM 4500 P E	
810-39728-5	STAG-S25R1	Total/NA	Water	SM 4500 P E	
810-39728-6	STAG-S25R2	Total/NA	Water	SM 4500 P E	
810-39728-7	RAW-S1	Total/NA	Water	SM 4500 P E	
810-39728-8	STAG-S1R1	Total/NA	Water	SM 4500 P E	
810-39728-9	STAG-S1R2	Total/NA	Water	SM 4500 P E	
810-39728-10	STAG-S1R3	Total/NA	Water	SM 4500 P E	
810-39728-11	RAW-S24	Total/NA	Water	SM 4500 P E	
810-39728-12	STAG-S24R1	Total/NA	Water	SM 4500 P E	
810-39728-13	STAG-S24R1	Total/NA	Water	SM 4500 P E	
MBL 810-33672/31	Method Blank	Total/NA	Water	SM 4500 P E	
MBL 810-33672/4	Method Blank	Total/NA	Water	SM 4500 P E	
LCS 810-33672/3	Lab Control Sample	Total/NA	Water	SM 4500 P E	

General Chemistry (Continued)

Analysis Batch: 33672 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 810-33672/30	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-33672/2	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-33672/29	Lab Control Sample	Total/NA	Water	SM 4500 P E	
810-39728-1 MS	RAW-S39	Total/NA	Water	SM 4500 P E	
810-39728-1 MSD	RAW-S39	Total/NA	Water	SM 4500 P E	
810-39728-13 MS	STAG-S24R1	Total/NA	Water	SM 4500 P E	
810-39728-13 MSD	STAG-S24R1	Total/NA	Water	SM 4500 P E	

Prep Batch: 34535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-1	RAW-S39	Total/NA	Water	SM 4500 P B	
810-39728-2	STAG-S39R1	Total/NA	Water	SM 4500 P B	
810-39728-3	STAG-S39R2	Total/NA	Water	SM 4500 P B	
810-39728-4	RAW-S25	Total/NA	Water	SM 4500 P B	
810-39728-5	STAG-S25R1	Total/NA	Water	SM 4500 P B	
MBL 810-34535/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-34535/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-34535/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Prep Batch: 34536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-6	STAG-S25R2	Total/NA	Water	SM 4500 P B	
810-39728-7	RAW-S1	Total/NA	Water	SM 4500 P B	
810-39728-8	STAG-S1R1	Total/NA	Water	SM 4500 P B	
810-39728-9	STAG-S1R2	Total/NA	Water	SM 4500 P B	
810-39728-11	RAW-S24	Total/NA	Water	SM 4500 P B	
810-39728-12	STAG-S24R1	Total/NA	Water	SM 4500 P B	
810-39728-13	STAG-S24R1	Total/NA	Water	SM 4500 P B	
MBL 810-34536/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-34536/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-34536/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 34563

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-1	RAW-S39	Total/NA	Water	SM 4500 P E	34535
810-39728-2	STAG-S39R1	Total/NA	Water	SM 4500 P E	34535
810-39728-3	STAG-S39R2	Total/NA	Water	SM 4500 P E	34535
810-39728-4	RAW-S25	Total/NA	Water	SM 4500 P E	34535
810-39728-5	STAG-S25R1	Total/NA	Water	SM 4500 P E	34535
810-39728-6	STAG-S25R2	Total/NA	Water	SM 4500 P E	34536
810-39728-7	RAW-S1	Total/NA	Water	SM 4500 P E	34536
810-39728-8	STAG-S1R1	Total/NA	Water	SM 4500 P E	34536
810-39728-9	STAG-S1R2	Total/NA	Water	SM 4500 P E	34536
810-39728-11	RAW-S24	Total/NA	Water	SM 4500 P E	34536
810-39728-12	STAG-S24R1	Total/NA	Water	SM 4500 P E	34536
810-39728-13	STAG-S24R1	Total/NA	Water	SM 4500 P E	34536
MBL 810-34535/4-A	Method Blank	Total/NA	Water	SM 4500 P E	34535
MBL 810-34536/4-A	Method Blank	Total/NA	Water	SM 4500 P E	34536
LCS 810-34535/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	34535
LCS 810-34536/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	34536
LLCS 810-34535/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	34535

General Chemistry (Continued)

Analysis Batch: 34563 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-34536/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	34536

Prep Batch: 34997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-10	STAG-S1R3	Total/NA	Water	SM 4500 P B	
MBL 810-34997/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-34997/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-34997/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 35028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-39728-10	STAG-S1R3	Total/NA	Water	SM 4500 P E	34997
MBL 810-34997/4-A	Method Blank	Total/NA	Water	SM 4500 P E	34997
LCS 810-34997/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	34997
LLCS 810-34997/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	34997

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-39728-1
Date Collected: 09/29/22 07:46
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	34713	AC	EA SB	10/09/22 20:19
Total/NA	Analysis	200.8		1	34785	JK	EA SB	10/10/22 12:14
Total/NA	Analysis	SM 4500 P E		1	33672	JA	EA SB	09/30/22 15:56
Total/NA	Prep	SM 4500 P B			34535	KH	EA SB	10/07/22 08:59
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 09:50

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-39728-2
Date Collected: 09/29/22 07:48
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			34082	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	34675	AC	EA SB	10/07/22 18:09
Total Recoverable	Prep	200.8			34083	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.8		1	34235	NB	EA SB	10/05/22 14:44
Total Recoverable	Prep	200.8			34083	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.8		10	34235	NB	EA SB	10/05/22 15:25
Total/NA	Analysis	SM 4500 P E		25	33672	JA	EA SB	09/30/22 16:18
Total/NA	Prep	SM 4500 P B			34535	KH	EA SB	10/07/22 09:07
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 09:50

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-39728-3
Date Collected: 09/29/22 07:50
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			34082	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	34675	AC	EA SB	10/07/22 18:11
Total Recoverable	Prep	200.8			34083	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.8		1	34235	NB	EA SB	10/05/22 14:46
Total/NA	Analysis	SM 4500 P E		5	33672	JA	EA SB	09/30/22 16:09
Total/NA	Prep	SM 4500 P B			34535	KH	EA SB	10/07/22 09:16
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 09:51

Client Sample ID: RAW-S25

Lab Sample ID: 810-39728-4
Date Collected: 09/29/22 10:06
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	34713	AC	EA SB	10/09/22 20:26
Total/NA	Analysis	200.8		1	34785	JK	EA SB	10/10/22 12:17
Total/NA	Analysis	SM 4500 P E		1	33672	JA	EA SB	09/30/22 15:59
Total/NA	Prep	SM 4500 P B			34535	KH	EA SB	10/07/22 09:24
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 09:51

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-39728-5
Date Collected: 09/29/22 10:08
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	34713	AC	EA SB	10/09/22 20:28
Total/NA	Analysis	200.8		1	34785	JK	EA SB	10/10/22 12:20
Total/NA	Analysis	SM 4500 P E		1	33672	JA	EA SB	09/30/22 15:59
Total/NA	Prep	SM 4500 P B			34535	KH	EA SB	10/07/22 08:07
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 09:49

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-39728-6
Date Collected: 09/29/22 10:10
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	34713	AC	EA SB	10/09/22 20:30
Total/NA	Analysis	200.8		1	34785	JK	EA SB	10/10/22 12:22
Total/NA	Analysis	SM 4500 P E		5	33672	JA	EA SB	09/30/22 16:09
Total/NA	Prep	SM 4500 P B			34536	KH	EA SB	10/07/22 06:41
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 09:52

Client Sample ID: RAW-S1

Lab Sample ID: 810-39728-7
Date Collected: 09/29/22 12:20
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	34713	AC	EA SB	10/09/22 20:32
Total/NA	Analysis	200.8		1	34785	JK	EA SB	10/10/22 12:31
Total/NA	Analysis	SM 4500 P E		1	33672	JA	EA SB	09/30/22 16:00
Total/NA	Prep	SM 4500 P B			34536	KH	EA SB	10/07/22 06:50
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 09:53

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-39728-8
Date Collected: 09/29/22 12:22
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			34082	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	34675	AC	EA SB	10/07/22 18:13
Total Recoverable	Prep	200.8			34083	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.8		1	34235	NB	EA SB	10/05/22 14:49
Total/NA	Analysis	SM 4500 P E		25	33672	JA	EA SB	09/30/22 16:18
Total/NA	Prep	SM 4500 P B			34536	KH	EA SB	10/07/22 06:59
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 09:53

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-39728-9

Date Collected: 09/29/22 12:24
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			34082	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	34675	AC	EA SB	10/07/22 18:15
Total Recoverable	Prep	200.8			34083	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.8		1	34235	NB	EA SB	10/05/22 14:51
Total/NA	Analysis	SM 4500 P E		25	33672	JA	EA SB	09/30/22 16:19
Total/NA	Prep	SM 4500 P B			34536	KH	EA SB	10/07/22 07:07
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 09:53

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-39728-10

Date Collected: 09/29/22 12:26
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			34082	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.7 Rev 4.4		1	34675	AC	EA SB	10/07/22 18:17
Total Recoverable	Prep	200.8			34083	NB	EA SB	10/04/22 15:30
Total Recoverable	Analysis	200.8		1	34235	NB	EA SB	10/05/22 14:53
Total/NA	Analysis	SM 4500 P E		25	33672	JA	EA SB	09/30/22 16:19
Total/NA	Prep	SM 4500 P B			34997	KH	EA SB	10/12/22 08:54
Total/NA	Analysis	SM 4500 P E		1	35028	KH	EA SB	10/12/22 11:40

Client Sample ID: RAW-S24

Lab Sample ID: 810-39728-11

Date Collected: 09/29/22 14:24
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	34713	AC	EA SB	10/09/22 20:34
Total/NA	Analysis	200.8		1	34785	JK	EA SB	10/10/22 12:33
Total/NA	Analysis	SM 4500 P E		1	33672	JA	EA SB	09/30/22 16:03
Total/NA	Prep	SM 4500 P B			34536	KH	EA SB	10/07/22 07:24
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 10:00

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-39728-12

Date Collected: 09/29/22 14:26
Matrix: Water
Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	34713	AC	EA SB	10/09/22 20:37
Total/NA	Analysis	200.8		1	34785	JK	EA SB	10/10/22 12:36
Total/NA	Analysis	SM 4500 P E		5	33672	JA	EA SB	09/30/22 16:12
Total/NA	Prep	SM 4500 P B			34536	KH	EA SB	10/07/22 07:33
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 10:01

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-39728-13

Date Collected: 09/29/22 14:28

Matrix: Water

Date Received: 09/30/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	34713	AC	EA SB	10/09/22 20:39
Total/NA	Analysis	200.8		1	34785	JK	EA SB	10/10/22 12:39
Total/NA	Analysis	SM 4500 P E		5	33672	JA	EA SB	09/30/22 16:15
Total/NA	Prep	SM 4500 P B			34536	KH	EA SB	10/07/22 07:41
Total/NA	Analysis	SM 4500 P E		1	34563	KH	EA SB	10/07/22 10:01

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Calcium
200.7 Rev 4.4	200.7	Water	Calcium
200.8		Water	Copper
200.8		Water	Lead
200.8	200.8	Water	Copper
200.8	200.8	Water	Lead
SM 4500 P E		Water	Orthophosphate as PO4
SM 4500 P E		Water	Phosphate, ortho
SM 4500 P E	SM 4500 P B	Water	Phosphorus

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
SM 4500 P E	Orthophosphate	SM	EA SB
SM 4500 P E	Phosphorus	SM	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB
SM 4500 P B	Phosphorous, Total and Ortho	SM	EA SB

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-39728-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-39728-1	RAW-S39	Water	09/29/22 07:46	09/30/22 09:15
810-39728-2	STAG-S39R1	Water	09/29/22 07:48	09/30/22 09:15
810-39728-3	STAG-S39R2	Water	09/29/22 07:50	09/30/22 09:15
810-39728-4	RAW-S25	Water	09/29/22 10:06	09/30/22 09:15
810-39728-5	STAG-S25R1	Water	09/29/22 10:08	09/30/22 09:15
810-39728-6	STAG-S25R2	Water	09/29/22 10:10	09/30/22 09:15
810-39728-7	RAW-S1	Water	09/29/22 12:20	09/30/22 09:15
810-39728-8	STAG-S1R1	Water	09/29/22 12:22	09/30/22 09:15
810-39728-9	STAG-S1R2	Water	09/29/22 12:24	09/30/22 09:15
810-39728-10	STAG-S1R3	Water	09/29/22 12:26	09/30/22 09:15
810-39728-11	RAW-S24	Water	09/29/22 14:24	09/30/22 09:15
810-39728-12	STAG-S24R1	Water	09/29/22 14:26	09/30/22 09:15
810-39728-13	STAG-S24R1	Water	09/29/22 14:28	09/30/22 09:15

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

810-39728 Chain of Custody

Client Information	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No. 92922.1
Client Contact: James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: Page 1 of 2
Company: Tetra Tech	PWSID:			Job #:
Address: 201 E Pine St. Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days):			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)	PO #:			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	[redacted]	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
RAW-S39	9/29/22	7:46	G	W			X	X	X			
STAG-S39R1	9/29/22	7:48	G	W			X	X	X			
STAG-S39R2	9/29/22	7:50	G	W			X	X	X			
RAW-S25	9/29/22	10:06	G	W			X	X	X			
STAG-S25R1	9/29/22	10:08	G	W			X	X	X			
STAG-S25R2	9/29/22	10:10	G	W			X	X	X			
RAW-S1	9/29/22	12:20	G	W			X	X	X			
STAG-S1R1	9/29/22	12:22	G	W			X	X	X			
STAG-S1R2	9/29/22	12:24	G	W			X	X	X			
STAG-S1R3	9/29/22	12:26	G	W			X	X	X			
RAW-S24	9/29/22	14:24	G	W			X	X	X			

T Phos ? omotzo
KS 9 30.22

0.2
0.0
18

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Sara Hayes	09-29-22 1700		FedEx	09-29-22 1700	
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
			KDm	09-30-22	8915

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: WO

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

eurofins

Client Information	Sampler:	Lab PM:	Carrier Tracking No(s):	COC No. 92922.1
Client Contact:	Phone:	E-Mail:	State of Origin:	Page: Page 2 of 2
Company:	PWSID:			Job #:
Address:	Due Date Requested:			
City:	TAT Requested (days):			
State, Zip:	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email:	WO #:			
Project Name:	Project #:			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	[redacted]	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan									Total Number of containers	Special Instructions/Note:
			Preservation Code:																	
STAG-S24R1	9/29/22	14:26	G	W			X	X	X											
STAG-S24R2	9/29/22	14:28	G	W			X	X	X											
																				9-30-22
										+ Phos & metals										
																				KD

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 9-30-22 0915	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-39728-1

Login Number: 39728
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-40604-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
10/19/2022 9:17:52 PM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 8
QC Sample Results 13
QC Association Summary 19
Lab Chronicle 23
Certification Summary 27
Method Summary 28
Sample Summary 29
Chain of Custody 30
Receipt Checklists 34

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Qualifiers

Metals

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
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.

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-40604-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-40604-1

Receipt
The samples were received on 10/7/2022 8:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.2°C

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

General Chemistry
Method 4500_P_E_Ortho: MS/MSD results are acceptable because the parent sample results are within calibration range (0.874).
STAG-S24R2 (810-40604-13)

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: RAW-S39 — Lab Sample ID: 810-40604-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	91		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	4.6		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.12		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.23		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.36		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAT-S39-R1 — Lab Sample ID: 810-40604-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	92		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	200		1.0		ug/L	1		200.8	Total Recoverable
Lead	1200		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	3.4		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	4.0		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	11		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAT-S39-R2 — Lab Sample ID: 810-40604-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	93		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	37		1.0		ug/L	1		200.8	Total Recoverable
Lead	880		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	3.0		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	3.6		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	9.2		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S25 — Lab Sample ID: 810-40604-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	86		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	9.2		1.0		ug/L	1		200.8	Total/NA
Lead	0.65		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.14		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.20		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.44		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R1 — Lab Sample ID: 810-40604-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	85		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	53		1.0		ug/L	1		200.8	Total/NA
Lead	20		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.084		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.16		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.26		0.092		mg/L	1		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-40604-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	85		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	13		1.0		ug/L	1		200.8	Total/NA
Lead	3.5		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	4.3		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	5.1		0.50		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	13		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S1 — Lab Sample ID: 810-40604-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Phosphorus	15		1.0		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-40604-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	41		1.0		ug/L	1		200.8	Total Recoverable
Lead	630		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	15		0.75		mg/L	25		SM 4500 P E	Total/NA
Orthophosphate as PO4	47		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-40604-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	88		1.0		ug/L	1		200.8	Total Recoverable
Lead	220		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	15		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	21		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	45		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-40604-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	120		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	120		1.0		ug/L	1		200.8	Total Recoverable
Lead	350		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	19		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	32		2.5		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	57		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: Raw-S24 — Lab Sample ID: 810-40604-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	53		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	3.4		1.0		ug/L	1		200.8	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: Raw-S24 (Continued) — Lab Sample ID: 810-40604-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Phosphate, ortho	0.074		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.15		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.23		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-40604-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	53		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	2.6		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.3		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	2.8		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	7.0		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-40604-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	55		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	28		1.0		ug/L	1		200.8	Total/NA
Lead	80		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	4.4	F1	0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	5.5		0.50		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	13		0.46		mg/L	5		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-40604-1
Matrix: Water

Date Collected: 10/06/22 07:58
Date Received: 10/07/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	91		0.10		mg/L			10/17/22 23:42	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	4.6		1.0		ug/L			10/17/22 14:49	1
Lead	<0.50		0.50		ug/L			10/17/22 14:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.12		0.030		mg/L			10/07/22 14:20	1
Phosphorus (SM 4500 P E)	0.23		0.050		mg/L		10/12/22 09:35	10/12/22 11:41	1
Orthophosphate as PO4 (SM 4500 P E)	0.36		0.092		mg/L			10/07/22 14:20	1

Client Sample ID: STAT-S39-R1

Lab Sample ID: 810-40604-2
Matrix: Water

Date Collected: 10/06/22 08:00
Date Received: 10/07/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	92		0.10		mg/L		10/18/22 13:25	10/19/22 18:01	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	200		1.0		ug/L		10/18/22 13:25	10/19/22 13:30	1
Lead	1200		0.50		ug/L		10/18/22 13:25	10/19/22 13:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	3.4		0.15		mg/L			10/07/22 14:39	5
Phosphorus (SM 4500 P E)	4.0		0.25		mg/L		10/12/22 09:43	10/12/22 11:41	1
Orthophosphate as PO4 (SM 4500 P E)	11		0.46		mg/L			10/07/22 14:39	5

Client Sample ID: STAT-S39-R2

Lab Sample ID: 810-40604-3
Matrix: Water

Date Collected: 10/06/22 08:02
Date Received: 10/07/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	93		0.10		mg/L		10/18/22 13:25	10/19/22 18:07	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	37		1.0		ug/L		10/18/22 13:25	10/19/22 13:33	1
Lead	880		0.50		ug/L		10/18/22 13:25	10/19/22 13:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	3.0		0.15		mg/L			10/07/22 14:40	5
Phosphorus (SM 4500 P E)	3.6		0.25		mg/L		10/12/22 09:51	10/12/22 11:41	1
Orthophosphate as PO4 (SM 4500 P E)	9.2		0.46		mg/L			10/07/22 14:40	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: RAW-S25

Lab Sample ID: 810-40604-4
Date Collected: 10/06/22 09:52
Matrix: Water
Date Received: 10/07/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	86		0.10		mg/L			10/17/22 23:44	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	9.2		1.0		ug/L			10/17/22 14:57	1
Lead	0.65		0.50		ug/L			10/17/22 14:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.14		0.030		mg/L			10/07/22 14:23	1
Phosphorus (SM 4500 P E)	0.20		0.050		mg/L		10/12/22 10:07	10/12/22 11:42	1
Orthophosphate as PO4 (SM 4500 P E)	0.44		0.092		mg/L			10/07/22 14:23	1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-40604-5
Date Collected: 10/06/22 09:54
Matrix: Water
Date Received: 10/07/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	85		0.10		mg/L			10/17/22 23:47	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	53		1.0		ug/L			10/17/22 15:11	1
Lead	20		0.50		ug/L			10/17/22 15:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.084		0.030		mg/L			10/07/22 14:23	1
Phosphorus (SM 4500 P E)	0.16		0.050		mg/L		10/12/22 10:15	10/12/22 11:42	1
Orthophosphate as PO4 (SM 4500 P E)	0.26		0.092		mg/L			10/07/22 14:23	1

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-40604-6
Date Collected: 10/06/22 09:56
Matrix: Water
Date Received: 10/07/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	85		0.10		mg/L			10/17/22 23:49	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	13		1.0		ug/L			10/17/22 15:14	1
Lead	3.5		0.50		ug/L			10/17/22 15:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	4.3		0.15		mg/L			10/07/22 14:33	5
Phosphorus (SM 4500 P E)	5.1		0.50		mg/L		10/18/22 06:27	10/18/22 09:38	1
Orthophosphate as PO4 (SM 4500 P E)	13		0.46		mg/L			10/07/22 14:33	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: RAW-S1

Lab Sample ID: 810-40604-7

Date Collected: 10/06/22 11:30
Date Received: 10/07/22 08:30

Matrix: Water

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**100**		0.10		mg/L			10/17/22 23:55	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/17/22 15:16	1
Lead	<0.50		0.50		ug/L			10/17/22 15:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	<0.030		0.030		mg/L			10/07/22 14:24	1
Phosphorus (SM 4500 P E)	**15**		1.0		mg/L		10/19/22 11:16	10/19/22 12:06	1
Orthophosphate as PO4 (SM 4500 P E)	<0.092		0.092		mg/L			10/07/22 14:24	1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-40604-8

Date Collected: 10/06/22 12:04
Date Received: 10/07/22 08:30

Matrix: Water

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**110**		0.10		mg/L		10/18/22 13:25	10/19/22 18:09	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	**41**		1.0		ug/L		10/18/22 13:25	10/19/22 13:39	1
Lead	**630**		0.50		ug/L		10/18/22 13:25	10/19/22 13:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	**15**		0.75		mg/L			10/07/22 14:34	25
Phosphorus (SM 4500 P E)	<1.3		1.3		mg/L		10/12/22 10:40	10/12/22 11:43	1
Orthophosphate as PO4 (SM 4500 P E)	**47**		2.3		mg/L			10/07/22 14:34	25

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-40604-9

Date Collected: 10/06/22 12:06
Date Received: 10/07/22 08:30

Matrix: Water

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**110**		0.10		mg/L		10/18/22 13:25	10/19/22 18:11	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	**88**		1.0		ug/L		10/18/22 13:25	10/19/22 13:42	1
Lead	**220**		0.50		ug/L		10/18/22 13:25	10/19/22 13:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	**15**		0.75		mg/L			10/07/22 14:34	25
Phosphorus (SM 4500 P E)	**21**		1.3		mg/L		10/12/22 10:48	10/12/22 11:43	1
Orthophosphate as PO4 (SM 4500 P E)	**45**		2.3		mg/L			10/07/22 14:34	25

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-40604-10

Date Collected: 10/06/22 12:08
Matrix: Water
Date Received: 10/07/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	120		0.10		mg/L		10/18/22 13:25	10/19/22 18:13	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	120		1.0		ug/L		10/18/22 13:25	10/19/22 13:44	1
Lead	350		0.50		ug/L		10/18/22 13:25	10/19/22 13:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	19		0.75		mg/L			10/07/22 14:35	25
Phosphorus (SM 4500 P E)	32		2.5		mg/L		10/18/22 06:46	10/18/22 09:38	1
Orthophosphate as PO4 (SM 4500 P E)	57		2.3		mg/L			10/07/22 14:35	25

Client Sample ID: Raw-S24

Lab Sample ID: 810-40604-11

Date Collected: 10/06/22 14:52
Matrix: Water
Date Received: 10/07/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	53		0.10		mg/L			10/18/22 00:02	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	3.4		1.0		ug/L			10/17/22 15:19	1
Lead	<0.50		0.50		ug/L			10/17/22 15:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.074		0.030		mg/L			10/07/22 14:28	1
Phosphorus (SM 4500 P E)	0.15		0.050		mg/L		10/12/22 11:04	10/12/22 11:43	1
Orthophosphate as PO4 (SM 4500 P E)	0.23		0.092		mg/L			10/07/22 14:28	1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-40604-12

Date Collected: 10/06/22 14:54
Matrix: Water
Date Received: 10/07/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	53		0.10		mg/L			10/18/22 00:04	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/17/22 15:22	1
Lead	2.6		0.50		ug/L			10/17/22 15:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	2.3		0.15		mg/L			10/07/22 14:35	5
Phosphorus (SM 4500 P E)	2.8		0.25		mg/L		10/12/22 11:12	10/12/22 11:43	1
Orthophosphate as PO4 (SM 4500 P E)	7.0		0.46		mg/L			10/07/22 14:35	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-40604-13

Date Collected: 10/06/22 14:56
Matrix: Water
Date Received: 10/07/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	55		0.10		mg/L			10/18/22 00:06	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	28		1.0		ug/L			10/17/22 15:25	1
Lead	80		0.50		ug/L			10/17/22 15:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	4.4	F1	0.15		mg/L			10/07/22 14:37	5
Phosphorus (SM 4500 P E)	5.5		0.50		mg/L		10/18/22 06:55	10/18/22 09:39	1
Orthophosphate as PO4 (SM 4500 P E)	13		0.46		mg/L			10/07/22 14:37	5

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-35552/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35552

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/17/22 23:19	1

Lab Sample ID: MB 810-35552/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35552

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/18/22 00:25	1

Lab Sample ID: LCS 810-35552/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35552

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	5.06		mg/L		101	85 - 115

Lab Sample ID: LLCS 810-35552/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35552

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021	*+	mg/L		162	50 - 150

Lab Sample ID: LLCS 810-35552/13 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35552

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0912	J	mg/L		91	50 - 150

Lab Sample ID: 810-40604-7 MS — **Client Sample ID: RAW-S1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35552

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	100		5.00	106	4	mg/L		84	70 - 130

Lab Sample ID: 810-40604-7 MSD — **Client Sample ID: RAW-S1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35552

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	100		5.00	106	4	mg/L		85	70 - 130	0	20

Lab Sample ID: MB 810-35696/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35868 — **Prep Batch: 35696**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		10/18/22 13:25	10/19/22 17:52	1

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: LCS 810-35696/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35868 — **Prep Batch: 35696**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.99		mg/L		100	85 - 115

Lab Sample ID: LLCS 810-35696/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35868 — **Prep Batch: 35696**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		120	50 - 150

Lab Sample ID: LLCS 810-35696/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35868 — **Prep Batch: 35696**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0884	J	mg/L		88	50 - 150

Lab Sample ID: 810-40604-2 MS — **Client Sample ID: STAT-S39-R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35868 — **Prep Batch: 35696**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	92		5.00	97.6	4	mg/L		114	70 - 130

Lab Sample ID: 810-40604-2 MSD — **Client Sample ID: STAT-S39-R1**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35868 — **Prep Batch: 35696**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	92		5.00	97.8	4	mg/L		118	70 - 130	0	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-35493/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35493

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/17/22 13:44	1
Lead	<0.50		0.50		ug/L			10/17/22 13:44	1

Lab Sample ID: MB 810-35493/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35493

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/17/22 15:06	1
Lead	<0.50		0.50		ug/L			10/17/22 15:06	1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 810-35493/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35493

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	52.4		ug/L		105	85 - 115
Lead	50.0	50.3		ug/L		101	85 - 115

Lab Sample ID: LLCS 810-35493/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35493

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		99	50 - 150
Lead	0.300	0.303	J	ug/L		101	50 - 150

Lab Sample ID: LLCS 810-35493/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35493

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.923	J	ug/L		92	50 - 150

Lab Sample ID: 810-40604-1 MS — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35493

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	4.6		50.0	49.8		ug/L		90	70 - 130
Lead	<0.50		50.0	46.9		ug/L		94	70 - 130

Lab Sample ID: 810-40604-1 MSD — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35493

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	4.6		50.0	49.4		ug/L		90	70 - 130	1	20
Lead	<0.50		50.0	46.8		ug/L		94	70 - 130	0	20

Lab Sample ID: MB 810-35698/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		10/18/22 13:25	10/19/22 13:17	1
Lead	<0.50		0.50		ug/L		10/18/22 13:25	10/19/22 13:17	1

Lab Sample ID: LCS 810-35698/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	49.0		ug/L		98	85 - 115
Lead	50.0	51.6		ug/L		103	85 - 115

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-35698/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		90	50 - 150
Lead	0.300	0.305	J	ug/L		102	50 - 150

Lab Sample ID: LLCS 810-35698/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.977	J	ug/L		98	50 - 150

Lab Sample ID: 810-40604-3 MS — **Client Sample ID: STAT-S39-R2**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	37		50.0	85.2		ug/L		97	70 - 130
Lead	880		50.0	948	4	ug/L		132	70 - 130

Lab Sample ID: 810-40604-3 MSD — **Client Sample ID: STAT-S39-R2**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	37		50.0	83.6		ug/L		93	70 - 130	2	20
Lead	880		50.0	922	4	ug/L		81	70 - 130	3	20

Method: SM 4500 P E - Phosphorus

Lab Sample ID: MBL 810-34997/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35028 — **Prep Batch: 34997**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		10/12/22 08:14	10/12/22 11:39	1

Lab Sample ID: LCS 810-34997/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35028 — **Prep Batch: 34997**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.502		mg/L		100	86 - 113

Lab Sample ID: LLCS 810-34997/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35028 — **Prep Batch: 34997**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0670		mg/L		134	50 - 150

Method: SM 4500 P E - Phosphorus (Continued)

Lab Sample ID: LLCS 810-35553/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35578 — **Prep Batch: 35553**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0460	J	mg/L		92	50 - 150

Lab Sample ID: MBL 810-35752/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35796 — **Prep Batch: 35752**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		10/19/22 09:02	10/19/22 12:04	1

Lab Sample ID: LCS 810-35752/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35796 — **Prep Batch: 35752**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.480		mg/L		96	86 - 113

Lab Sample ID: LLCS 810-35752/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35796 — **Prep Batch: 35752**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0480	J	mg/L		96	50 - 150

Method: SM 4500 P E - Orthophosphate

Lab Sample ID: MBL 810-34640/31 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34640

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			10/07/22 14:37	1
Orthophosphate as PO4	<0.046		0.092		mg/L			10/07/22 14:37	1

Lab Sample ID: MBL 810-34640/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34640

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			10/07/22 14:20	1
Orthophosphate as PO4	<0.046		0.092		mg/L			10/07/22 14:20	1

Lab Sample ID: LCS 810-34640/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34640

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.457		mg/L		91	84 - 109

Method: SM 4500 P E - Orthophosphate (Continued)

Lab Sample ID: LCS 810-34640/30 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34640

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.453		mg/L		91	84 - 109

Lab Sample ID: LLCS 810-34640/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34640

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0300		mg/L		100	50 - 150

Lab Sample ID: LLCS 810-34640/29 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34640

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0280	J	mg/L		93	50 - 150

Lab Sample ID: 810-40604-1 MS — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34640

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.12		0.500	0.637		mg/L		104	75 - 195

Lab Sample ID: 810-40604-1 MSD — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34640

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphate, ortho	0.12		0.500	0.638		mg/L		104	75 - 195	0	20

Lab Sample ID: 810-40604-13 MS — **Client Sample ID: STAG-S24R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34640

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	4.4	F1	2.50	5.98	F1	mg/L		64	75 - 195

Lab Sample ID: 810-40604-13 MSD — **Client Sample ID: STAG-S24R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34640

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphate, ortho	4.4	F1	2.50	6.08	F1	mg/L		68	75 - 195	2	20

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Metals

Analysis Batch: 35493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-1	RAW-S39	Total/NA	Water	200.8	
810-40604-4	RAW-S25	Total/NA	Water	200.8	
810-40604-5	STAG-S25R1	Total/NA	Water	200.8	
810-40604-6	STAG-S25R2	Total/NA	Water	200.8	
810-40604-7	RAW-S1	Total/NA	Water	200.8	
810-40604-11	Raw-S24	Total/NA	Water	200.8	
810-40604-12	STAG-S24R1	Total/NA	Water	200.8	
810-40604-13	STAG-S24R2	Total/NA	Water	200.8	
MB 810-35493/13	Method Blank	Total/NA	Water	200.8	
MB 810-35493/43	Method Blank	Total/NA	Water	200.8	
LCS 810-35493/14	Lab Control Sample	Total/NA	Water	200.8	
LCS 810-35493/44	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-35493/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-35493/12	Lab Control Sample	Total/NA	Water	200.8	
810-40604-1 MS	RAW-S39	Total/NA	Water	200.8	
810-40604-1 MSD	RAW-S39	Total/NA	Water	200.8	

Analysis Batch: 35552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-1	RAW-S39	Total/NA	Water	200.7 Rev 4.4	
810-40604-4	RAW-S25	Total/NA	Water	200.7 Rev 4.4	
810-40604-5	STAG-S25R1	Total/NA	Water	200.7 Rev 4.4	
810-40604-6	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	
810-40604-7	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-40604-11	Raw-S24	Total/NA	Water	200.7 Rev 4.4	
810-40604-12	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-40604-13	STAG-S24R2	Total/NA	Water	200.7 Rev 4.4	
MB 810-35552/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-35552/43	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-35552/14	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-35552/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-35552/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-40604-7 MS	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-40604-7 MSD	RAW-S1	Total/NA	Water	200.7 Rev 4.4	

Prep Batch: 35696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-2	STAT-S39-R1	Total Recoverable	Water	200.7	
810-40604-3	STAT-S39-R2	Total Recoverable	Water	200.7	
810-40604-8	STAG-S1R1	Total Recoverable	Water	200.7	
810-40604-9	STAG-S1R2	Total Recoverable	Water	200.7	
810-40604-10	STAG-S1R3	Total Recoverable	Water	200.7	
MB 810-35696/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-35696/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-35696/2-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-35696/3-A	Lab Control Sample	Total Recoverable	Water	200.7	
810-40604-2 MS	STAT-S39-R1	Total Recoverable	Water	200.7	
810-40604-2 MSD	STAT-S39-R1	Total Recoverable	Water	200.7	

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Metals

Prep Batch: 35698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-2	STAT-S39-R1	Total Recoverable	Water	200.8	
810-40604-3	STAT-S39-R2	Total Recoverable	Water	200.8	
810-40604-8	STAG-S1R1	Total Recoverable	Water	200.8	
810-40604-9	STAG-S1R2	Total Recoverable	Water	200.8	
810-40604-10	STAG-S1R3	Total Recoverable	Water	200.8	
MB 810-35698/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-35698/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-35698/2-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-35698/3-A	Lab Control Sample	Total Recoverable	Water	200.8	
810-40604-3 MS	STAT-S39-R2	Total Recoverable	Water	200.8	
810-40604-3 MSD	STAT-S39-R2	Total Recoverable	Water	200.8	

Analysis Batch: 35819

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-2	STAT-S39-R1	Total Recoverable	Water	200.8	35698
810-40604-3	STAT-S39-R2	Total Recoverable	Water	200.8	35698
810-40604-8	STAG-S1R1	Total Recoverable	Water	200.8	35698
810-40604-9	STAG-S1R2	Total Recoverable	Water	200.8	35698
810-40604-10	STAG-S1R3	Total Recoverable	Water	200.8	35698
MB 810-35698/1-A	Method Blank	Total Recoverable	Water	200.8	35698
LCS 810-35698/6-A	Lab Control Sample	Total Recoverable	Water	200.8	35698
LLCS 810-35698/2-A	Lab Control Sample	Total Recoverable	Water	200.8	35698
LLCS 810-35698/3-A	Lab Control Sample	Total Recoverable	Water	200.8	35698
810-40604-3 MS	STAT-S39-R2	Total Recoverable	Water	200.8	35698
810-40604-3 MSD	STAT-S39-R2	Total Recoverable	Water	200.8	35698

Analysis Batch: 35868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-2	STAT-S39-R1	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40604-3	STAT-S39-R2	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40604-8	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40604-9	STAG-S1R2	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40604-10	STAG-S1R3	Total Recoverable	Water	200.7 Rev 4.4	35696
MB 810-35696/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	35696
LCS 810-35696/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	35696
LLCS 810-35696/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	35696
LLCS 810-35696/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40604-2 MS	STAT-S39-R1	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40604-2 MSD	STAT-S39-R1	Total Recoverable	Water	200.7 Rev 4.4	35696

General Chemistry

Analysis Batch: 34640

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-1	RAW-S39	Total/NA	Water	SM 4500 P E	
810-40604-2	STAT-S39-R1	Total/NA	Water	SM 4500 P E	
810-40604-3	STAT-S39-R2	Total/NA	Water	SM 4500 P E	
810-40604-4	RAW-S25	Total/NA	Water	SM 4500 P E	
810-40604-5	STAG-S25R1	Total/NA	Water	SM 4500 P E	
810-40604-6	STAG-S25R2	Total/NA	Water	SM 4500 P E	
810-40604-7	RAW-S1	Total/NA	Water	SM 4500 P E	

General Chemistry (Continued)

Analysis Batch: 34640 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-8	STAG-S1R1	Total/NA	Water	SM 4500 P E	
810-40604-9	STAG-S1R2	Total/NA	Water	SM 4500 P E	
810-40604-10	STAG-S1R3	Total/NA	Water	SM 4500 P E	
810-40604-11	Raw-S24	Total/NA	Water	SM 4500 P E	
810-40604-12	STAG-S24R1	Total/NA	Water	SM 4500 P E	
810-40604-13	STAG-S24R2	Total/NA	Water	SM 4500 P E	
MBL 810-34640/31	Method Blank	Total/NA	Water	SM 4500 P E	
MBL 810-34640/4	Method Blank	Total/NA	Water	SM 4500 P E	
LCS 810-34640/3	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LCS 810-34640/30	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-34640/2	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-34640/29	Lab Control Sample	Total/NA	Water	SM 4500 P E	
810-40604-1 MS	RAW-S39	Total/NA	Water	SM 4500 P E	
810-40604-1 MSD	RAW-S39	Total/NA	Water	SM 4500 P E	
810-40604-13 MS	STAG-S24R2	Total/NA	Water	SM 4500 P E	
810-40604-13 MSD	STAG-S24R2	Total/NA	Water	SM 4500 P E	

Prep Batch: 34997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-1	RAW-S39	Total/NA	Water	SM 4500 P B	
810-40604-2	STAT-S39-R1	Total/NA	Water	SM 4500 P B	
810-40604-3	STAT-S39-R2	Total/NA	Water	SM 4500 P B	
810-40604-4	RAW-S25	Total/NA	Water	SM 4500 P B	
810-40604-5	STAG-S25R1	Total/NA	Water	SM 4500 P B	
810-40604-8	STAG-S1R1	Total/NA	Water	SM 4500 P B	
810-40604-9	STAG-S1R2	Total/NA	Water	SM 4500 P B	
810-40604-11	Raw-S24	Total/NA	Water	SM 4500 P B	
810-40604-12	STAG-S24R1	Total/NA	Water	SM 4500 P B	
MBL 810-34997/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-34997/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-34997/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 35028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-1	RAW-S39	Total/NA	Water	SM 4500 P E	34997
810-40604-2	STAT-S39-R1	Total/NA	Water	SM 4500 P E	34997
810-40604-3	STAT-S39-R2	Total/NA	Water	SM 4500 P E	34997
810-40604-4	RAW-S25	Total/NA	Water	SM 4500 P E	34997
810-40604-5	STAG-S25R1	Total/NA	Water	SM 4500 P E	34997
810-40604-8	STAG-S1R1	Total/NA	Water	SM 4500 P E	34997
810-40604-9	STAG-S1R2	Total/NA	Water	SM 4500 P E	34997
810-40604-11	Raw-S24	Total/NA	Water	SM 4500 P E	34997
810-40604-12	STAG-S24R1	Total/NA	Water	SM 4500 P E	34997
MBL 810-34997/4-A	Method Blank	Total/NA	Water	SM 4500 P E	34997
LCS 810-34997/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	34997
LLCS 810-34997/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	34997

Prep Batch: 35553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-6	STAG-S25R2	Total/NA	Water	SM 4500 P B	
810-40604-10	STAG-S1R3	Total/NA	Water	SM 4500 P B	

General Chemistry (Continued)

Prep Batch: 35553 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-13	STAG-S24R2	Total/NA	Water	SM 4500 P B	
LLCS 810-35553/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 35578

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-6	STAG-S25R2	Total/NA	Water	SM 4500 P E	35553
810-40604-10	STAG-S1R3	Total/NA	Water	SM 4500 P E	35553
810-40604-13	STAG-S24R2	Total/NA	Water	SM 4500 P E	35553
LLCS 810-35553/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	35553

Prep Batch: 35752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-7	RAW-S1	Total/NA	Water	SM 4500 P B	
MBL 810-35752/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-35752/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-35752/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 35796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40604-7	RAW-S1	Total/NA	Water	SM 4500 P E	35752
MBL 810-35752/4-A	Method Blank	Total/NA	Water	SM 4500 P E	35752
LCS 810-35752/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	35752
LLCS 810-35752/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	35752

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-40604-1
Date Collected: 10/06/22 07:58
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	35552	AC	EA SB	10/17/22 23:42
Total/NA	Analysis	200.8		1	35493	NB	EA SB	10/17/22 14:49
Total/NA	Analysis	SM 4500 P E		1	34640	JA	EA SB	10/07/22 14:20
Total/NA	Prep	SM 4500 P B			34997	KH	EA SB	10/12/22 09:35
Total/NA	Analysis	SM 4500 P E		1	35028	KH	EA SB	10/12/22 11:41

Client Sample ID: STAT-S39-R1

Lab Sample ID: 810-40604-2
Date Collected: 10/06/22 08:00
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:01
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 13:30
Total/NA	Analysis	SM 4500 P E		5	34640	JA	EA SB	10/07/22 14:39
Total/NA	Prep	SM 4500 P B			34997	KH	EA SB	10/12/22 09:43
Total/NA	Analysis	SM 4500 P E		1	35028	KH	EA SB	10/12/22 11:41

Client Sample ID: STAT-S39-R2

Lab Sample ID: 810-40604-3
Date Collected: 10/06/22 08:02
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:07
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 13:33
Total/NA	Analysis	SM 4500 P E		5	34640	JA	EA SB	10/07/22 14:40
Total/NA	Prep	SM 4500 P B			34997	KH	EA SB	10/12/22 09:51
Total/NA	Analysis	SM 4500 P E		1	35028	KH	EA SB	10/12/22 11:41

Client Sample ID: RAW-S25

Lab Sample ID: 810-40604-4
Date Collected: 10/06/22 09:52
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	35552	AC	EA SB	10/17/22 23:44
Total/NA	Analysis	200.8		1	35493	NB	EA SB	10/17/22 14:57
Total/NA	Analysis	SM 4500 P E		1	34640	JA	EA SB	10/07/22 14:23
Total/NA	Prep	SM 4500 P B			34997	KH	EA SB	10/12/22 10:07
Total/NA	Analysis	SM 4500 P E		1	35028	KH	EA SB	10/12/22 11:42

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-40604-5
Date Collected: 10/06/22 09:54
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	35552	AC	EA SB	10/17/22 23:47
Total/NA	Analysis	200.8		1	35493	NB	EA SB	10/17/22 15:11
Total/NA	Analysis	SM 4500 P E		1	34640	JA	EA SB	10/07/22 14:23
Total/NA	Prep	SM 4500 P B			34997	KH	EA SB	10/12/22 10:15
Total/NA	Analysis	SM 4500 P E		1	35028	KH	EA SB	10/12/22 11:42

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-40604-6
Date Collected: 10/06/22 09:56
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	35552	AC	EA SB	10/17/22 23:49
Total/NA	Analysis	200.8		1	35493	NB	EA SB	10/17/22 15:14
Total/NA	Analysis	SM 4500 P E		5	34640	JA	EA SB	10/07/22 14:33
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 06:27
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:38

Client Sample ID: RAW-S1

Lab Sample ID: 810-40604-7
Date Collected: 10/06/22 11:30
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	35552	AC	EA SB	10/17/22 23:55
Total/NA	Analysis	200.8		1	35493	NB	EA SB	10/17/22 15:16
Total/NA	Analysis	SM 4500 P E		1	34640	JA	EA SB	10/07/22 14:24
Total/NA	Prep	SM 4500 P B			35752	KH	EA SB	10/19/22 11:16
Total/NA	Analysis	SM 4500 P E		1	35796	KH	EA SB	10/19/22 12:06

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-40604-8
Date Collected: 10/06/22 12:04
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:09
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 13:39
Total/NA	Analysis	SM 4500 P E		25	34640	JA	EA SB	10/07/22 14:34
Total/NA	Prep	SM 4500 P B			34997	KH	EA SB	10/12/22 10:40
Total/NA	Analysis	SM 4500 P E		1	35028	KH	EA SB	10/12/22 11:43

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-40604-9

Date Collected: 10/06/22 12:06
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:11
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 13:42
Total/NA	Analysis	SM 4500 P E		25	34640	JA	EA SB	10/07/22 14:34
Total/NA	Prep	SM 4500 P B			34997	KH	EA SB	10/12/22 10:48
Total/NA	Analysis	SM 4500 P E		1	35028	KH	EA SB	10/12/22 11:43

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-40604-10

Date Collected: 10/06/22 12:08
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:13
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 13:44
Total/NA	Analysis	SM 4500 P E		25	34640	JA	EA SB	10/07/22 14:35
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 06:46
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:38

Client Sample ID: Raw-S24

Lab Sample ID: 810-40604-11

Date Collected: 10/06/22 14:52
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	35552	AC	EA SB	10/18/22 00:02
Total/NA	Analysis	200.8		1	35493	NB	EA SB	10/17/22 15:19
Total/NA	Analysis	SM 4500 P E		1	34640	JA	EA SB	10/07/22 14:28
Total/NA	Prep	SM 4500 P B			34997	KH	EA SB	10/12/22 11:04
Total/NA	Analysis	SM 4500 P E		1	35028	KH	EA SB	10/12/22 11:43

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-40604-12

Date Collected: 10/06/22 14:54
Matrix: Water
Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	35552	AC	EA SB	10/18/22 00:04
Total/NA	Analysis	200.8		1	35493	NB	EA SB	10/17/22 15:22
Total/NA	Analysis	SM 4500 P E		5	34640	JA	EA SB	10/07/22 14:35
Total/NA	Prep	SM 4500 P B			34997	KH	EA SB	10/12/22 11:12
Total/NA	Analysis	SM 4500 P E		1	35028	KH	EA SB	10/12/22 11:43

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-40604-13

Date Collected: 10/06/22 14:56

Matrix: Water

Date Received: 10/07/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	35552	AC	EA SB	10/18/22 00:06
Total/NA	Analysis	200.8		1	35493	NB	EA SB	10/17/22 15:25
Total/NA	Analysis	SM 4500 P E		5	34640	JA	EA SB	10/07/22 14:37
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 06:55
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:39

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Calcium
200.7 Rev 4.4	200.7	Water	Calcium
200.8		Water	Copper
200.8		Water	Lead
200.8	200.8	Water	Copper
200.8	200.8	Water	Lead
SM 4500 P E		Water	Orthophosphate as PO4
SM 4500 P E		Water	Phosphate, ortho
SM 4500 P E	SM 4500 P B	Water	Phosphorus

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
SM 4500 P E	Orthophosphate	SM	EA SB
SM 4500 P E	Phosphorus	SM	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB
SM 4500 P B	Phosphorous, Total and Ortho	SM	EA SB

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40604-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-40604-1	RAW-S39	Water	10/06/22 07:58	10/07/22 08:30
810-40604-2	STAT-S39-R1	Water	10/06/22 08:00	10/07/22 08:30
810-40604-3	STAT-S39-R2	Water	10/06/22 08:02	10/07/22 08:30
810-40604-4	RAW-S25	Water	10/06/22 09:52	10/07/22 08:30
810-40604-5	STAG-S25R1	Water	10/06/22 09:54	10/07/22 08:30
810-40604-6	STAG-S25R2	Water	10/06/22 09:56	10/07/22 08:30
810-40604-7	RAW-S1	Water	10/06/22 11:30	10/07/22 08:30
810-40604-8	STAG-S1R1	Water	10/06/22 12:04	10/07/22 08:30
810-40604-9	STAG-S1R2	Water	10/06/22 12:06	10/07/22 08:30
810-40604-10	STAG-S1R3	Water	10/06/22 12:08	10/07/22 08:30
810-40604-11	Raw-S24	Water	10/06/22 14:52	10/07/22 08:30
810-40604-12	STAG-S24R1	Water	10/06/22 14:54	10/07/22 08:30
810-40604-13	STAG-S24R2	Water	10/06/22 14:56	10/07/22 08:30

810-40604 Chain of Custody

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: 100622.1
Client Contact: James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: Page 1 of 2
Company: Tetra Tech	PWSID:			Job #:
Address: 201 E Pine St. Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days):			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)	PO #:			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
RAW-S39	10/6/22	7:58	G	W			X	X	X			
STAG-S39R1	10/6/22	8:00	G	W			X	X	X			
STAG-S39R2	10/6/22	8:02	G	W			X	X	X			
RAW-S25	10/6/22	9:52	G	W			X	X	X			
STAG-S25R1	10/6/22	9:54	G	W			X	X	X			
STAG-S25R2	10/6/22	9:56	G	W			X	X	X			
RAW-S1	10/6/22	11:30	G	W			X	X	X			
STAG-S1R1	10/6/22	12:04	G	W			X	X	X			
STAG-S1R2	10/6/22	12:06	G	W			X	X	X			
STAG-S1R3	10/6/22	12:08	G	W			X	X	X			
RAW-S24	10/6/22	14:52	G	W			X	X	X			

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Sara Hayes	10/06/22 17:30		FedEx	10/06/22 17:30	

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler:	Lab PM:	Carrier Tracking No(s):	COC No: 92922.1
Client Contact:	Phone:	E-Mail:	State of Origin:	Page: Page 2 of 2
Company:	PWSID:			Job #:
Address:	Due Date Requested:			
City:	TAT Requested (days):			
State, Zip:	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email:	WO #:			
Project Name:	Project #:			
Site:	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				PH22	PH22				
STAG-S24R1	10/6/22	14:54	G	W			X	X	X			
STAG-S24R2	10/6/22	14:56	G	W			X	X	X			

Initial Temp: 0.4
Corrected Temp: 0.2
IR Gun # 18

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by: K [illegible]	Date/Time: 10-7-22 0830	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: WE

810-40604 Chain of Custody

Chain of Custody Record

eurofins Environment Testing America

10/19/2022

Client Information	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: 100622.1
Client Contact: James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: Page 1 of 2
Company: Tetra Tech	PWSID:			Job #:
Address: 201 E Pine St. Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days):			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)	PO #:			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
RAW-S39	10/6/22	7:58	G	W			X	X	X			
STAG-S39R1	10/6/22	8:00	G	W			X	X	X			
STAG-S39R2	10/6/22	8:02	G	W			X	X	X			
RAW-S25	10/6/22	9:52	G	W			X	X	X			
STAG-S25R1	10/6/22	9:54	G	W			X	X	X			
STAG-S25R2	10/6/22	9:56	G	W			X	X	X			
RAW-S1	10/6/22	11:30	G	W			X	X	X			
STAG-S1R1	10/6/22	12:04	G	W			X	X	X			
STAG-S1R2	10/6/22	12:06	G	W			X	X	X			
STAG-S1R3	10/6/22	12:08	G	W			X	X	X			
RAW-S24	10/6/22	14:52	G	W			X	X	X			

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Sara Hayes	10/6/22 17:30		FedEx	10/06/22 17:30	
			KDW	10-7-22 0830	

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler:	Lab PM:	Carrier Tracking No(s):	COC No: 92922.1
Client Contact:	Phone:	E-Mail:	State of Origin:	Page: Page 2 of 2
Company:	PWSID:			Job #:
Address:	Due Date Requested:			
City:	TAT Requested (days):			
State, Zip:	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email:	WO #:			
Project Name:	Project #:			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				pH22	pH22				
STAG-S24R1	10/6/22	14:54	G	W			X	X	X			
STAG-S24R2	10/6/22	14:56	G	W			X	X	X			

Initial Temp: 0.4
Corrected Temp: 0.8
IR Gun # 18

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by: [signature]	Date/Time: 10-7-22 0830	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: WEC

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-40604-1

Login Number: 40604
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-40870-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
10/25/2022 9:47:59 PM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 8
QC Sample Results 13
QC Association Summary 18
Lab Chronicle 22
Certification Summary 26
Method Summary 27
Sample Summary 28
Chain of Custody 29
Receipt Checklists 31

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Qualifiers

Metals

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

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-40870-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-40870-1

Receipt
The samples were received on 10/11/2022 8:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.4°C

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

General Chemistry
Method 4500_P_E_Ortho: The matrix spike / matrix spike duplicate (MS/MSD) precision for analytical batch 810-34936 was outside control limits due to parent sample result being 0.703 mg/L. MS/MSD results are expected to be outside of instrument calibration range and are acceptable.

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: RAW-S39 — Lab Sample ID: 810-40870-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	89		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	2.7		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.087		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.16		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	0.27		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S39-R1 — Lab Sample ID: 810-40870-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	93		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	75		1.0		ug/L	1		200.8	Total Recoverable
Lead	780		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	6.3		0.30		mg/L	10		SM 4500 P E	Total/NA
Phosphorus	7.2		0.50		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	19		0.92		mg/L	10		SM 4500 P E	Total/NA

Client Sample ID: STAG-S39-R2 — Lab Sample ID: 810-40870-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	90		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	24		1.0		ug/L	1		200.8	Total Recoverable
Lead	340		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	1.1		0.060		mg/L	2		SM 4500 P E	Total/NA
Phosphorus	1.3		0.10		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	3.5		0.18		mg/L	2		SM 4500 P E	Total/NA

Client Sample ID: RAW-S25 — Lab Sample ID: 810-40870-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	85		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	19		1.0		ug/L	1		200.8	Total Recoverable
Lead	1.4		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	0.44		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.66		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	1.3		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R1 — Lab Sample ID: 810-40870-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	83		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	310		1.0		ug/L	1		200.8	Total Recoverable
Lead	140		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	0.49		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.70		0.050		mg/L	1		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: STAG-S25R1 (Continued) — Lab Sample ID: 810-40870-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Orthophosphate as PO4	1.5		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-40870-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	83		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	12		1.0		ug/L	1		200.8	Total Recoverable
Lead	10		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	4.2		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	4.9		0.50		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	13		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: RAW-S1 — Lab Sample ID: 810-40870-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	98		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.2		1.0		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-40870-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	26		1.0		ug/L	1		200.8	Total Recoverable
Lead	180		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	8.6		0.30		mg/L	10		SM 4500 P E	Total/NA
Phosphorus	14		1.0		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	26		0.92		mg/L	10		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-40870-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	43		1.0		ug/L	1		200.8	Total Recoverable
Lead	77		0.50		ug/L	1		200.8	Total Recoverable
Phosphate, ortho	8.1		0.30		mg/L	10		SM 4500 P E	Total/NA
Phosphorus	13		1.0		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	25		0.92		mg/L	10		SM 4500 P E	Total/NA

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-40870-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	80		1.0		ug/L	1		200.8	Total Recoverable
Lead	100		0.50		ug/L	1		200.8	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: STAG-S1R3 (Continued) — Lab Sample ID: 810-40870-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Phosphate, ortho	10		0.75		mg/L	25		SM 4500 P E	Total/NA
Phosphorus	17		1.3		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	31		2.3		mg/L	25		SM 4500 P E	Total/NA

Client Sample ID: Raw-S24 — Lab Sample ID: 810-40870-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	52		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	6.4		1.0		ug/L	1		200.8	Total/NA
Phosphate, ortho	0.41		0.030		mg/L	1		SM 4500 P E	Total/NA
Phosphorus	0.51		0.050		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	1.3		0.092		mg/L	1		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-40870-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	52		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	4.0		1.0		ug/L	1		200.8	Total/NA
Lead	11		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	2.9		0.15		mg/L	5		SM 4500 P E	Total/NA
Phosphorus	3.5		0.25		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	8.9		0.46		mg/L	5		SM 4500 P E	Total/NA

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-40870-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	57		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	71		1.0		ug/L	1		200.8	Total/NA
Lead	170		0.50		ug/L	1		200.8	Total/NA
Phosphate, ortho	7.0	F1	0.30		mg/L	10		SM 4500 P E	Total/NA
Phosphorus	9.3		0.50		mg/L	1		SM 4500 P E	Total/NA
Orthophosphate as PO4	22		0.92		mg/L	10		SM 4500 P E	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-40870-1
Date Collected: 10/10/22 08:20
Matrix: Water
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	89		0.10		mg/L			10/25/22 19:17	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	2.7		1.0		ug/L			10/18/22 18:44	1
Lead	<0.50		0.50		ug/L			10/18/22 18:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.087		0.030		mg/L			10/11/22 14:31	1
Phosphorus (SM 4500 P E)	0.16		0.050		mg/L		10/18/22 05:50	10/18/22 09:37	1
Orthophosphate as PO4 (SM 4500 P E)	0.27		0.092		mg/L			10/11/22 14:31	1

Client Sample ID: STAG-S39-R1

Lab Sample ID: 810-40870-2
Date Collected: 10/10/22 08:22
Matrix: Water
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	93		0.10		mg/L		10/18/22 13:25	10/19/22 18:16	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	75		1.0		ug/L		10/18/22 13:25	10/19/22 13:46	1
Lead	780		0.50		ug/L		10/18/22 13:25	10/19/22 13:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	6.3		0.30		mg/L			10/11/22 15:04	10
Phosphorus (SM 4500 P E)	7.2		0.50		mg/L		10/18/22 07:05	10/18/22 09:39	1
Orthophosphate as PO4 (SM 4500 P E)	19		0.92		mg/L			10/11/22 15:04	10

Client Sample ID: STAG-S39-R2

Lab Sample ID: 810-40870-3
Date Collected: 10/10/22 08:24
Matrix: Water
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	90		0.10		mg/L		10/18/22 13:25	10/19/22 18:18	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	24		1.0		ug/L		10/18/22 13:25	10/19/22 13:48	1
Lead	340		0.50		ug/L		10/18/22 13:25	10/19/22 13:48	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	1.1		0.060		mg/L			10/11/22 14:39	2
Phosphorus (SM 4500 P E)	1.3		0.10		mg/L		10/18/22 07:14	10/18/22 09:39	1
Orthophosphate as PO4 (SM 4500 P E)	3.5		0.18		mg/L			10/11/22 14:39	2

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: RAW-S25

Lab Sample ID: 810-40870-4
Date Collected: 10/10/22 09:34
Matrix: Water
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	85		0.10		mg/L		10/18/22 13:25	10/19/22 18:20	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	19		1.0		ug/L		10/18/22 13:25	10/19/22 13:51	1
Lead	1.4		0.50		ug/L		10/18/22 13:25	10/19/22 13:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.44		0.030		mg/L			10/11/22 14:33	1
Phosphorus (SM 4500 P E)	0.66		0.050		mg/L		10/18/22 07:23	10/18/22 09:39	1
Orthophosphate as PO4 (SM 4500 P E)	1.3		0.092		mg/L			10/11/22 14:33	1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-40870-5
Date Collected: 10/10/22 06:34
Matrix: Water
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	83		0.10		mg/L		10/18/22 13:25	10/19/22 18:22	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	310		1.0		ug/L		10/18/22 13:25	10/19/22 13:53	1
Lead	140		0.50		ug/L		10/18/22 13:25	10/19/22 13:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.49		0.030		mg/L			10/11/22 14:33	1
Phosphorus (SM 4500 P E)	0.70		0.050		mg/L		10/18/22 07:33	10/18/22 09:39	1
Orthophosphate as PO4 (SM 4500 P E)	1.5		0.092		mg/L			10/11/22 14:33	1

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-40870-6
Date Collected: 10/10/22 09:38
Matrix: Water
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	83		0.10		mg/L		10/18/22 13:25	10/19/22 18:24	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	12		1.0		ug/L		10/18/22 13:25	10/19/22 13:55	1
Lead	10		0.50		ug/L		10/18/22 13:25	10/19/22 13:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	4.2		0.15		mg/L			10/11/22 14:39	5
Phosphorus (SM 4500 P E)	4.9		0.50		mg/L		10/19/22 09:14	10/19/22 11:58	1
Orthophosphate as PO4 (SM 4500 P E)	13		0.46		mg/L			10/11/22 14:39	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: RAW-S1

Lab Sample ID: 810-40870-7
Date Collected: 10/10/22 11:32
Matrix: Water
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	98		0.10		mg/L			10/25/22 19:19	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.2		1.0		ug/L			10/18/22 18:46	1
Lead	<0.50		0.50		ug/L			10/18/22 18:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	<0.030		0.030		mg/L			10/11/22 14:34	1
Phosphorus (SM 4500 P E)	<0.050		0.050		mg/L		10/18/22 08:01	10/18/22 09:40	1
Orthophosphate as PO4 (SM 4500 P E)	<0.092		0.092		mg/L			10/11/22 14:34	1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-40870-8
Date Collected: 10/10/22 11:34
Matrix: Water
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		10/18/22 13:25	10/19/22 18:31	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	26		1.0		ug/L		10/18/22 13:25	10/19/22 14:02	1
Lead	180		0.50		ug/L		10/18/22 13:25	10/19/22 14:02	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	8.6		0.30		mg/L			10/11/22 15:05	10
Phosphorus (SM 4500 P E)	14		1.0		mg/L		10/19/22 09:22	10/19/22 11:58	1
Orthophosphate as PO4 (SM 4500 P E)	26		0.92		mg/L			10/11/22 15:05	10

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-40870-9
Date Collected: 10/10/22 11:36
Matrix: Water
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		10/18/22 13:25	10/19/22 18:33	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	43		1.0		ug/L		10/18/22 13:25	10/19/22 14:04	1
Lead	77		0.50		ug/L		10/18/22 13:25	10/19/22 14:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	8.1		0.30		mg/L			10/11/22 15:05	10
Phosphorus (SM 4500 P E)	13		1.0		mg/L		10/19/22 09:29	10/19/22 11:58	1
Orthophosphate as PO4 (SM 4500 P E)	25		0.92		mg/L			10/11/22 15:05	10

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-40870-10
Matrix: Water
Date Collected: 10/10/22 11:38
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		10/18/22 13:25	10/19/22 18:35	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	80		1.0		ug/L		10/18/22 13:25	10/19/22 14:06	1
Lead	100		0.50		ug/L		10/18/22 13:25	10/19/22 14:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	10		0.75		mg/L			10/11/22 15:11	25
Phosphorus (SM 4500 P E)	17		1.3		mg/L		10/18/22 08:29	10/18/22 09:40	1
Orthophosphate as PO4 (SM 4500 P E)	31		2.3		mg/L			10/11/22 15:11	25

Client Sample ID: Raw-S24

Lab Sample ID: 810-40870-11
Matrix: Water
Date Collected: 10/10/22 11:36
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	52		0.10		mg/L			10/25/22 19:21	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	6.4		1.0		ug/L			10/18/22 18:48	1
Lead	<0.50		0.50		ug/L			10/18/22 18:48	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	0.41		0.030		mg/L			10/11/22 14:37	1
Phosphorus (SM 4500 P E)	0.51		0.050		mg/L		10/18/22 08:38	10/18/22 09:40	1
Orthophosphate as PO4 (SM 4500 P E)	1.3		0.092		mg/L			10/11/22 14:37	1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-40870-12
Matrix: Water
Date Collected: 10/10/22 11:38
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	52		0.10		mg/L			10/25/22 19:24	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	4.0		1.0		ug/L			10/18/22 18:50	1
Lead	11		0.50		ug/L			10/18/22 18:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	2.9		0.15		mg/L			10/11/22 15:08	5
Phosphorus (SM 4500 P E)	3.5		0.25		mg/L		10/18/22 08:48	10/18/22 09:40	1
Orthophosphate as PO4 (SM 4500 P E)	8.9		0.46		mg/L			10/11/22 15:08	5

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-40870-13

Date Collected: 10/10/22 13:40
Matrix: Water
Date Received: 10/11/22 08:30

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	57		0.10		mg/L			10/25/22 19:26	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	71		1.0		ug/L			10/18/22 18:52	1
Lead	170		0.50		ug/L			10/18/22 18:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho (SM 4500 P E)	7.0	F1	0.30		mg/L			10/11/22 15:03	10
Phosphorus (SM 4500 P E)	9.3		0.50		mg/L		10/18/22 08:57	10/18/22 09:41	1
Orthophosphate as PO4 (SM 4500 P E)	22		0.92		mg/L			10/11/22 15:03	10

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-36433/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/25/22 17:21	1

Lab Sample ID: MB 810-36433/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/25/22 18:28	1

Lab Sample ID: LCS 810-36433/44 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	5.18		mg/L		104	85 - 115

Lab Sample ID: LLCS 810-36433/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		84	50 - 150

Lab Sample ID: LLCS 810-36433/13 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0875	J	mg/L		88	50 - 150

Lab Sample ID: MB 810-35696/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35868 — **Prep Batch: 35696**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		10/18/22 13:25	10/19/22 17:52	1

Lab Sample ID: LCS 810-35696/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35868 — **Prep Batch: 35696**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.99		mg/L		100	85 - 115

Lab Sample ID: LLCS 810-35696/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35868 — **Prep Batch: 35696**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		120	50 - 150

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: LLCS 810-35696/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35868 — **Prep Batch: 35696**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0884	J	mg/L		88	50 - 150

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-35700/44 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35700

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/18/22 17:57	1
Lead	<0.50		0.50		ug/L			10/18/22 17:57	1

Lab Sample ID: LCS 810-35700/45 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35700

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	51.7		ug/L		103	85 - 115
Lead	50.0	51.6		ug/L		103	85 - 115

Lab Sample ID: LLCS 810-35700/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35700

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		107	50 - 150
Lead	0.300	0.313	J	ug/L		104	50 - 150

Lab Sample ID: MB 810-35698/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		10/18/22 13:25	10/19/22 13:17	1
Lead	<0.50		0.50		ug/L		10/18/22 13:25	10/19/22 13:17	1

Lab Sample ID: LCS 810-35698/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	49.0		ug/L		98	85 - 115
Lead	50.0	51.6		ug/L		103	85 - 115

Lab Sample ID: LLCS 810-35698/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		90	50 - 150

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-35698/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	0.300	0.305	J	ug/L		102	50 - 150

Lab Sample ID: LLCS 810-35698/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 35819 — **Prep Batch: 35698**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.977	J	ug/L		98	50 - 150

Method: SM 4500 P E - Phosphorus

Lab Sample ID: MBL 810-35553/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35578 — **Prep Batch: 35553**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		10/18/22 05:41	10/18/22 09:37	1

Lab Sample ID: LCS 810-35553/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35578 — **Prep Batch: 35553**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.493		mg/L		99	86 - 113

Lab Sample ID: LLCS 810-35553/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35578 — **Prep Batch: 35553**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0460	J	mg/L		92	50 - 150

Lab Sample ID: 810-40870-1 MS — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35578 — **Prep Batch: 35553**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.16		0.500	0.638		mg/L		96	61 - 260

Lab Sample ID: 810-40870-1 MSD — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35578 — **Prep Batch: 35553**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphorus	0.16		0.500	0.639		mg/L		97	61 - 260	0	20

Method: SM 4500 P E - Phosphorus (Continued)

Lab Sample ID: MBL 810-35751/4-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35796 — **Prep Batch: 35751**

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus	<0.021		0.050		mg/L		10/19/22 08:35	10/19/22 11:57	1

Lab Sample ID: LCS 810-35751/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35796 — **Prep Batch: 35751**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.500	0.490		mg/L		98	86 - 113

Lab Sample ID: LLCS 810-35751/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 35796 — **Prep Batch: 35751**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus	0.0500	0.0520		mg/L		104	50 - 150

Method: SM 4500 P E - Orthophosphate

Lab Sample ID: MBL 810-34936/31 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34936

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			10/11/22 14:56	1
Orthophosphate as PO4	<0.046		0.092		mg/L			10/11/22 14:56	1

Lab Sample ID: MBL 810-34936/4 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34936

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphate, ortho	<0.015		0.030		mg/L			10/11/22 14:30	1
Orthophosphate as PO4	<0.046		0.092		mg/L			10/11/22 14:30	1

Lab Sample ID: LCS 810-34936/3 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34936

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.506		mg/L		101	84 - 109

Lab Sample ID: LCS 810-34936/30 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34936

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.500	0.510		mg/L		102	84 - 109

Method: SM 4500 P E - Orthophosphate (Continued)

Lab Sample ID: LLCS 810-34936/2 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34936

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0300		mg/L		100	50 - 150

Lab Sample ID: LLCS 810-34936/29 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34936

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.0300	0.0330		mg/L		110	50 - 150

Lab Sample ID: 810-40870-1 MS — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34936

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	0.087		0.500	0.610		mg/L		105	75 - 195

Lab Sample ID: 810-40870-1 MSD — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34936

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphate, ortho	0.087		0.500	0.596		mg/L		102	75 - 195	2	20

Lab Sample ID: 810-40870-13 MS — **Client Sample ID: STAG-S24R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34936

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphate, ortho	7.0	F1	5.00	10.5	F1	mg/L		70	75 - 195

Lab Sample ID: 810-40870-13 MSD — **Client Sample ID: STAG-S24R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 34936

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phosphate, ortho	7.0	F1	5.00	10.8		mg/L		76	75 - 195	3	20

Metals

Prep Batch: 35696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-2	STAG-S39-R1	Total Recoverable	Water	200.7	
810-40870-3	STAG-S39-R2	Total Recoverable	Water	200.7	
810-40870-4	RAW-S25	Total Recoverable	Water	200.7	
810-40870-5	STAG-S25R1	Total Recoverable	Water	200.7	
810-40870-6	STAG-S25R2	Total Recoverable	Water	200.7	
810-40870-8	STAG-S1R1	Total Recoverable	Water	200.7	
810-40870-9	STAG-S1R2	Total Recoverable	Water	200.7	
810-40870-10	STAG-S1R3	Total Recoverable	Water	200.7	
MB 810-35696/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-35696/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-35696/2-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-35696/3-A	Lab Control Sample	Total Recoverable	Water	200.7	

Prep Batch: 35698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-2	STAG-S39-R1	Total Recoverable	Water	200.8	
810-40870-3	STAG-S39-R2	Total Recoverable	Water	200.8	
810-40870-4	RAW-S25	Total Recoverable	Water	200.8	
810-40870-5	STAG-S25R1	Total Recoverable	Water	200.8	
810-40870-6	STAG-S25R2	Total Recoverable	Water	200.8	
810-40870-8	STAG-S1R1	Total Recoverable	Water	200.8	
810-40870-9	STAG-S1R2	Total Recoverable	Water	200.8	
810-40870-10	STAG-S1R3	Total Recoverable	Water	200.8	
MB 810-35698/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-35698/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-35698/2-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-35698/3-A	Lab Control Sample	Total Recoverable	Water	200.8	

Analysis Batch: 35700

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-1	RAW-S39	Total/NA	Water	200.8	
810-40870-7	RAW-S1	Total/NA	Water	200.8	
810-40870-11	Raw-S24	Total/NA	Water	200.8	
810-40870-12	STAG-S24R1	Total/NA	Water	200.8	
810-40870-13	STAG-S24R2	Total/NA	Water	200.8	
MB 810-35700/44	Method Blank	Total/NA	Water	200.8	
LCS 810-35700/45	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-35700/11	Lab Control Sample	Total/NA	Water	200.8	

Analysis Batch: 35819

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-2	STAG-S39-R1	Total Recoverable	Water	200.8	35698
810-40870-3	STAG-S39-R2	Total Recoverable	Water	200.8	35698
810-40870-4	RAW-S25	Total Recoverable	Water	200.8	35698
810-40870-5	STAG-S25R1	Total Recoverable	Water	200.8	35698
810-40870-6	STAG-S25R2	Total Recoverable	Water	200.8	35698
810-40870-8	STAG-S1R1	Total Recoverable	Water	200.8	35698
810-40870-9	STAG-S1R2	Total Recoverable	Water	200.8	35698
810-40870-10	STAG-S1R3	Total Recoverable	Water	200.8	35698
MB 810-35698/1-A	Method Blank	Total Recoverable	Water	200.8	35698
LCS 810-35698/6-A	Lab Control Sample	Total Recoverable	Water	200.8	35698

Metals (Continued)

Analysis Batch: 35819 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-35698/2-A	Lab Control Sample	Total Recoverable	Water	200.8	35698
LLCS 810-35698/3-A	Lab Control Sample	Total Recoverable	Water	200.8	35698

Analysis Batch: 35868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-2	STAG-S39-R1	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40870-3	STAG-S39-R2	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40870-4	RAW-S25	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40870-5	STAG-S25R1	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40870-6	STAG-S25R2	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40870-8	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40870-9	STAG-S1R2	Total Recoverable	Water	200.7 Rev 4.4	35696
810-40870-10	STAG-S1R3	Total Recoverable	Water	200.7 Rev 4.4	35696
MB 810-35696/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	35696
LCS 810-35696/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	35696
LLCS 810-35696/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	35696
LLCS 810-35696/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	35696

Analysis Batch: 36433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-1	RAW-S39	Total/NA	Water	200.7 Rev 4.4	
810-40870-7	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-40870-11	Raw-S24	Total/NA	Water	200.7 Rev 4.4	
810-40870-12	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-40870-13	STAG-S24R2	Total/NA	Water	200.7 Rev 4.4	
MB 810-36433/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-36433/43	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-36433/44	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36433/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36433/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	

General Chemistry

Analysis Batch: 34936

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-1	RAW-S39	Total/NA	Water	SM 4500 P E	
810-40870-2	STAG-S39-R1	Total/NA	Water	SM 4500 P E	
810-40870-3	STAG-S39-R2	Total/NA	Water	SM 4500 P E	
810-40870-4	RAW-S25	Total/NA	Water	SM 4500 P E	
810-40870-5	STAG-S25R1	Total/NA	Water	SM 4500 P E	
810-40870-6	STAG-S25R2	Total/NA	Water	SM 4500 P E	
810-40870-7	RAW-S1	Total/NA	Water	SM 4500 P E	
810-40870-8	STAG-S1R1	Total/NA	Water	SM 4500 P E	
810-40870-9	STAG-S1R2	Total/NA	Water	SM 4500 P E	
810-40870-10	STAG-S1R3	Total/NA	Water	SM 4500 P E	
810-40870-11	Raw-S24	Total/NA	Water	SM 4500 P E	
810-40870-12	STAG-S24R1	Total/NA	Water	SM 4500 P E	
810-40870-13	STAG-S24R2	Total/NA	Water	SM 4500 P E	
MBL 810-34936/31	Method Blank	Total/NA	Water	SM 4500 P E	
MBL 810-34936/4	Method Blank	Total/NA	Water	SM 4500 P E	
LCS 810-34936/3	Lab Control Sample	Total/NA	Water	SM 4500 P E	

General Chemistry (Continued)

Analysis Batch: 34936 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 810-34936/30	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-34936/2	Lab Control Sample	Total/NA	Water	SM 4500 P E	
LLCS 810-34936/29	Lab Control Sample	Total/NA	Water	SM 4500 P E	
810-40870-1 MS	RAW-S39	Total/NA	Water	SM 4500 P E	
810-40870-1 MSD	RAW-S39	Total/NA	Water	SM 4500 P E	
810-40870-13 MS	STAG-S24R2	Total/NA	Water	SM 4500 P E	
810-40870-13 MSD	STAG-S24R2	Total/NA	Water	SM 4500 P E	

Prep Batch: 35553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-1	RAW-S39	Total/NA	Water	SM 4500 P B	
810-40870-2	STAG-S39-R1	Total/NA	Water	SM 4500 P B	
810-40870-3	STAG-S39-R2	Total/NA	Water	SM 4500 P B	
810-40870-4	RAW-S25	Total/NA	Water	SM 4500 P B	
810-40870-5	STAG-S25R1	Total/NA	Water	SM 4500 P B	
810-40870-7	RAW-S1	Total/NA	Water	SM 4500 P B	
810-40870-10	STAG-S1R3	Total/NA	Water	SM 4500 P B	
810-40870-11	Raw-S24	Total/NA	Water	SM 4500 P B	
810-40870-12	STAG-S24R1	Total/NA	Water	SM 4500 P B	
810-40870-13	STAG-S24R2	Total/NA	Water	SM 4500 P B	
MBL 810-35553/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-35553/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
LLCS 810-35553/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	
810-40870-1 MS	RAW-S39	Total/NA	Water	SM 4500 P B	
810-40870-1 MSD	RAW-S39	Total/NA	Water	SM 4500 P B	

Analysis Batch: 35578

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-1	RAW-S39	Total/NA	Water	SM 4500 P E	35553
810-40870-2	STAG-S39-R1	Total/NA	Water	SM 4500 P E	35553
810-40870-3	STAG-S39-R2	Total/NA	Water	SM 4500 P E	35553
810-40870-4	RAW-S25	Total/NA	Water	SM 4500 P E	35553
810-40870-5	STAG-S25R1	Total/NA	Water	SM 4500 P E	35553
810-40870-7	RAW-S1	Total/NA	Water	SM 4500 P E	35553
810-40870-10	STAG-S1R3	Total/NA	Water	SM 4500 P E	35553
810-40870-11	Raw-S24	Total/NA	Water	SM 4500 P E	35553
810-40870-12	STAG-S24R1	Total/NA	Water	SM 4500 P E	35553
810-40870-13	STAG-S24R2	Total/NA	Water	SM 4500 P E	35553
MBL 810-35553/4-A	Method Blank	Total/NA	Water	SM 4500 P E	35553
LCS 810-35553/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	35553
LLCS 810-35553/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	35553
810-40870-1 MS	RAW-S39	Total/NA	Water	SM 4500 P E	35553
810-40870-1 MSD	RAW-S39	Total/NA	Water	SM 4500 P E	35553

Prep Batch: 35751

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-6	STAG-S25R2	Total/NA	Water	SM 4500 P B	
810-40870-8	STAG-S1R1	Total/NA	Water	SM 4500 P B	
810-40870-9	STAG-S1R2	Total/NA	Water	SM 4500 P B	
MBL 810-35751/4-A	Method Blank	Total/NA	Water	SM 4500 P B	
LCS 810-35751/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

General Chemistry (Continued)

Prep Batch: 35751 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LLCS 810-35751/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P B	

Analysis Batch: 35796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-40870-6	STAG-S25R2	Total/NA	Water	SM 4500 P E	35751
810-40870-8	STAG-S1R1	Total/NA	Water	SM 4500 P E	35751
810-40870-9	STAG-S1R2	Total/NA	Water	SM 4500 P E	35751
MBL 810-35751/4-A	Method Blank	Total/NA	Water	SM 4500 P E	35751
LCS 810-35751/3-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	35751
LLCS 810-35751/2-A	Lab Control Sample	Total/NA	Water	SM 4500 P E	35751

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-40870-1

Date Collected: 10/10/22 08:20
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 19:17
Total/NA	Analysis	200.8		1	35700	NB	EA SB	10/18/22 18:44
Total/NA	Analysis	SM 4500 P E		1	34936	JA	EA SB	10/11/22 14:31
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 05:50
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:37

Client Sample ID: STAG-S39-R1

Lab Sample ID: 810-40870-2

Date Collected: 10/10/22 08:22
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:16
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 13:46
Total/NA	Analysis	SM 4500 P E		10	34936	JA	EA SB	10/11/22 15:04
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 07:05
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:39

Client Sample ID: STAG-S39-R2

Lab Sample ID: 810-40870-3

Date Collected: 10/10/22 08:24
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:18
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 13:48
Total/NA	Analysis	SM 4500 P E		2	34936	JA	EA SB	10/11/22 14:39
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 07:14
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:39

Client Sample ID: RAW-S25

Lab Sample ID: 810-40870-4

Date Collected: 10/10/22 09:34
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:20
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 13:51
Total/NA	Analysis	SM 4500 P E		1	34936	JA	EA SB	10/11/22 14:33
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 07:23
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:39

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-40870-5

Date Collected: 10/10/22 06:34
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:22
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 13:53
Total/NA	Analysis	SM 4500 P E		1	34936	JA	EA SB	10/11/22 14:33
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 07:33
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:39

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-40870-6

Date Collected: 10/10/22 09:38
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:24
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 13:55
Total/NA	Analysis	SM 4500 P E		5	34936	JA	EA SB	10/11/22 14:39
Total/NA	Prep	SM 4500 P B			35751	KH	EA SB	10/19/22 09:14
Total/NA	Analysis	SM 4500 P E		1	35796	KH	EA SB	10/19/22 11:58

Client Sample ID: RAW-S1

Lab Sample ID: 810-40870-7

Date Collected: 10/10/22 11:32
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 19:19
Total/NA	Analysis	200.8		1	35700	NB	EA SB	10/18/22 18:46
Total/NA	Analysis	SM 4500 P E		1	34936	JA	EA SB	10/11/22 14:34
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 08:01
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:40

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-40870-8

Date Collected: 10/10/22 11:34
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:31
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 14:02
Total/NA	Analysis	SM 4500 P E		10	34936	JA	EA SB	10/11/22 15:05
Total/NA	Prep	SM 4500 P B			35751	KH	EA SB	10/19/22 09:22
Total/NA	Analysis	SM 4500 P E		1	35796	KH	EA SB	10/19/22 11:58

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-40870-9

Date Collected: 10/10/22 11:36
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:33
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 14:04
Total/NA	Analysis	SM 4500 P E		10	34936	JA	EA SB	10/11/22 15:05
Total/NA	Prep	SM 4500 P B			35751	KH	EA SB	10/19/22 09:29
Total/NA	Analysis	SM 4500 P E		1	35796	KH	EA SB	10/19/22 11:58

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-40870-10

Date Collected: 10/10/22 11:38
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			35696	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.7 Rev 4.4		1	35868	AC	EA SB	10/19/22 18:35
Total Recoverable	Prep	200.8			35698	NB	EA SB	10/18/22 13:25
Total Recoverable	Analysis	200.8		1	35819	NB	EA SB	10/19/22 14:06
Total/NA	Analysis	SM 4500 P E		25	34936	JA	EA SB	10/11/22 15:11
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 08:29
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:40

Client Sample ID: Raw-S24

Lab Sample ID: 810-40870-11

Date Collected: 10/10/22 11:36
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 19:21
Total/NA	Analysis	200.8		1	35700	NB	EA SB	10/18/22 18:48
Total/NA	Analysis	SM 4500 P E		1	34936	JA	EA SB	10/11/22 14:37
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 08:38
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:40

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-40870-12

Date Collected: 10/10/22 11:38
Matrix: Water
Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 19:24
Total/NA	Analysis	200.8		1	35700	NB	EA SB	10/18/22 18:50
Total/NA	Analysis	SM 4500 P E		5	34936	JA	EA SB	10/11/22 15:08
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 08:48
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:40

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-40870-13

Date Collected: 10/10/22 13:40

Matrix: Water

Date Received: 10/11/22 08:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 19:26
Total/NA	Analysis	200.8		1	35700	NB	EA SB	10/18/22 18:52
Total/NA	Analysis	SM 4500 P E		10	34936	JA	EA SB	10/11/22 15:03
Total/NA	Prep	SM 4500 P B			35553	KH	EA SB	10/18/22 08:57
Total/NA	Analysis	SM 4500 P E		1	35578	KH	EA SB	10/18/22 09:41

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Calcium
200.7 Rev 4.4	200.7	Water	Calcium
200.8		Water	Copper
200.8		Water	Lead
200.8	200.8	Water	Copper
200.8	200.8	Water	Lead
SM 4500 P E		Water	Orthophosphate as PO4
SM 4500 P E		Water	Phosphate, ortho
SM 4500 P E	SM 4500 P B	Water	Phosphorus

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
SM 4500 P E	Orthophosphate	SM	EA SB
SM 4500 P E	Phosphorus	SM	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB
SM 4500 P B	Phosphorous, Total and Ortho	SM	EA SB

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-40870-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-40870-1	RAW-S39	Water	10/10/22 08:20	10/11/22 08:30
810-40870-2	STAG-S39-R1	Water	10/10/22 08:22	10/11/22 08:30
810-40870-3	STAG-S39-R2	Water	10/10/22 08:24	10/11/22 08:30
810-40870-4	RAW-S25	Water	10/10/22 09:34	10/11/22 08:30
810-40870-5	STAG-S25R1	Water	10/10/22 06:34	10/11/22 08:30
810-40870-6	STAG-S25R2	Water	10/10/22 09:38	10/11/22 08:30
810-40870-7	RAW-S1	Water	10/10/22 11:32	10/11/22 08:30
810-40870-8	STAG-S1R1	Water	10/10/22 11:34	10/11/22 08:30
810-40870-9	STAG-S1R2	Water	10/10/22 11:36	10/11/22 08:30
810-40870-10	STAG-S1R3	Water	10/10/22 11:38	10/11/22 08:30
810-40870-11	Raw-S24	Water	10/10/22 11:36	10/11/22 08:30
810-40870-12	STAG-S24R1	Water	10/10/22 11:38	10/11/22 08:30
810-40870-13	STAG-S24R2	Water	10/10/22 13:40	10/11/22 08:30

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

810-40870 Chain of Custody

Client Information	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: 101022
Client Contact: James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: 101022
Company: Tetra Tech	PWSID:			Job #:
Address: 201 E Pine St. Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days):			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)	PO #:			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan										Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	D	A	N	D										X	
RAW-S39	10/10/22	8:20	G	W			X	X	X												
STAG-S39R1	10/10/22	8:22	G	W			X	X	X												
STAG-S39R2	10/10/22	8:24	G	W			X	X	X												
RAW-S25	10/10/22	9:34	G	W			X	X	X												
STAG-S25R1	10/10/22	9:36	G	W			X	X	X												
STAG-S25R2	10/10/22	9:38	G	W			X	X	X												
RAW-S1	10/10/22	11:32	G	W			X	X	X												
STAG-S1R1	10/10/22	11:34	G	W			X	X	X												
STAG-S1R2	10/10/22	11:36	G	W			X	X	X												
~~STAG-S1R3~~	~~10/10/22~~	~~11:38~~	~~G~~	~~W~~			~~X~~	~~X~~	~~X~~												
RAW-S24	10/10/22	13:36	G	W			X	X	X												

Initial Temp: 1.6
Corrected Temp: 1.9
IR Gun # 18

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	10/10/22 17:00		FedEx	10/10/22 17:00	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by: [signature]	Date/Time: 10-11-22 0830	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

eurofins Environment Testing America

Client Information	Sampler:	Lab PM:	Carrier Tracking No(s):	COC No: 101022
Client Contact:	Phone:	E-Mail:	State of Origin:	Page: Page 2 of 2
Company:	PWSID:			Job #:
Address:	Due Date Requested:			
City:	TAT Requested (days):			
State, Zip:	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email:	WO #:			
Project Name:	Project #:			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8 pH<2	4500_P_E - (MOD) Copy Analytes pH<2	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
STAG-S24R1	10/10/22	13:38	G	W			X	X	X			
STAG-S24R2	10/10/22	13:40	G	W			X	X	X			

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by: KP	Date/Time: 10-11-22 0830	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: WE

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-40870-1

Login Number: 40870
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-42267-1
Client Project/Site: Kalamazoo Pilot SOL

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
10/25/2022 9:47:55 PM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 6
QC Sample Results 7
QC Association Summary 8
Lab Chronicle 9
Certification Summary 10
Method Summary 11
Sample Summary 12
Chain of Custody 13
Receipt Checklists 15

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-42267-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-42267-1

Receipt
The samples were received on 10/21/2022 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.6°C

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot SOL

Job ID: 810-42267-1

Client Sample ID: SOL-S1RAW — Lab Sample ID: 810-42267-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	0.18		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: SOL-S1R1 — Lab Sample ID: 810-42267-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	7.9		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: SOL-S1R2 — Lab Sample ID: 810-42267-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	9.6		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: SOL-S1R3 — Lab Sample ID: 810-42267-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	9.9		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: SOL-S24RAW — Lab Sample ID: 810-42267-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	0.68		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: SOL-S24R1 — Lab Sample ID: 810-42267-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	5.8		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: SOL-S24R2 — Lab Sample ID: 810-42267-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	7.6		0.010		mg/L	1		200.7 Rev 4.4	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot SOL

Job ID: 810-42267-1

Client Sample ID: SOL-S1RAW — Lab Sample ID: 810-42267-1

Date Collected: 10/14/22 12:25 — **Matrix: Water**
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.18		0.010		mg/L			10/25/22 18:43	1

Client Sample ID: SOL-S1R1 — Lab Sample ID: 810-42267-2

Date Collected: 10/14/22 12:26 — **Matrix: Water**
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	7.9		0.010		mg/L			10/25/22 18:45	1

Client Sample ID: SOL-S1R2 — Lab Sample ID: 810-42267-3

Date Collected: 10/14/22 12:27 — **Matrix: Water**
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	9.6		0.010		mg/L			10/25/22 18:47	1

Client Sample ID: SOL-S1R3 — Lab Sample ID: 810-42267-4

Date Collected: 10/14/22 12:28 — **Matrix: Water**
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	9.9		0.010		mg/L			10/25/22 18:49	1

Client Sample ID: SOL-S24RAW — Lab Sample ID: 810-42267-5

Date Collected: 10/14/22 12:29 — **Matrix: Water**
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.68		0.010		mg/L			10/25/22 18:51	1

Client Sample ID: SOL-S24R1 — Lab Sample ID: 810-42267-6

Date Collected: 10/14/22 12:30 — **Matrix: Water**
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	5.8		0.010		mg/L			10/25/22 18:53	1

Client Sample ID: SOL-S24R2 — Lab Sample ID: 810-42267-7

Date Collected: 10/14/22 12:31 — **Matrix: Water**
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	7.6		0.010		mg/L			10/25/22 18:56	1

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot SOL

Job ID: 810-42267-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-36433/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L			10/25/22 17:21	1

Lab Sample ID: MB 810-36433/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.010		0.010		mg/L			10/25/22 18:28	1

Lab Sample ID: LCS 810-36433/44 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	5.00	5.17		mg/L		103	85 - 115

Lab Sample ID: LLCS 810-36433/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.0100	0.0100		mg/L		100	50 - 150

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot SOL

Job ID: 810-42267-1

Metals

Analysis Batch: 36433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-42267-1	SOL-S1RAW	Total/NA	Water	200.7 Rev 4.4	
810-42267-2	SOL-S1R1	Total/NA	Water	200.7 Rev 4.4	
810-42267-3	SOL-S1R2	Total/NA	Water	200.7 Rev 4.4	
810-42267-4	SOL-S1R3	Total/NA	Water	200.7 Rev 4.4	
810-42267-5	SOL-S24RAW	Total/NA	Water	200.7 Rev 4.4	
810-42267-6	SOL-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-42267-7	SOL-S24R2	Total/NA	Water	200.7 Rev 4.4	
MB 810-36433/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-36433/43	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-36433/44	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36433/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot SOL

Job ID: 810-42267-1

Client Sample ID: SOL-S1RAW — Lab Sample ID: 810-42267-1

Date Collected: 10/14/22 12:25 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:43

Client Sample ID: SOL-S1R1 — Lab Sample ID: 810-42267-2

Date Collected: 10/14/22 12:26 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:45

Client Sample ID: SOL-S1R2 — Lab Sample ID: 810-42267-3

Date Collected: 10/14/22 12:27 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:47

Client Sample ID: SOL-S1R3 — Lab Sample ID: 810-42267-4

Date Collected: 10/14/22 12:28 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:49

Client Sample ID: SOL-S24RAW — Lab Sample ID: 810-42267-5

Date Collected: 10/14/22 12:29 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:51

Client Sample ID: SOL-S24R1 — Lab Sample ID: 810-42267-6

Date Collected: 10/14/22 12:30 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:53

Client Sample ID: SOL-S24R2 — Lab Sample ID: 810-42267-7

Date Collected: 10/14/22 12:31 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:56

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot SOL

Job ID: 810-42267-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Iron

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot SOL

Job ID: 810-42267-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot SOL

Job ID: 810-42267-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-42267-1	SOL-S1RAW	Water	10/14/22 12:25	10/21/22 08:45
810-42267-2	SOL-S1R1	Water	10/14/22 12:26	10/21/22 08:45
810-42267-3	SOL-S1R2	Water	10/14/22 12:27	10/21/22 08:45
810-42267-4	SOL-S1R3	Water	10/14/22 12:28	10/21/22 08:45
810-42267-5	SOL-S24RAW	Water	10/14/22 12:29	10/21/22 08:45
810-42267-6	SOL-S24R1	Water	10/14/22 12:30	10/21/22 08:45
810-42267-7	SOL-S24R2	Water	10/14/22 12:31	10/21/22 08:45

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Recor

810-42267 Chain of Custody

eurofins Environment Testing America

Client Information	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: ~~401322~~.2 102022.2
Client Contact: James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: Tetra Tech	PWSID:			Job #:
Address: 201 E Pine St. Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): 5			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)	PO #:			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

pH Acceptable

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan									Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D										
SOL-S1RAW	10/14/22	1225	G	W						X				✓					1	250mL
SOL-S1R1	10/14/22	1226	G	W						X				✓						
SOL-S1R2	10/14/22	1227	G	W						X				✓						
SOL-S1R3	10/14/22	1228	G	W						X				✓						
SOL-S24RAW	10/14/22	1229	G	W						X				✓						
SOL-S24R1	10/14/22	1230	G	W						X				✓						
SOL-S24R2	10/14/22	1231	G	W						X				✓						

Cross Offs on COC by Client

Initial Temp: 0.6
Corrected Temp: 0.6
IR Gun # 21 WET

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Sara Hayes	10.20.22 1500		FedEx	10.20.22 1500	
			10-21-22 0845 EEA		

RUSH

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Reco

810-42267 Chain of Custody

eurofins

Client Information	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: ~~401322~~.2 102022.2
Client Contact: James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: Tetra Tech	PWSID:			Job #:
Address: 201 E Pine St. Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): 5			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)	PO #:			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan									Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D										
SOL-S1RAW	10/14/22	1225	G	W						X				✓					1	250mL
SOL-S1R1	10/14/22	1226	G	W						X				✓						
SOL-S1R2	10/14/22	1227	G	W						X				✓						
SOL-S1R3	10/14/22	1228	G	W						X				✓						
SOL-S24RAW	10/14/22	1229	G	W						X				✓						
SOL-S24R1	10/14/22	1230	G	W						X				✓						
SOL-S24R2	10/14/22	1231	G	W						X				✓						

Recv

pH Acceptable

Cross Offs on COC by Client

Initial Temp: 0.6
Corrected Temp: 0.6
IR Gun # 21 wet

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Sara Hayes	Date/Time: 10.20.22 1500	Company	Received by: FedEx	Date/Time: 10.20.22 1500	Company

10-21-22 0845 EEA

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-42267-1

Login Number: 42267
List Number: 1
Creator: Spurgeon, Sheri

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-42268-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
10/28/2022 1:01:29 PM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 7
QC Sample Results 10
QC Association Summary 14
Lab Chronicle 16
Certification Summary 18
Method Summary 19
Sample Summary 20
Chain of Custody 21
Receipt Checklists 22

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Qualifiers

Metals

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

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-42268-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-42268-1

Receipt
The samples were received on 10/21/2022 8:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.6°C

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Client Sample ID: RAW-S39 — Lab Sample ID: 810-42268-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	89		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	13		1.0		ug/L	1		200.8	Total Recoverable

Client Sample ID: RAW-S25 — Lab Sample ID: 810-42268-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	83		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	2.2		1.0		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-42268-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	84		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	4.9		1.0		ug/L	1		200.8	Total/NA
Lead	7.3		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: RAW-S1 — Lab Sample ID: 810-42268-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.1		1.0		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-42268-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	15		1.0		ug/L	1		200.8	Total Recoverable
Lead	50		0.50		ug/L	1		200.8	Total Recoverable

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-42268-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	25		1.0		ug/L	1		200.8	Total Recoverable
Lead	29		0.50		ug/L	1		200.8	Total Recoverable

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-42268-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	99		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.7		1.0		ug/L	1		200.8	Total/NA
Lead	9.5		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: RAW-S24 — Lab Sample ID: 810-42268-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	59		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	11		1.0		ug/L	1		200.8	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-42268-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	60		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	2.4		1.0		ug/L	1		200.8	Total/NA
Lead	11		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-42268-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	58		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	3.0		1.0		ug/L	1		200.8	Total/NA
Lead	35		0.50		ug/L	1		200.8	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-42268-1
Date Collected: 10/20/22 08:15
Matrix: Water
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	89		0.10		mg/L		10/25/22 14:20	10/26/22 22:04	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	13		1.0		ug/L		10/25/22 14:20	10/26/22 15:59	1
Lead	<0.50		0.50		ug/L		10/25/22 14:20	10/26/22 15:59	1

Client Sample ID: RAW-S25

Lab Sample ID: 810-42268-2
Date Collected: 10/20/22 09:35
Matrix: Water
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	83		0.10		mg/L			10/26/22 19:47	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	2.2		1.0		ug/L			10/25/22 13:46	1
Lead	<0.50		0.50		ug/L			10/25/22 13:46	1

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-42268-3
Date Collected: 10/20/22 09:37
Matrix: Water
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	84		0.10		mg/L			10/26/22 19:49	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	4.9		1.0		ug/L			10/25/22 13:48	1
Lead	7.3		0.50		ug/L			10/25/22 13:48	1

Client Sample ID: RAW-S1

Lab Sample ID: 810-42268-4
Date Collected: 10/20/22 11:08
Matrix: Water
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L			10/26/22 19:51	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.1		1.0		ug/L			10/25/22 13:50	1
Lead	<0.50		0.50		ug/L			10/25/22 13:50	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-42268-5
Date Collected: 10/20/22 11:10
Matrix: Water
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		10/25/22 14:20	10/26/22 22:09	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	15		1.0		ug/L		10/25/22 14:20	10/26/22 16:03	1
Lead	50		0.50		ug/L		10/25/22 14:20	10/26/22 16:03	1

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-42268-6
Date Collected: 10/20/22 11:12
Matrix: Water
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		10/25/22 14:20	10/26/22 22:07	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	25		1.0		ug/L		10/25/22 14:20	10/26/22 16:01	1
Lead	29		0.50		ug/L		10/25/22 14:20	10/26/22 16:01	1

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-42268-7
Date Collected: 10/20/22 11:14
Matrix: Water
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	99		0.10		mg/L			10/25/22 19:09	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.7		1.0		ug/L			10/25/22 13:56	1
Lead	9.5		0.50		ug/L			10/25/22 13:56	1

Client Sample ID: RAW-S24

Lab Sample ID: 810-42268-8
Date Collected: 10/20/22 13:12
Matrix: Water
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	59		0.10		mg/L			10/25/22 19:11	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	11		1.0		ug/L			10/25/22 13:58	1
Lead	<0.50		0.50		ug/L			10/25/22 13:58	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-42268-9
Date Collected: 10/20/22 13:14
Matrix: Water
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	60		0.10		mg/L			10/25/22 19:13	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	2.4		1.0		ug/L			10/25/22 14:00	1
Lead	11		0.50		ug/L			10/25/22 14:00	1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-42268-10
Date Collected: 10/20/22 13:16
Matrix: Water
Date Received: 10/21/22 08:45

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	58		0.10		mg/L			10/25/22 19:15	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	3.0		1.0		ug/L			10/25/22 14:02	1
Lead	35		0.50		ug/L			10/25/22 14:02	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-36433/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/25/22 17:21	1

Lab Sample ID: MB 810-36433/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/25/22 18:28	1

Lab Sample ID: LCS 810-36433/44 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	5.18		mg/L		104	85 - 115

Lab Sample ID: LLCS 810-36433/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		84	50 - 150

Lab Sample ID: LLCS 810-36433/13 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0875	J	mg/L		88	50 - 150

Lab Sample ID: MB 810-36558/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36558

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/26/22 18:53	1

Lab Sample ID: MB 810-36558/44 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36558

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/26/22 20:02	1

Lab Sample ID: LCS 810-36558/15 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36558

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	5.13		mg/L		103	85 - 115

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: LLCS 810-36558/11
Matrix: Water
Analysis Batch: 36558

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

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		115	50 - 150

Lab Sample ID: LLCS 810-36558/13
Matrix: Water
Analysis Batch: 36558

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

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0870	J	mg/L		87	50 - 150

Lab Sample ID: MB 810-36386/1-A
Matrix: Water
Analysis Batch: 36558

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 36386

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		10/25/22 14:20	10/26/22 21:07	1

Lab Sample ID: LCS 810-36386/4-A
Matrix: Water
Analysis Batch: 36558

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 36386

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.93		mg/L		99	85 - 115

Lab Sample ID: LLCS 810-36386/2-A
Matrix: Water
Analysis Batch: 36558

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 36386

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		122	50 - 150

Lab Sample ID: LLCS 810-36386/3-A
Matrix: Water
Analysis Batch: 36558

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 36386

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0789	J	mg/L		79	50 - 150

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-36403/13
Matrix: Water
Analysis Batch: 36403

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/25/22 13:42	1
Lead	<0.50		0.50		ug/L			10/25/22 13:42	1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 810-36403/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36403

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	49.0		ug/L		98	85 - 115
Lead	50.0	51.3		ug/L		103	85 - 115

Lab Sample ID: LLCS 810-36403/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36403

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		101	50 - 150
Lead	0.300	0.321	J	ug/L		107	50 - 150

Lab Sample ID: LLCS 810-36403/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36403

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.977	J	ug/L		98	50 - 150

Lab Sample ID: 810-42268-4 MS — **Client Sample ID: RAW-S1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36403

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.1		50.0	41.5		ug/L		81	70 - 130
Lead	<0.50		50.0	44.1		ug/L		88	70 - 130

Lab Sample ID: 810-42268-4 MSD — **Client Sample ID: RAW-S1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36403

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	1.1		50.0	41.2		ug/L		80	70 - 130	1	20
Lead	<0.50		50.0	44.2		ug/L		88	70 - 130	0	20

Lab Sample ID: MB 810-36392/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36536 — **Prep Batch: 36392**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		10/25/22 14:20	10/26/22 14:53	1
Lead	<0.50		0.50		ug/L		10/25/22 14:20	10/26/22 14:53	1

Lab Sample ID: LCS 810-36392/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36536 — **Prep Batch: 36392**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	51.4		ug/L		103	85 - 115
Lead	50.0	53.7		ug/L		107	85 - 115

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-36392/3-A
Matrix: Water
Analysis Batch: 36536

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 36392

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Copper			1.00	0.943	J	ug/L		94	50 - 150		

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Metals

Prep Batch: 36386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-42268-1	RAW-S39	Total Recoverable	Water	200.7	
810-42268-5	STAG-S1R1	Total Recoverable	Water	200.7	
810-42268-6	STAG-S1R2	Total Recoverable	Water	200.7	
MB 810-36386/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-36386/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-36386/2-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-36386/3-A	Lab Control Sample	Total Recoverable	Water	200.7	

Prep Batch: 36392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-42268-1	RAW-S39	Total Recoverable	Water	200.8	
810-42268-5	STAG-S1R1	Total Recoverable	Water	200.8	
810-42268-6	STAG-S1R2	Total Recoverable	Water	200.8	
MB 810-36392/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-36392/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-36392/3-A	Lab Control Sample	Total Recoverable	Water	200.8	

Analysis Batch: 36403

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-42268-2	RAW-S25	Total/NA	Water	200.8	
810-42268-3	STAG-S25R2	Total/NA	Water	200.8	
810-42268-4	RAW-S1	Total/NA	Water	200.8	
810-42268-7	STAG-S1R3	Total/NA	Water	200.8	
810-42268-8	RAW-S24	Total/NA	Water	200.8	
810-42268-9	STAG-S24R1	Total/NA	Water	200.8	
810-42268-10	STAG-S24R2	Total/NA	Water	200.8	
MB 810-36403/13	Method Blank	Total/NA	Water	200.8	
LCS 810-36403/14	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-36403/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-36403/12	Lab Control Sample	Total/NA	Water	200.8	
810-42268-4 MS	RAW-S1	Total/NA	Water	200.8	
810-42268-4 MSD	RAW-S1	Total/NA	Water	200.8	

Analysis Batch: 36433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-42268-7	STAG-S1R3	Total/NA	Water	200.7 Rev 4.4	
810-42268-8	RAW-S24	Total/NA	Water	200.7 Rev 4.4	
810-42268-9	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-42268-10	STAG-S24R2	Total/NA	Water	200.7 Rev 4.4	
MB 810-36433/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-36433/43	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-36433/44	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36433/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36433/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	

Analysis Batch: 36536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-42268-1	RAW-S39	Total Recoverable	Water	200.8	36392
810-42268-5	STAG-S1R1	Total Recoverable	Water	200.8	36392
810-42268-6	STAG-S1R2	Total Recoverable	Water	200.8	36392
MB 810-36392/1-A	Method Blank	Total Recoverable	Water	200.8	36392

Metals (Continued)

Analysis Batch: 36536 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 810-36392/6-A	Lab Control Sample	Total Recoverable	Water	200.8	36392
LLCS 810-36392/2-A	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-36392/3-A	Lab Control Sample	Total Recoverable	Water	200.8	36392

Analysis Batch: 36558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-42268-1	RAW-S39	Total Recoverable	Water	200.7 Rev 4.4	36386
810-42268-2	RAW-S25	Total/NA	Water	200.7 Rev 4.4	
810-42268-3	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	
810-42268-4	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-42268-5	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	36386
810-42268-6	STAG-S1R2	Total Recoverable	Water	200.7 Rev 4.4	36386
MB 810-36386/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	36386
MB 810-36558/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-36558/44	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-36386/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	36386
LCS 810-36558/15	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36386/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	36386
LLCS 810-36386/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	36386
LLCS 810-36558/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36558/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Client Sample ID: RAW-S39 — Lab Sample ID: 810-42268-1

Date Collected: 10/20/22 08:15 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 22:04
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:59

Client Sample ID: RAW-S25 — Lab Sample ID: 810-42268-2

Date Collected: 10/20/22 09:35 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 19:47
Total/NA	Analysis	200.8		1	36403	JK	EA SB	10/25/22 13:46

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-42268-3

Date Collected: 10/20/22 09:37 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 19:49
Total/NA	Analysis	200.8		1	36403	JK	EA SB	10/25/22 13:48

Client Sample ID: RAW-S1 — Lab Sample ID: 810-42268-4

Date Collected: 10/20/22 11:08 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 19:51
Total/NA	Analysis	200.8		1	36403	JK	EA SB	10/25/22 13:50

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-42268-5

Date Collected: 10/20/22 11:10 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 22:09
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 16:03

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-42268-6

Date Collected: 10/20/22 11:12 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 22:07

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-42268-6

Date Collected: 10/20/22 11:12 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 16:01

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-42268-7

Date Collected: 10/20/22 11:14 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 19:09
Total/NA	Analysis	200.8		1	36403	JK	EA SB	10/25/22 13:56

Client Sample ID: RAW-S24 — Lab Sample ID: 810-42268-8

Date Collected: 10/20/22 13:12 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 19:11
Total/NA	Analysis	200.8		1	36403	JK	EA SB	10/25/22 13:58

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-42268-9

Date Collected: 10/20/22 13:14 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 19:13
Total/NA	Analysis	200.8		1	36403	JK	EA SB	10/25/22 14:00

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-42268-10

Date Collected: 10/20/22 13:16 — **Matrix: Water**
Date Received: 10/21/22 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 19:15
Total/NA	Analysis	200.8		1	36403	JK	EA SB	10/25/22 14:02

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Laboratory: Eurofins Eaton South Bend

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-42268-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-42268-1	RAW-S39	Water	10/20/22 08:15	10/21/22 08:45
810-42268-2	RAW-S25	Water	10/20/22 09:35	10/21/22 08:45
810-42268-3	STAG-S25R2	Water	10/20/22 09:37	10/21/22 08:45
810-42268-4	RAW-S1	Water	10/20/22 11:08	10/21/22 08:45
810-42268-5	STAG-S1R1	Water	10/20/22 11:10	10/21/22 08:45
810-42268-6	STAG-S1R2	Water	10/20/22 11:12	10/21/22 08:45
810-42268-7	STAG-S1R3	Water	10/20/22 11:14	10/21/22 08:45
810-42268-8	RAW-S24	Water	10/20/22 13:12	10/21/22 08:45
810-42268-9	STAG-S24R1	Water	10/20/22 13:14	10/21/22 08:45
810-42268-10	STAG-S24R2	Water	10/20/22 13:16	10/21/22 08:45

RUSH

810-42268 Chain of Custody

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Re

eurofins Environment Testing America

Client Information	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: ~~104322~~.1 102022.1
Client Contact: James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: 101022
Company: Tetra Tech	PWSID:			Job #:
Address: 201 E Pine St. Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): 5			
State, Zip: FL, 32801	Compliance Project: Λ Yes Λ No			
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)	PO #:			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

RUSH

pH Acceptable

Cross Offs on COC by Client

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	A	N	D		
RAW-S39	10/20/22	815	G	W			X				1	250mL
RAW-S25	10/20/22	935	G	W			X					
STAG-S25R2	10/20/22	937	G	W			X					
RAW-S1	10/20/22	1108	G	W			X					
STAG-S1R1	10/20/22	1110	G	W			X					
STAG-S1R2	10/20/22	1112	G	W			X					
STAG-S1R3	10/20/22	1114	G	W			X					
RAW-S24	10/20/22	1312	G	W			X					
STAG-S24R1	10/20/22	1314	G	W			X					
STAG-S24R2	10/20/22	1316	G	W			X					

Initial Temp: 0.6
Corrected Temp: 0.6
Gun #: 21
Wet

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
44847	Return To Client / Disposal By Lab / Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Sara Hayes	10.20.22 15:00		FedEx	10.20.22 1500	
			SGregor	10-21-22 0845	EEA

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-42268-1

Login Number: 42268
List Number: 1
Creator: Spurgeon, Sheri

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-41530-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
10/27/2022 12:28:20 PM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 8
QC Sample Results 13
QC Association Summary 17
Lab Chronicle 19
Certification Summary 23
Method Summary 24
Sample Summary 25
Chain of Custody 26
Receipt Checklists 28

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Qualifiers

Metals

Qualifier	Qualifier Description
^-	Continuing Calibration Verification (CCV) is outside acceptance limits, low biased.
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.

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-41530-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-41530-1

Receipt
The samples were received on 10/14/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.6°C

Metals
Method 200.8: The continuing calibration verification (CCV) analyzed in 810-36165 was outside the method criteria of + 10 % but within + 15%. As indicated in the reference method, this continuing calibration verification (CCV) will be used at the closing CCV and previous samples will not be reanalyzed.

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-41530-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	59		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	3.4		1.0		ug/L	1		200.8	Total/NA
Lead	2.0		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: SOL-S1Raw — Lab Sample ID: 810-41530-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-41530-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	30		1.0		ug/L	1		200.8	Total Recoverable
Lead	180		0.50		ug/L	1		200.8	Total Recoverable

Client Sample ID: Raw-S1 — Lab Sample ID: 810-41530-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: Raw-S24 — Lab Sample ID: 810-41530-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	59		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	66		1.0		ug/L	1		200.8	Total/NA

Client Sample ID: Raw-S25 — Lab Sample ID: 810-41530-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	85		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	4.2		1.0		ug/L	1		200.8	Total/NA

Client Sample ID: SOL-S1R3 — Lab Sample ID: 810-41530-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	1.2		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: SOL-S24Raw — Lab Sample ID: 810-41530-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	60		0.10		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: SOL-S1R2 — Lab Sample ID: 810-41530-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-41530-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	61		0.10		mg/L	1		200.7 Rev 4.4	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: STAG-S24R2 (Continued) — Lab Sample ID: 810-41530-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Copper	17		1.0		ug/L	1		200.8	Total/NA
Lead	72		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-41530-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	85		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	12		1.0		ug/L	1		200.8	Total/NA
Lead	21		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: SOL-S24R2 — Lab Sample ID: 810-41530-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	60		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	3.9		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: Raw-S39 — Lab Sample ID: 810-41530-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	90		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.6	^-	1.0		ug/L	1		200.8	Total/NA

Client Sample ID: SOL-S24R1 — Lab Sample ID: 810-41530-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	60		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	2.2	^-	0.50		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-41530-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	27		1.0		ug/L	1		200.8	Total Recoverable
Lead	87		0.50		ug/L	1		200.8	Total Recoverable

Client Sample ID: SOL-S1R1 — Lab Sample ID: 810-41530-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	0.56	^-	0.50		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-41530-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	110		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	59		1.0		ug/L	1		200.8	Total Recoverable
Lead	130		0.50		ug/L	1		200.8	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: STAG-S39R1 — Lab Sample ID: 810-41530-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	92		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	130	^-	1.0		ug/L	1		200.8	Total/NA
Lead	950	^-	0.50		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S25R1 — Lab Sample ID: 810-41530-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	85		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	70		1.0		ug/L	1		200.8	Total Recoverable
Lead	75		0.50		ug/L	1		200.8	Total Recoverable

Client Sample ID: STAG-S39R2 — Lab Sample ID: 810-41530-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	88		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	11		1.0		ug/L	1		200.8	Total Recoverable
Lead	130		0.50		ug/L	1		200.8	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-41530-1
Date Collected: 10/13/22 15:28
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	59		0.10		mg/L			10/25/22 17:28	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	3.4		1.0		ug/L			10/21/22 15:22	1
Lead	2.0		0.50		ug/L			10/21/22 15:22	1

Client Sample ID: SOL-S1Raw

Lab Sample ID: 810-41530-2
Date Collected: 10/07/22 12:43
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L			10/25/22 17:34	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 15:28	1
Lead	<0.50		0.50		ug/L			10/21/22 15:28	1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-41530-3
Date Collected: 10/13/22 11:34
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		10/25/22 14:20	10/26/22 21:32	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	30		1.0		ug/L		10/25/22 14:20	10/26/22 15:25	1
Lead	180		0.50		ug/L		10/25/22 14:20	10/26/22 15:25	1

Client Sample ID: Raw-S1

Lab Sample ID: 810-41530-4
Date Collected: 10/13/22 11:32
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L			10/25/22 17:36	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 15:31	1
Lead	<0.50		0.50		ug/L			10/21/22 15:31	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: Raw-S24

Lab Sample ID: 810-41530-5
Date Collected: 10/13/22 13:24
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	59		0.10		mg/L			10/25/22 17:38	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	66		1.0		ug/L			10/21/22 15:33	1
Lead	<0.50		0.50		ug/L			10/21/22 15:33	1

Client Sample ID: Raw-S25

Lab Sample ID: 810-41530-6
Date Collected: 10/13/22 10:04
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	85		0.10		mg/L			10/25/22 17:40	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	4.2		1.0		ug/L			10/21/22 15:40	1
Lead	<0.50		0.50		ug/L			10/21/22 15:40	1

Client Sample ID: SOL-S1R3

Lab Sample ID: 810-41530-7
Date Collected: 10/06/22 12:46
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L			10/25/22 17:43	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 15:42	1
Lead	1.2		0.50		ug/L			10/21/22 15:42	1

Client Sample ID: SOL-S24Raw

Lab Sample ID: 810-41530-8
Date Collected: 10/06/22 12:47
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	60		0.10		mg/L			10/25/22 17:45	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 15:44	1
Lead	<0.50		0.50		ug/L			10/21/22 15:44	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: SOL-S1R2

Lab Sample ID: 810-41530-9
Date Collected: 10/06/22 12:45
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L			10/25/22 17:47	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 15:47	1
Lead	<0.50		0.50		ug/L			10/21/22 15:47	1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-41530-10
Date Collected: 10/13/22 13:28
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	61		0.10		mg/L			10/25/22 17:49	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	17		1.0		ug/L			10/21/22 15:49	1
Lead	72		0.50		ug/L			10/21/22 15:49	1

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-41530-11
Date Collected: 10/13/22 10:00
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	85		0.10		mg/L			10/25/22 17:51	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	12		1.0		ug/L			10/21/22 15:51	1
Lead	21		0.50		ug/L			10/21/22 15:51	1

Client Sample ID: SOL-S24R2

Lab Sample ID: 810-41530-12
Date Collected: 10/07/22 12:49
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	60		0.10		mg/L			10/25/22 17:58	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 15:54	1
Lead	3.9		0.50		ug/L			10/21/22 15:54	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: Raw-S39

Lab Sample ID: 810-41530-13
Date Collected: 10/13/22 08:00
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	90		0.10		mg/L			10/25/22 18:04	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.6	^-	1.0		ug/L			10/21/22 16:07	1
Lead	<0.50	^-	0.50		ug/L			10/21/22 16:07	1

Client Sample ID: SOL-S24R1

Lab Sample ID: 810-41530-14
Date Collected: 10/07/22 12:48
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	60		0.10		mg/L			10/25/22 18:06	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0	^-	1.0		ug/L			10/21/22 16:10	1
Lead	2.2	^-	0.50		ug/L			10/21/22 16:10	1

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-41530-15
Date Collected: 10/13/22 11:38
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		10/25/22 14:20	10/26/22 21:34	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	27		1.0		ug/L		10/25/22 14:20	10/26/22 15:27	1
Lead	87		0.50		ug/L		10/25/22 14:20	10/26/22 15:27	1

Client Sample ID: SOL-S1R1

Lab Sample ID: 810-41530-16
Date Collected: 10/06/22 12:44
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L			10/25/22 18:08	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0	^-	1.0		ug/L			10/21/22 16:12	1
Lead	0.56	^-	0.50		ug/L			10/21/22 16:12	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-41530-17
Date Collected: 10/13/22 11:36
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	110		0.10		mg/L		10/25/22 14:20	10/26/22 21:37	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	59		1.0		ug/L		10/25/22 14:20	10/26/22 15:29	1
Lead	130		0.50		ug/L		10/25/22 14:20	10/26/22 15:29	1

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-41530-18
Date Collected: 10/13/22 08:02
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	92		0.10		mg/L			10/25/22 18:10	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	130	^-	1.0		ug/L			10/21/22 16:14	1
Lead	950	^-	0.50		ug/L			10/21/22 16:14	1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-41530-19
Date Collected: 10/13/22 10:06
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	85		0.10		mg/L		10/25/22 14:20	10/26/22 21:39	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	70		1.0		ug/L		10/25/22 14:20	10/26/22 15:31	1
Lead	75		0.50		ug/L		10/25/22 14:20	10/26/22 15:31	1

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-41530-20
Date Collected: 10/13/22 08:04
Matrix: Water
Date Received: 10/14/22 09:00

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	88		0.10		mg/L		10/25/22 14:20	10/26/22 21:45	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	11		1.0		ug/L		10/25/22 14:20	10/26/22 15:38	1
Lead	130		0.50		ug/L		10/25/22 14:20	10/26/22 15:38	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-36433/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/25/22 17:21	1

Lab Sample ID: MB 810-36433/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/25/22 18:28	1

Lab Sample ID: LCS 810-36433/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	5.22		mg/L		104	85 - 115

Lab Sample ID: LLCS 810-36433/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		84	50 - 150

Lab Sample ID: LLCS 810-36433/13 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0875	J	mg/L		88	50 - 150

Lab Sample ID: 810-41530-1 MS — **Client Sample ID: STAG-S24R1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	59		5.00	64.4	4	mg/L		99	70 - 130

Lab Sample ID: 810-41530-1 MSD — **Client Sample ID: STAG-S24R1**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	59		5.00	64.5	4	mg/L		100	70 - 130	0	20

Lab Sample ID: 810-41530-12 MS — **Client Sample ID: SOL-S24R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	60		5.00	64.6	4	mg/L		96	70 - 130

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: 810-41530-12 MSD — **Client Sample ID: SOL-S24R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	60		5.00	65.0	4	mg/L		103	70 - 130	1	20

Lab Sample ID: MB 810-36386/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36558 — **Prep Batch: 36386**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		10/25/22 14:20	10/26/22 21:07	1

Lab Sample ID: LCS 810-36386/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36558 — **Prep Batch: 36386**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.93		mg/L		99	85 - 115

Lab Sample ID: LLCS 810-36386/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36558 — **Prep Batch: 36386**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		122	50 - 150

Lab Sample ID: LLCS 810-36386/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36558 — **Prep Batch: 36386**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0789	J	mg/L		79	50 - 150

Lab Sample ID: 810-41530-20 MS — **Client Sample ID: STAG-S39R2**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36558 — **Prep Batch: 36386**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	88		5.00	91.2	4	mg/L		73	70 - 130

Lab Sample ID: 810-41530-20 MSD — **Client Sample ID: STAG-S39R2**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36558 — **Prep Batch: 36386**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	88		5.00	91.9	4	mg/L		87	70 - 130	1	20

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-36165/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 14:52	1
Lead	<0.50		0.50		ug/L			10/21/22 14:52	1

Lab Sample ID: MB 810-36165/44 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 16:03	1
Lead	<0.50		0.50		ug/L			10/21/22 16:03	1

Lab Sample ID: LCS 810-36165/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	48.4		ug/L		97	85 - 115
Lead	50.0	47.7		ug/L		95	85 - 115

Lab Sample ID: LCS 810-36165/45 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	48.4		ug/L		97	85 - 115
Lead	50.0	47.9		ug/L		96	85 - 115

Lab Sample ID: LLCS 810-36165/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		91	50 - 150
Lead	0.300	0.273	J	ug/L		91	50 - 150

Lab Sample ID: LLCS 810-36165/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.964	J	ug/L		96	50 - 150

Lab Sample ID: 810-41530-5 MS — **Client Sample ID: Raw-S24**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	66		50.0	111		ug/L		89	70 - 130
Lead	<0.50		50.0	47.7		ug/L		95	70 - 130

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 810-41530-5 MSD — **Client Sample ID: Raw-S24**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	66		50.0	114		ug/L		97	70 - 130	3	20
Lead	<0.50		50.0	48.8		ug/L		97	70 - 130	2	20

Lab Sample ID: MB 810-36392/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36536 — **Prep Batch: 36392**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		10/25/22 14:20	10/26/22 14:53	1
Lead	<0.50		0.50		ug/L		10/25/22 14:20	10/26/22 14:53	1

Lab Sample ID: LCS 810-36392/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36536 — **Prep Batch: 36392**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	51.4		ug/L		103	85 - 115
Lead	50.0	53.7		ug/L		107	85 - 115

Lab Sample ID: LLCS 810-36392/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36536 — **Prep Batch: 36392**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.943	J	ug/L		94	50 - 150

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Metals

Analysis Batch: 36165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41530-1	STAG-S24R1	Total/NA	Water	200.8	
810-41530-2	SOL-S1Raw	Total/NA	Water	200.8	
810-41530-4	Raw-S1	Total/NA	Water	200.8	
810-41530-5	Raw-S24	Total/NA	Water	200.8	
810-41530-6	Raw-S25	Total/NA	Water	200.8	
810-41530-7	SOL-S1R3	Total/NA	Water	200.8	
810-41530-8	SOL-S24Raw	Total/NA	Water	200.8	
810-41530-9	SOL-S1R2	Total/NA	Water	200.8	
810-41530-10	STAG-S24R2	Total/NA	Water	200.8	
810-41530-11	STAG-S25R2	Total/NA	Water	200.8	
810-41530-12	SOL-S24R2	Total/NA	Water	200.8	
810-41530-13	Raw-S39	Total/NA	Water	200.8	
810-41530-14	SOL-S24R1	Total/NA	Water	200.8	
810-41530-16	SOL-S1R1	Total/NA	Water	200.8	
810-41530-18	STAG-S39R1	Total/NA	Water	200.8	
MB 810-36165/13	Method Blank	Total/NA	Water	200.8	
MB 810-36165/44	Method Blank	Total/NA	Water	200.8	
LCS 810-36165/14	Lab Control Sample	Total/NA	Water	200.8	
LCS 810-36165/45	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-36165/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-36165/12	Lab Control Sample	Total/NA	Water	200.8	
810-41530-5 MS	Raw-S24	Total/NA	Water	200.8	
810-41530-5 MSD	Raw-S24	Total/NA	Water	200.8	

Prep Batch: 36386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41530-3	STAG-S1R1	Total Recoverable	Water	200.7	
810-41530-15	STAG-S1R3	Total Recoverable	Water	200.7	
810-41530-17	STAG-S1R2	Total Recoverable	Water	200.7	
810-41530-19	STAG-S25R1	Total Recoverable	Water	200.7	
810-41530-20	STAG-S39R2	Total Recoverable	Water	200.7	
MB 810-36386/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-36386/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-36386/2-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-36386/3-A	Lab Control Sample	Total Recoverable	Water	200.7	
810-41530-20 MS	STAG-S39R2	Total Recoverable	Water	200.7	
810-41530-20 MSD	STAG-S39R2	Total Recoverable	Water	200.7	

Prep Batch: 36392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41530-3	STAG-S1R1	Total Recoverable	Water	200.8	
810-41530-15	STAG-S1R3	Total Recoverable	Water	200.8	
810-41530-17	STAG-S1R2	Total Recoverable	Water	200.8	
810-41530-19	STAG-S25R1	Total Recoverable	Water	200.8	
810-41530-20	STAG-S39R2	Total Recoverable	Water	200.8	
MB 810-36392/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-36392/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-36392/3-A	Lab Control Sample	Total Recoverable	Water	200.8	

Metals

Analysis Batch: 36433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41530-1	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-41530-2	SOL-S1Raw	Total/NA	Water	200.7 Rev 4.4	
810-41530-4	Raw-S1	Total/NA	Water	200.7 Rev 4.4	
810-41530-5	Raw-S24	Total/NA	Water	200.7 Rev 4.4	
810-41530-6	Raw-S25	Total/NA	Water	200.7 Rev 4.4	
810-41530-7	SOL-S1R3	Total/NA	Water	200.7 Rev 4.4	
810-41530-8	SOL-S24Raw	Total/NA	Water	200.7 Rev 4.4	
810-41530-9	SOL-S1R2	Total/NA	Water	200.7 Rev 4.4	
810-41530-10	STAG-S24R2	Total/NA	Water	200.7 Rev 4.4	
810-41530-11	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	
810-41530-12	SOL-S24R2	Total/NA	Water	200.7 Rev 4.4	
810-41530-13	Raw-S39	Total/NA	Water	200.7 Rev 4.4	
810-41530-14	SOL-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-41530-16	SOL-S1R1	Total/NA	Water	200.7 Rev 4.4	
810-41530-18	STAG-S39R1	Total/NA	Water	200.7 Rev 4.4	
MB 810-36433/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-36433/43	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-36433/14	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36433/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36433/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-41530-1 MS	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-41530-1 MSD	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-41530-12 MS	SOL-S24R2	Total/NA	Water	200.7 Rev 4.4	
810-41530-12 MSD	SOL-S24R2	Total/NA	Water	200.7 Rev 4.4	

Analysis Batch: 36536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41530-3	STAG-S1R1	Total Recoverable	Water	200.8	36392
810-41530-15	STAG-S1R3	Total Recoverable	Water	200.8	36392
810-41530-17	STAG-S1R2	Total Recoverable	Water	200.8	36392
810-41530-19	STAG-S25R1	Total Recoverable	Water	200.8	36392
810-41530-20	STAG-S39R2	Total Recoverable	Water	200.8	36392
MB 810-36392/1-A	Method Blank	Total Recoverable	Water	200.8	36392
LCS 810-36392/6-A	Lab Control Sample	Total Recoverable	Water	200.8	36392
LLCS 810-36392/2-A	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-36392/3-A	Lab Control Sample	Total Recoverable	Water	200.8	36392

Analysis Batch: 36558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41530-3	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	36386
810-41530-15	STAG-S1R3	Total Recoverable	Water	200.7 Rev 4.4	36386
810-41530-17	STAG-S1R2	Total Recoverable	Water	200.7 Rev 4.4	36386
810-41530-19	STAG-S25R1	Total Recoverable	Water	200.7 Rev 4.4	36386
810-41530-20	STAG-S39R2	Total Recoverable	Water	200.7 Rev 4.4	36386
MB 810-36386/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	36386
LCS 810-36386/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	36386
LLCS 810-36386/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	36386
LLCS 810-36386/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	36386
810-41530-20 MS	STAG-S39R2	Total Recoverable	Water	200.7 Rev 4.4	36386
810-41530-20 MSD	STAG-S39R2	Total Recoverable	Water	200.7 Rev 4.4	36386

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-41530-1

Date Collected: 10/13/22 15:28 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:28
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:22

Client Sample ID: SOL-S1Raw — Lab Sample ID: 810-41530-2

Date Collected: 10/07/22 12:43 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:34
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:28

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-41530-3

Date Collected: 10/13/22 11:34 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 21:32
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:25

Client Sample ID: Raw-S1 — Lab Sample ID: 810-41530-4

Date Collected: 10/13/22 11:32 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:36
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:31

Client Sample ID: Raw-S24 — Lab Sample ID: 810-41530-5

Date Collected: 10/13/22 13:24 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:38
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:33

Client Sample ID: Raw-S25 — Lab Sample ID: 810-41530-6

Date Collected: 10/13/22 10:04 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:40
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:40

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: SOL-S1R3 — Lab Sample ID: 810-41530-7

Date Collected: 10/06/22 12:46 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:43
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:42

Client Sample ID: SOL-S24Raw — Lab Sample ID: 810-41530-8

Date Collected: 10/06/22 12:47 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:45
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:44

Client Sample ID: SOL-S1R2 — Lab Sample ID: 810-41530-9

Date Collected: 10/06/22 12:45 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:47
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:47

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-41530-10

Date Collected: 10/13/22 13:28 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:49
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:49

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-41530-11

Date Collected: 10/13/22 10:00 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:51
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:51

Client Sample ID: SOL-S24R2 — Lab Sample ID: 810-41530-12

Date Collected: 10/07/22 12:49 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 17:58
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 15:54

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: Raw-S39 — Lab Sample ID: 810-41530-13

Date Collected: 10/13/22 08:00 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:04
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 16:07

Client Sample ID: SOL-S24R1 — Lab Sample ID: 810-41530-14

Date Collected: 10/07/22 12:48 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:06
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 16:10

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-41530-15

Date Collected: 10/13/22 11:38 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 21:34
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:27

Client Sample ID: SOL-S1R1 — Lab Sample ID: 810-41530-16

Date Collected: 10/06/22 12:44 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:08
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 16:12

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-41530-17

Date Collected: 10/13/22 11:36 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 21:37
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:29

Client Sample ID: STAG-S39R1 — Lab Sample ID: 810-41530-18

Date Collected: 10/13/22 08:02 — **Matrix: Water**
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:10

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Client Sample ID: STAG-S39R1

Lab Sample ID: 810-41530-18

Date Collected: 10/13/22 08:02
Matrix: Water
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 16:14

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-41530-19

Date Collected: 10/13/22 10:06
Matrix: Water
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 21:39
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:31

Client Sample ID: STAG-S39R2

Lab Sample ID: 810-41530-20

Date Collected: 10/13/22 08:04
Matrix: Water
Date Received: 10/14/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 21:45
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:38

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Laboratory: Eurofins Eaton South Bend

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41530-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-41530-1	STAG-S24R1	Water	10/13/22 15:28	10/14/22 09:00
810-41530-2	SOL-S1Raw	Water	10/07/22 12:43	10/14/22 09:00
810-41530-3	STAG-S1R1	Water	10/13/22 11:34	10/14/22 09:00
810-41530-4	Raw-S1	Water	10/13/22 11:32	10/14/22 09:00
810-41530-5	Raw-S24	Water	10/13/22 13:24	10/14/22 09:00
810-41530-6	Raw-S25	Water	10/13/22 10:04	10/14/22 09:00
810-41530-7	SOL-S1R3	Water	10/06/22 12:46	10/14/22 09:00
810-41530-8	SOL-S24Raw	Water	10/06/22 12:47	10/14/22 09:00
810-41530-9	SOL-S1R2	Water	10/06/22 12:45	10/14/22 09:00
810-41530-10	STAG-S24R2	Water	10/13/22 13:28	10/14/22 09:00
810-41530-11	STAG-S25R2	Water	10/13/22 10:00	10/14/22 09:00
810-41530-12	SOL-S24R2	Water	10/07/22 12:49	10/14/22 09:00
810-41530-13	Raw-S39	Water	10/13/22 08:00	10/14/22 09:00
810-41530-14	SOL-S24R1	Water	10/07/22 12:48	10/14/22 09:00
810-41530-15	STAG-S1R3	Water	10/13/22 11:38	10/14/22 09:00
810-41530-16	SOL-S1R1	Water	10/06/22 12:44	10/14/22 09:00
810-41530-17	STAG-S1R2	Water	10/13/22 11:36	10/14/22 09:00
810-41530-18	STAG-S39R1	Water	10/13/22 08:02	10/14/22 09:00
810-41530-19	STAG-S25R1	Water	10/13/22 10:06	10/14/22 09:00
810-41530-20	STAG-S39R2	Water	10/13/22 08:04	10/14/22 09:00

South Bend, IN

810-41530 Chain of Custody

Chain of Custody Record

eurofins

Environment Testing America

10/27/2022

	Sampler	Lab PM:	Carrier Tracking No(s):	COC No:
	Phone	E-Mail	State of Origin:	Page: Page 1 of
		PWSID:		Job #:

Address:

City:

State, Zip:

Phone:

Email:

Project Name: Kalamazoo Pilot

Site:

Due Date Requested:

TAT Requested (days):

Compliance Project: Δ Yes Δ No

PO #:

WO #:

Project #: 81003039

SSOW#:

Analysis Requested

Field Filtered Sample (Yes or No)

Perform MS/MSD (Yes or No)

200.7 + 200.8

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA

M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Preservation Code:	Special Instructions/Note:
STAG-S24R1	10/13	1528				
SOL-S1Raw	10/07	1243				
STAG-S1R1	10/13	1134				
Raw-S1	10/13	1132				
Raw-S24	10/13	1324				
Raw-S25	10/13	1004				
SOL-S1R3	10/06	1246				
SOL-S24Raw	10/06	1247				
SOL-S1R2	10/06	1245				
STAG-S24R2	10/13	1328				
STAG-S25R2	10/13	1000				

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: COC filled out by PPW

Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by:	Date/Time:	Company	Received by: Penny Pehling Wright	Date/Time: 10/14/22 0900	Company: EEA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		Initial Temp: 0.2 Corrected Temp: -0.6 IR Gun # 72 WAT

pH Acceptable

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

eurofins

Environment Testing America

10/27/2022

Client Information	Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:
Client Contact:	Phone:	E-Mail:	State of Origin:	Page: Page 1 of
Company:	PWSID:			Job #:
Address:	Due Date Requested:			
City:	TAT Requested (days):			
State, Zip:	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email:	WO #:			
Project Name:	Project #:			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	200.7 + 200.8	Special Instructions/Note:
			Preservation Code:			
SOL-S24R2	10/07	1249				
Raw-S39	10/13	0800				
SOL-S24R1	10/07	1248				
STAG-S1R3	10/13	1138				
SOL-S1R1	10/06	1244				
STAG-S1R2	10/13	1136				
STAG-S39R1	10/13	0802				
STAG-S25R1	10/13	1006				
STAG-S39R2	10/13	0804				

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: COC filled out by pmw

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time:	Company	Received by:	Date/Time:	Company
			Penny Pehling Wright	10/14/22 0900	EEA
Relinquished by	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

pH Acceptable

Initial Temp: -0.2
Corrected Temp: 0.6
IR Gun # 28 Wet

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-41530-1

Login Number: 41530

List Source: Eurofins Eaton South Bend

List Number: 1

Creator: Pehling-Wright, Penny

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing

ANALYTICAL REPORT

Eurofins Eaton South Bend
110 S Hill Street
South Bend, IN 46617
Tel: (574)233-4777

Laboratory Job ID: 810-41658-1
Client Project/Site: Kalamazoo Pilot

For:
Tetra Tech, Inc.
201 E. Pine St., Ste. 1000
Orlando, Florida 32801

Attn: Mr. James E Christopher

Authorized for release by:
10/27/2022 12:28:20 PM

Joe Mattheis, Project Manager I
(574)233-4777
Joe.Mattheis@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

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.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 7
QC Sample Results 11
QC Association Summary 15
Lab Chronicle 17
Certification Summary 20
Method Summary 21
Sample Summary 22
Chain of Custody 23
Receipt Checklists 25

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Qualifiers

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

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Job ID: 810-41658-1

Laboratory: Eurofins Eaton South Bend

Narrative

Job Narrative
810-41658-1

Receipt
The samples were received on 10/18/2022 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.2°C

Metals
Method 200.8: The continuing calibration verification (CCV) analyzed in 810-36165 was outside the method criteria of + 10 % but within + 15%. As indicated in the reference method, this continuing calibration verification (CCV) will be used at the closing CCV and previous samples will not be reanalyzed.

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Client Sample ID: RAW-S39 — Lab Sample ID: 810-41658-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	90		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	15		1.0		ug/L	1		200.8	Total Recoverable

Client Sample ID: STAG-S39-R1 — Lab Sample ID: 810-41658-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	91		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	39		1.0		ug/L	1		200.8	Total Recoverable
Lead	460		0.50		ug/L	1		200.8	Total Recoverable

Client Sample ID: STAG-S39-R2 — Lab Sample ID: 810-41658-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	90		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	18		1.0		ug/L	1		200.8	Total Recoverable
Lead	66		0.50		ug/L	1		200.8	Total Recoverable

Client Sample ID: RAW-S25 — Lab Sample ID: 810-41658-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	85		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.7		1.0		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S25R1 — Lab Sample ID: 810-41658-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	84		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	10		1.0		ug/L	1		200.8	Total/NA
Lead	12		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-41658-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	83		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	4.5		1.0		ug/L	1		200.8	Total/NA
Lead	7.0		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: RAW-S1 — Lab Sample ID: 810-41658-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-41658-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	21		1.0		ug/L	1		200.8	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Client Sample ID: STAG-S1R1 (Continued) — Lab Sample ID: 810-41658-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	76		0.50		ug/L	1		200.8	Total Recoverable

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-41658-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total Recoverable
Copper	13		1.0		ug/L	1		200.8	Total Recoverable
Lead	40		0.50		ug/L	1		200.8	Total Recoverable

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-41658-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	100		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.4		1.0		ug/L	1		200.8	Total/NA
Lead	9.3		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: Raw-S24 — Lab Sample ID: 810-41658-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	59		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	12		1.0		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S24R1 — Lab Sample ID: 810-41658-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	57		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	1.3		1.0		ug/L	1		200.8	Total/NA
Lead	2.0		0.50		ug/L	1		200.8	Total/NA

Client Sample ID: STAG-S24R2 — Lab Sample ID: 810-41658-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	59		0.10		mg/L	1		200.7 Rev 4.4	Total/NA
Copper	12		1.0		ug/L	1		200.8	Total/NA
Lead	130		0.50		ug/L	1		200.8	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-41658-1
Date Collected: 10/17/22 08:28
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	90		0.10		mg/L		10/25/22 14:20	10/26/22 21:52	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	15		1.0		ug/L		10/25/22 14:20	10/26/22 15:40	1
Lead	<0.50		0.50		ug/L		10/25/22 14:20	10/26/22 15:40	1

Client Sample ID: STAG-S39-R1

Lab Sample ID: 810-41658-2
Date Collected: 10/17/22 08:30
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	91		0.10		mg/L		10/25/22 14:20	10/26/22 21:54	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	39		1.0		ug/L		10/25/22 14:20	10/26/22 15:47	1
Lead	460		0.50		ug/L		10/25/22 14:20	10/26/22 15:47	1

Client Sample ID: STAG-S39-R2

Lab Sample ID: 810-41658-3
Date Collected: 10/17/22 08:32
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	90		0.10		mg/L		10/25/22 14:20	10/26/22 21:56	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	18		1.0		ug/L		10/25/22 14:20	10/26/22 15:49	1
Lead	66		0.50		ug/L		10/25/22 14:20	10/26/22 15:49	1

Client Sample ID: RAW-S25

Lab Sample ID: 810-41658-4
Date Collected: 10/17/22 09:50
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	85		0.10		mg/L			10/25/22 18:13	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.7		1.0		ug/L			10/21/22 16:16	1
Lead	<0.50		0.50		ug/L			10/21/22 16:16	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-41658-5
Date Collected: 10/17/22 09:52
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	84		0.10		mg/L			10/25/22 18:15	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	10		1.0		ug/L			10/21/22 16:19	1
Lead	12		0.50		ug/L			10/21/22 16:19	1

Client Sample ID: STAG-S25R2

Lab Sample ID: 810-41658-6
Date Collected: 10/17/22 09:54
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	83		0.10		mg/L			10/25/22 18:17	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	4.5		1.0		ug/L			10/21/22 16:21	1
Lead	7.0		0.50		ug/L			10/21/22 16:21	1

Client Sample ID: RAW-S1

Lab Sample ID: 810-41658-7
Date Collected: 10/17/22 11:32
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L			10/25/22 18:19	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 16:28	1
Lead	<0.50		0.50		ug/L			10/21/22 16:28	1

Client Sample ID: STAG-S1R1

Lab Sample ID: 810-41658-8
Date Collected: 10/17/22 11:34
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		10/25/22 14:20	10/26/22 21:58	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	21		1.0		ug/L		10/25/22 14:20	10/26/22 15:52	1
Lead	76		0.50		ug/L		10/25/22 14:20	10/26/22 15:52	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Client Sample ID: STAG-S1R2

Lab Sample ID: 810-41658-9
Date Collected: 10/17/22 11:36
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L		10/25/22 14:20	10/26/22 22:00	1

Method: EPA 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	13		1.0		ug/L		10/25/22 14:20	10/26/22 15:54	1
Lead	40		0.50		ug/L		10/25/22 14:20	10/26/22 15:54	1

Client Sample ID: STAG-S1R3

Lab Sample ID: 810-41658-10
Date Collected: 10/17/22 11:38
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	100		0.10		mg/L			10/25/22 18:21	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.4		1.0		ug/L			10/21/22 16:30	1
Lead	9.3		0.50		ug/L			10/21/22 16:30	1

Client Sample ID: Raw-S24

Lab Sample ID: 810-41658-11
Date Collected: 10/17/22 14:32
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	59		0.10		mg/L			10/25/22 18:32	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	12		1.0		ug/L			10/21/22 16:32	1
Lead	<0.50		0.50		ug/L			10/21/22 16:32	1

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-41658-12
Date Collected: 10/17/22 14:34
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	57		0.10		mg/L			10/25/22 18:38	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	1.3		1.0		ug/L			10/21/22 18:04	1
Lead	2.0		0.50		ug/L			10/21/22 18:04	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-41658-13

Date Collected: 10/17/22 14:36
Matrix: Water
Date Received: 10/18/22 09:15

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	59		0.10		mg/L			10/25/22 18:41	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	12		1.0		ug/L			10/21/22 18:06	1
Lead	130		0.50		ug/L			10/21/22 18:06	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-36433/12 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/25/22 17:21	1

Lab Sample ID: MB 810-36433/43 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L			10/25/22 18:28	1

Lab Sample ID: LCS 810-36433/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Calcium			5.00	5.22		mg/L		104	85 - 115		

Lab Sample ID: LCS 810-36433/44 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Calcium			5.00	5.18		mg/L		104	85 - 115		

Lab Sample ID: LLCS 810-36433/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Calcium			0.0100	<0.021		mg/L		84	50 - 150		

Lab Sample ID: LLCS 810-36433/13 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Calcium			0.100	0.0875	J	mg/L		88	50 - 150		

Lab Sample ID: 810-41658-11 MS — **Client Sample ID: Raw-S24**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Calcium	59		5.00	63.9	4	mg/L		101	70 - 130		

Lab Sample ID: 810-41658-11 MSD — **Client Sample ID: Raw-S24**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36433

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Calcium	59		5.00	63.7	4	mg/L		97	70 - 130	0	20

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 810-36386/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36558 — **Prep Batch: 36386**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.10		mg/L		10/25/22 14:20	10/26/22 21:07	1

Lab Sample ID: LCS 810-36386/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36558 — **Prep Batch: 36386**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	5.00	4.93		mg/L		99	85 - 115

Lab Sample ID: LLCS 810-36386/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36558 — **Prep Batch: 36386**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.0100	<0.021		mg/L		122	50 - 150

Lab Sample ID: LLCS 810-36386/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36558 — **Prep Batch: 36386**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Calcium	0.100	0.0789	J	mg/L		79	50 - 150

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 810-36165/13 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 14:52	1
Lead	<0.50		0.50		ug/L			10/21/22 14:52	1

Lab Sample ID: MB 810-36165/44 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 16:03	1
Lead	<0.50		0.50		ug/L			10/21/22 16:03	1

Lab Sample ID: LCS 810-36165/45 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	48.4		ug/L		97	85 - 115
Lead	50.0	47.9		ug/L		96	85 - 115

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: LLCS 810-36165/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		91	50 - 150
Lead	0.300	0.273	J	ug/L		91	50 - 150

Lab Sample ID: LLCS 810-36165/12 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.964	J	ug/L		96	50 - 150

Lab Sample ID: 810-41658-6 MS — **Client Sample ID: STAG-S25R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	4.5		50.0	49.1		ug/L		89	70 - 130
Lead	7.0		50.0	53.8		ug/L		93	70 - 130

Lab Sample ID: 810-41658-6 MSD — **Client Sample ID: STAG-S25R2**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36165

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	4.5		50.0	49.0		ug/L		89	70 - 130	0	20
Lead	7.0		50.0	54.4		ug/L		95	70 - 130	1	20

Lab Sample ID: MB 810-36171/14 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36171

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L			10/21/22 17:59	1
Lead	<0.50		0.50		ug/L			10/21/22 17:59	1

Lab Sample ID: LCS 810-36171/15 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36171

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	50.4		ug/L		101	85 - 115
Lead	50.0	49.8		ug/L		100	85 - 115

Lab Sample ID: LLCS 810-36171/11 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 36171

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	0.300	<0.55		ug/L		110	50 - 150
Lead	0.300	0.313	J	ug/L		104	50 - 150

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 810-36392/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36536 — **Prep Batch: 36392**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	<1.0		1.0		ug/L		10/25/22 14:20	10/26/22 14:53	1
Lead	<0.50		0.50		ug/L		10/25/22 14:20	10/26/22 14:53	1

Lab Sample ID: LCS 810-36392/6-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36536 — **Prep Batch: 36392**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	50.0	51.4		ug/L		103	85 - 115
Lead	50.0	53.7		ug/L		107	85 - 115

Lab Sample ID: LLCS 810-36392/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36536 — **Prep Batch: 36392**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	1.00	0.943	J	ug/L		94	50 - 150

Lab Sample ID: 810-41658-1 MS — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36536 — **Prep Batch: 36392**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Copper	15		50.0	57.3		ug/L		84	70 - 130
Lead	<0.50		50.0	48.4		ug/L		96	70 - 130

Lab Sample ID: 810-41658-1 MSD — **Client Sample ID: RAW-S39**
Matrix: Water — **Prep Type: Total Recoverable**
Analysis Batch: 36536 — **Prep Batch: 36392**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Copper	15		50.0	62.1		ug/L		93	70 - 130	8	20
Lead	<0.50		50.0	54.7		ug/L		109	70 - 130	12	20

Metals

Analysis Batch: 36165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41658-4	RAW-S25	Total/NA	Water	200.8	
810-41658-5	STAG-S25R1	Total/NA	Water	200.8	
810-41658-6	STAG-S25R2	Total/NA	Water	200.8	
810-41658-7	RAW-S1	Total/NA	Water	200.8	
810-41658-10	STAG-S1R3	Total/NA	Water	200.8	
810-41658-11	Raw-S24	Total/NA	Water	200.8	
MB 810-36165/13	Method Blank	Total/NA	Water	200.8	
MB 810-36165/44	Method Blank	Total/NA	Water	200.8	
LCS 810-36165/45	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-36165/11	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-36165/12	Lab Control Sample	Total/NA	Water	200.8	
810-41658-6 MS	STAG-S25R2	Total/NA	Water	200.8	
810-41658-6 MSD	STAG-S25R2	Total/NA	Water	200.8	

Analysis Batch: 36171

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41658-12	STAG-S24R1	Total/NA	Water	200.8	
810-41658-13	STAG-S24R2	Total/NA	Water	200.8	
MB 810-36171/14	Method Blank	Total/NA	Water	200.8	
LCS 810-36171/15	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-36171/11	Lab Control Sample	Total/NA	Water	200.8	

Prep Batch: 36386

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41658-1	RAW-S39	Total Recoverable	Water	200.7	
810-41658-2	STAG-S39-R1	Total Recoverable	Water	200.7	
810-41658-3	STAG-S39-R2	Total Recoverable	Water	200.7	
810-41658-8	STAG-S1R1	Total Recoverable	Water	200.7	
810-41658-9	STAG-S1R2	Total Recoverable	Water	200.7	
MB 810-36386/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 810-36386/4-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-36386/2-A	Lab Control Sample	Total Recoverable	Water	200.7	
LLCS 810-36386/3-A	Lab Control Sample	Total Recoverable	Water	200.7	

Prep Batch: 36392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41658-1	RAW-S39	Total Recoverable	Water	200.8	
810-41658-2	STAG-S39-R1	Total Recoverable	Water	200.8	
810-41658-3	STAG-S39-R2	Total Recoverable	Water	200.8	
810-41658-8	STAG-S1R1	Total Recoverable	Water	200.8	
810-41658-9	STAG-S1R2	Total Recoverable	Water	200.8	
MB 810-36392/1-A	Method Blank	Total Recoverable	Water	200.8	
LCS 810-36392/6-A	Lab Control Sample	Total Recoverable	Water	200.8	
LLCS 810-36392/3-A	Lab Control Sample	Total Recoverable	Water	200.8	
810-41658-1 MS	RAW-S39	Total Recoverable	Water	200.8	
810-41658-1 MSD	RAW-S39	Total Recoverable	Water	200.8	

Analysis Batch: 36433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41658-4	RAW-S25	Total/NA	Water	200.7 Rev 4.4	
810-41658-5	STAG-S25R1	Total/NA	Water	200.7 Rev 4.4	

Metals (Continued)

Analysis Batch: 36433 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41658-6	STAG-S25R2	Total/NA	Water	200.7 Rev 4.4	
810-41658-7	RAW-S1	Total/NA	Water	200.7 Rev 4.4	
810-41658-10	STAG-S1R3	Total/NA	Water	200.7 Rev 4.4	
810-41658-11	Raw-S24	Total/NA	Water	200.7 Rev 4.4	
810-41658-12	STAG-S24R1	Total/NA	Water	200.7 Rev 4.4	
810-41658-13	STAG-S24R2	Total/NA	Water	200.7 Rev 4.4	
MB 810-36433/12	Method Blank	Total/NA	Water	200.7 Rev 4.4	
MB 810-36433/43	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 810-36433/14	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LCS 810-36433/44	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36433/11	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
LLCS 810-36433/13	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	
810-41658-11 MS	Raw-S24	Total/NA	Water	200.7 Rev 4.4	
810-41658-11 MSD	Raw-S24	Total/NA	Water	200.7 Rev 4.4	

Analysis Batch: 36536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41658-1	RAW-S39	Total Recoverable	Water	200.8	36392
810-41658-2	STAG-S39-R1	Total Recoverable	Water	200.8	36392
810-41658-3	STAG-S39-R2	Total Recoverable	Water	200.8	36392
810-41658-8	STAG-S1R1	Total Recoverable	Water	200.8	36392
810-41658-9	STAG-S1R2	Total Recoverable	Water	200.8	36392
MB 810-36392/1-A	Method Blank	Total Recoverable	Water	200.8	36392
LCS 810-36392/6-A	Lab Control Sample	Total Recoverable	Water	200.8	36392
LLCS 810-36392/2-A	Lab Control Sample	Total/NA	Water	200.8	
LLCS 810-36392/3-A	Lab Control Sample	Total Recoverable	Water	200.8	36392
810-41658-1 MS	RAW-S39	Total Recoverable	Water	200.8	36392
810-41658-1 MSD	RAW-S39	Total Recoverable	Water	200.8	36392

Analysis Batch: 36558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
810-41658-1	RAW-S39	Total Recoverable	Water	200.7 Rev 4.4	36386
810-41658-2	STAG-S39-R1	Total Recoverable	Water	200.7 Rev 4.4	36386
810-41658-3	STAG-S39-R2	Total Recoverable	Water	200.7 Rev 4.4	36386
810-41658-8	STAG-S1R1	Total Recoverable	Water	200.7 Rev 4.4	36386
810-41658-9	STAG-S1R2	Total Recoverable	Water	200.7 Rev 4.4	36386
MB 810-36386/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	36386
LCS 810-36386/4-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	36386
LLCS 810-36386/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	36386
LLCS 810-36386/3-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	36386

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Client Sample ID: RAW-S39

Lab Sample ID: 810-41658-1
Date Collected: 10/17/22 08:28
Matrix: Water
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 21:52
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:40

Client Sample ID: STAG-S39-R1

Lab Sample ID: 810-41658-2
Date Collected: 10/17/22 08:30
Matrix: Water
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 21:54
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:47

Client Sample ID: STAG-S39-R2

Lab Sample ID: 810-41658-3
Date Collected: 10/17/22 08:32
Matrix: Water
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 21:56
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:49

Client Sample ID: RAW-S25

Lab Sample ID: 810-41658-4
Date Collected: 10/17/22 09:50
Matrix: Water
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:13
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 16:16

Client Sample ID: STAG-S25R1

Lab Sample ID: 810-41658-5
Date Collected: 10/17/22 09:52
Matrix: Water
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:15
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 16:19

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Client Sample ID: STAG-S25R2 — Lab Sample ID: 810-41658-6

Date Collected: 10/17/22 09:54 — **Matrix: Water**
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:17
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 16:21

Client Sample ID: RAW-S1 — Lab Sample ID: 810-41658-7

Date Collected: 10/17/22 11:32 — **Matrix: Water**
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:19
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 16:28

Client Sample ID: STAG-S1R1 — Lab Sample ID: 810-41658-8

Date Collected: 10/17/22 11:34 — **Matrix: Water**
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 21:58
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:52

Client Sample ID: STAG-S1R2 — Lab Sample ID: 810-41658-9

Date Collected: 10/17/22 11:36 — **Matrix: Water**
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	200.7			36386	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.7 Rev 4.4		1	36558	AC	EA SB	10/26/22 22:00
Total Recoverable	Prep	200.8			36392	NB	EA SB	10/25/22 14:20
Total Recoverable	Analysis	200.8		1	36536	NB	EA SB	10/26/22 15:54

Client Sample ID: STAG-S1R3 — Lab Sample ID: 810-41658-10

Date Collected: 10/17/22 11:38 — **Matrix: Water**
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:21
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 16:30

Client Sample ID: Raw-S24 — Lab Sample ID: 810-41658-11

Date Collected: 10/17/22 14:32 — **Matrix: Water**
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:32

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Client Sample ID: Raw-S24

Lab Sample ID: 810-41658-11

Date Collected: 10/17/22 14:32
Matrix: Water
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.8		1	36165	NB	EA SB	10/21/22 16:32

Client Sample ID: STAG-S24R1

Lab Sample ID: 810-41658-12

Date Collected: 10/17/22 14:34
Matrix: Water
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:38
Total/NA	Analysis	200.8		1	36171	NB	EA SB	10/21/22 18:04

Client Sample ID: STAG-S24R2

Lab Sample ID: 810-41658-13

Date Collected: 10/17/22 14:36
Matrix: Water
Date Received: 10/18/22 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	200.7 Rev 4.4		1	36433	AC	EA SB	10/25/22 18:41
Total/NA	Analysis	200.8		1	36171	NB	EA SB	10/21/22 18:06

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Laboratory: Eurofins Eaton South Bend

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9926	12-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4		Water	Calcium
200.7 Rev 4.4	200.7	Water	Calcium
200.8		Water	Copper
200.8		Water	Lead
200.8	200.8	Water	Copper
200.8	200.8	Water	Lead

Method Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Method	Method Description	Protocol	Laboratory
200.7 Rev 4.4	Metals (ICP)	EPA	EA SB
200.8	Metals (ICP/MS)	EPA	EA SB
200.7	Preparation, Total Recoverable Metals	EPA	EA SB
200.8	Preparation, Total Recoverable Metals	EPA	EA SB

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA SB = Eurofins Eaton South Bend, 110 S Hill Street, South Bend, IN 46617, TEL (574)233-4777

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Kalamazoo Pilot

Job ID: 810-41658-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
810-41658-1	RAW-S39	Water	10/17/22 08:28	10/18/22 09:15
810-41658-2	STAG-S39-R1	Water	10/17/22 08:30	10/18/22 09:15
810-41658-3	STAG-S39-R2	Water	10/17/22 08:32	10/18/22 09:15
810-41658-4	RAW-S25	Water	10/17/22 09:50	10/18/22 09:15
810-41658-5	STAG-S25R1	Water	10/17/22 09:52	10/18/22 09:15
810-41658-6	STAG-S25R2	Water	10/17/22 09:54	10/18/22 09:15
810-41658-7	RAW-S1	Water	10/17/22 11:32	10/18/22 09:15
810-41658-8	STAG-S1R1	Water	10/17/22 11:34	10/18/22 09:15
810-41658-9	STAG-S1R2	Water	10/17/22 11:36	10/18/22 09:15
810-41658-10	STAG-S1R3	Water	10/17/22 11:38	10/18/22 09:15
810-41658-11	Raw-S24	Water	10/17/22 14:32	10/18/22 09:15
810-41658-12	STAG-S24R1	Water	10/17/22 14:34	10/18/22 09:15
810-41658-13	STAG-S24R2	Water	10/17/22 14:36	10/18/22 09:15

810-41658 Chain of Custody

Chain of Custody Record

eurofins

10/27/2022

Client Information	Sampler: Sara Hayes	Lab PM: Mattheis, Joe	Carrier Tracking No(s):	COC No: ~~101022-1~~ 10 1722
Client Contact: James Christopher	Phone:	E-Mail: Joe.Mattheis@et.eurofinsus.com	State of Origin:	Page: 101022
Company: Tetra Tech	PWSID:			Job #:
Address: 201 E Pine St. Ste. 1000	Due Date Requested:			
City: Orlando	TAT Requested (days): 5			
State, Zip: FL, 32801	Compliance Project: Δ Yes Δ No			
Phone: 407-480-3907 (Tel) 407-839-3790(Fax)	PO #:			
Email: james.christopher@tetratech.com	WO #:			
Project Name: Kalamazoo Pilot	Project #: 81003039			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan									Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	D	A	N	D										
RAW-S39	10/17/22	8:28	G	W			X													
STAG-S39R1	10/17/22	8:30	G	W			X													
STAG-S39R2	10/17/22	8:32	G	W			X													
RAW-S25	10/17/22	9:50	G	W			X													
STAG-S25R1	10/17/22	9:52	G	W			X													
STAG-S25R2	10/17/22	9:54	G	W			X													
RAW-S1	10/17/22	11:32	G	W			X													
STAG-S1R1	10/17/22	11:34	G	W			X													
STAG-S1R2	10/17/22	11:36	G	W			X													
STAG-S1R3	10/17/22	11:38	G	W			X													
RAW-S24	10/17/22	14:32	G	W			X													

pH Acceptable

0.4
0.2
18

Possible Hazard Identification
44847

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return To Client — Disposal By Lab — Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Sara Hayes	10-17-22 17:00		Fedex 10-17-22 17:00		
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
				10-18-22	0915

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

South Bend, IN
110 S Hill Street
South Bend, IN 46617
Phone (574) 233-4777 Phone (574) 233-8207

Chain of Custody Record

eurofins

Client Information	Sampler:	Lab PM:	Carrier Tracking No(s):	COC No: 101322.1
Client Contact:	Phone:	E-Mail:	State of Origin:	Page: Page 2 of 2
Company:	PWSID:			Job #:
Address:	Due Date Requested:			
City:	TAT Requested (days): 5			
State, Zip:	Compliance Project: Δ Yes Δ No			
Phone:	PO #:			
Email:	WO #:			
Project Name:	Project #:			
Site:	SSOW#:			

Analysis Requested

pH Acceptable

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	200.7, 200.8	4500_P_E - (MOD) Copy Analytes	4500_P_E_Ortho - Orthophosphate	200.7 - (MOD) ICP - AES Metals Scan									Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X													X	
STAG-S24R1	10/17/22	14:34	G	W			X										✓			
STAG-S24R2	10/17/22	14:36	G	W			X										✓			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by: KR	Date/Time: 10-18-22 0:15	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: W3

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 810-41658-1

Login Number: 41658
List Number: 1
Creator: DePriest, Kellie

List Source: Eurofins Eaton South Bend

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
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	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	