

Chemical Analysis Report

NE-DIST-2022-07-21-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **LSJR West Boat 2022**

Request ID: **RQ-2022-07-04-20**

Customer: **NE-DIST**

Project ID: **SMP**

Send Reports to:

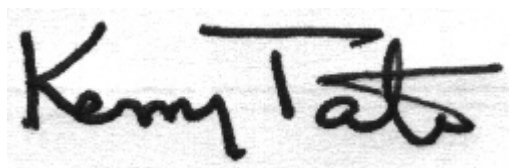
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 09-AUG-2022 09:22

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Wills BR at Watergate Rd.

Collection Date/Time: 07/20/2022 09:05

Field ID: G2NE1183

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2343095	DEP SOP: NU-094-1	Color (true)	77		PCU	P417013	
	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P417011	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P417383	
		Sulfate	17		mg SO4/L	P417386	
	SM 2320 B-2011	Total Alkalinity	70		mg CaCO3/L	P417354	
	SM 2540 C-2011	TDS	150	A	mg/L	P417490	
	SM 2540 D-2011	TSS	3	IA	mg/L	P417478	
	SM 4500-F- C-2011	Fluoride	0.084	I	mg F/L	P417356	
2343096	EPA 350.1 Rev. 2.0	Ammonia-N	0.23		mg N/L	P417259	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P417236	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.35		mg N/L	P417227	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P417095	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P417222	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Yellow Water CR at SR 228

Collection Date/Time: 07/20/2022 09:40

Field ID: 20030549

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2343101	EPA 200.7 Rev. 4.4	Calcium	10.3		mg/L	P417017	
		Iron	1.37E+03		ug/L	P417017	
		Magnesium	1.80		mg/L	P417017	
		Potassium	0.51	I	mg/L	P417017	
		Sodium	5.9		mg/L	P417017	
		Strontium	49.4		ug/L	P417017	
		Tin	3.0	U	ug/L	P417017	
		Titanium	1.2	I	ug/L	P417017	
		Vanadium	2.0	U	ug/L	P417017	
	EPA 200.8 Rev. 5.4	Zinc	9.2	I	ug/L	P417017	
		Aluminum	379		ug/L	P417017	
		Antimony	0.080	I	ug/L	P417017	
		Arsenic	0.55		ug/L	P417017	
		Barium	21.5		ug/L	P417017	
		Beryllium	0.053		ug/L	P417017	
		Boron	18.9		ug/L	P417017	
		Cadmium	0.020	U	ug/L	P417017	
		Chromium	1.2	I	ug/L	P417017	
		Cobalt	0.160		ug/L	P417017	
		Copper	3.63		ug/L	P417017	
		Lead	1.29		ug/L	P417017	
		Manganese	10.1		ug/L	P417017	
		Molybdenum	0.15	U	ug/L	P417017	
		Nickel	0.80	I	ug/L	P417017	
		Selenium	0.20	U	ug/L	P417017	
		Silver	0.010	U	ug/L	P417017	
		Thallium	0.10	U	ug/L	P417017	
	SM 2340 B-2011	Hardness	33.0		mg/L	P417017	

Ref. Method and Comment:

EPA 200.8 Rev. 5.4: The copper and lead result was confirmed in the undigested sample on 07/26/2022.

Sample Location: Black CR South fork @ CR218

Collection Date/Time: 07/20/2022 13:30

Field ID: 20030244

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2343093	DEP SOP: NU-094-1	Color (true)	170		PCU	P417013	
	EPA 180.1 Rev. 2.0	Turbidity	5.7		NTU	P417011	
	EPA 300.0 Rev. 2.1	Chloride	8.7		mg Cl/L	P417383	
		Sulfate	4.8		mg SO4/L	P417386	
	SM 2320 B-2011	Total Alkalinity	8.5		mg CaCO3/L	P417354	
	SM 2540 C-2011	TDS	66		mg/L	P417490	
	SM 2540 D-2011	TSS	3	I	mg/L	P417478	
	SM 4500-F- C-2011	Fluoride	0.076	I	mg F/L	P417356	
2343094	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P417259	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P417236	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.059		mg N/L	P417227	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P417095	
	SM 5310 B-2011	Organic Carbon	15		mg C/L	P417222	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P417013

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417011

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P417017

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P417017

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417383

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417386

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417259

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417236

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417227

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417095

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: SM 2320 B-2011
Batch ID: P417354

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-2011
Batch ID: P417490

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P417478

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P417356

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P417222

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P417013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.6		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417011

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	96.4		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P417017

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	103		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	102		P	85 - 115
Sodium	102		P	85 - 115
Strontium	106		P	85 - 115
Tin	102		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	99.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P417017

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.8		P	85 - 115
Antimony	95.9		P	85 - 115
Arsenic	96.3		P	85 - 115
Barium	99.2		P	85 - 115
Beryllium	91.5		P	85 - 115
Boron	104		P	85 - 115
Cadmium	94.8		P	85 - 115
Chromium	94.7		P	85 - 115
Cobalt	97.3		P	85 - 115
Copper	96.3		P	85 - 115
Lead	98.8		P	85 - 115
Manganese	95.2		P	85 - 115
Molybdenum	94.8		P	85 - 115
Nickel	97.5		P	85 - 115
Selenium	94.1		P	85 - 115
Silver	100		P	85 - 115
Thallium	97.7		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417383

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.7		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417386

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417259

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417236

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417227

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417095

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	101		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P417354

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.1		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P417356

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	104		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P417222

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P417017

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343204	Calcium	103		P	80 - 120
2343204	Iron	104	102	P/P	80 - 120
2343204	Magnesium	104	99.9	P/P	80 - 120
2343204	Potassium	104	102	P/P	80 - 120
2343204	Sodium	102		P	80 - 120
2343204	Strontium	108	106	P/P	80 - 120
2343204	Tin	103	100	P/P	80 - 120
2343204	Titanium	104	101	P/P	80 - 120
2343204	Vanadium	104	100	P/P	80 - 120
2343204	Zinc	104	99.6	P/P	80 - 120
2343291	Calcium	108		P	80 - 120
2343291	Iron	110		P	80 - 120
2343291	Magnesium	108		P	80 - 120
2343291	Potassium	105		P	80 - 120
2343291	Sodium	108		P	80 - 120
2343291	Strontium	110		P	80 - 120
2343291	Tin	106		P	80 - 120
2343291	Titanium	107		P	80 - 120
2343291	Vanadium	107		P	80 - 120
2343291	Zinc	106		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P417017

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343204	Aluminum	97.2	99.6	P/P	80 - 120
2343204	Antimony	95.4	97.3	P/P	80 - 120
2343204	Arsenic	95.5	97.7	P/P	80 - 120
2343204	Barium	98.9	100	P/P	80 - 120
2343204	Beryllium	90.5	91.8	P/P	80 - 120
2343204	Boron	103	103	P/P	80 - 120
2343204	Cadmium	94.2	94.8	P/P	80 - 120
2343204	Chromium	96.1	97.4	P/P	80 - 120
2343204	Cobalt	97.0	97.2	P/P	80 - 120
2343204	Copper	96.1	97.2	P/P	80 - 120
2343204	Lead	99.2	100	P/P	80 - 120
2343204	Manganese	96.5	97.0	P/P	80 - 120
2343204	Molybdenum	96.8	98.4	P/P	80 - 120
2343204	Nickel	97.7	98.8	P/P	80 - 120
2343204	Selenium	93.9	96.6	P/P	80 - 120
2343204	Silver	99.5	103	P/P	80 - 120
2343204	Thallium	99.4	101	P/P	80 - 120
2343291	Aluminum	100		P	80 - 120
2343291	Antimony	95.6		P	80 - 120
2343291	Arsenic	96.5		P	80 - 120
2343291	Barium	99.3		P	80 - 120
2343291	Beryllium	91.4		P	80 - 120
2343291	Boron	105		P	80 - 120
2343291	Cadmium	94.7		P	80 - 120
2343291	Chromium	94.6		P	80 - 120
2343291	Cobalt	96.6		P	80 - 120
2343291	Copper	97.4		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P417017

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343291	Lead	99.0		P	80 - 120
2343291	Manganese	96.1		P	80 - 120
2343291	Molybdenum	95.1		P	80 - 120
2343291	Nickel	96.5		P	80 - 120
2343291	Selenium	93.4		P	80 - 120
2343291	Silver	99.8		P	80 - 120
2343291	Thallium	96.9		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343105	Chloride	94.3		P	90 - 110
2343245	Chloride	94.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417386

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343105	Sulfate	91.4		P	90 - 110
2343245	Sulfate	94.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343094	Ammonia-N	98.4	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417227

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343060	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417095

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343094	Total-P	102	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P417356

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2342914	Fluoride	103	103	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P417222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2343096	Organic Carbon	98.2	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P417013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343058	Color (true)	0.0162	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P417011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343033	Turbidity	13.4	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P417017

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343204	Calcium	3.63	Spike	P	0 - 20
2343204	Iron	2.28	Spike	P	0 - 20
2343204	Magnesium	2.89	Spike	P	0 - 20
2343204	Potassium	1.97	Spike	P	0 - 20
2343204	Sodium	2.13	Spike	P	0 - 20
2343204	Strontium	2.30	Spike	P	0 - 20
2343204	Tin	3.16	Spike	P	0 - 20
2343204	Titanium	2.83	Spike	P	0 - 20
2343204	Vanadium	3.71	Spike	P	0 - 20
2343204	Zinc	3.71	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P417017

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343204	Aluminum	2.19	Spike	P	0 - 20
2343204	Antimony	1.92	Spike	P	0 - 20
2343204	Arsenic	2.26	Spike	P	0 - 20
2343204	Barium	1.16	Spike	P	0 - 20
2343204	Beryllium	1.41	Spike	P	0 - 20
2343204	Boron	0.128	Spike	P	0 - 20
2343204	Cadmium	0.599	Spike	P	0 - 20
2343204	Chromium	1.26	Spike	P	0 - 20
2343204	Cobalt	0.201	Spike	P	0 - 20
2343204	Copper	1.13	Spike	P	0 - 20
2343204	Lead	1.15	Spike	P	0 - 20
2343204	Manganese	0.376	Spike	P	0 - 20
2343204	Molybdenum	1.63	Spike	P	0 - 20
2343204	Nickel	1.12	Spike	P	0 - 20
2343204	Selenium	2.73	Spike	P	0 - 20
2343204	Silver	3.26	Spike	P	0 - 20
2343204	Thallium	1.59	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343105	Chloride	0.347	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P417386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343105	Sulfate	0.503	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P417259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343094	Ammonia-N	1.44	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P417236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343114	Kjeldahl Nitrogen	3.50	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P417227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343060	NO2NO3-N	0.374	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P417095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343094	Total-P	1.41	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P417354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342914	Total Alkalinity	0.352	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P417490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343095	TDS	5.98	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P417356

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2342914	Fluoride	0.0	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P417222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2343096	Organic Carbon	1.48	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A113649

Included Lab Sample IDs: 2343093, 2343095

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105

Reference Method: DEP SOP: NU-094-1

Run ID: A113654

Included Lab Sample IDs: 2343093, 2343095

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	90 - 110
Color (true)	101	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A113697

Included Lab Sample IDs: 2343101

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.5	96.3	P/P	90 - 110
Antimony	94.6	92.8	P/P	90 - 110
Arsenic	96.9	95.4	P/P	90 - 110
Barium	95.7	94.6	P/P	90 - 110
Beryllium	92.3	90.7	P/P	90 - 110
Boron	98.7	99.0	P/P	90 - 110
Cadmium	96.8	95.8	P/P	90 - 110
Chromium	95.9	94.2	P/P	90 - 110
Cobalt	97.6	97.1	P/P	90 - 110
Copper	97.3	96.7	P/P	90 - 110
Lead	97.8	97.1	P/P	90 - 110
Manganese	96.9	95.7	P/P	90 - 110
Molybdenum	96.6	95.0	P/P	90 - 110
Nickel	97.0	96.2	P/P	90 - 110
Selenium	96.6	95.0	P/P	90 - 110
Silver	102	101	P/P	90 - 110
Thallium	97.3	96.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A113721

Included Lab Sample IDs: 2343093, 2343095

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.8	101	P/P	90 - 110
Sulfate	98.5	99.9	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A113725

Included Lab Sample IDs: 2343094, 2343096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.6	P/P	90 - 110
Organic Carbon	98.0	97.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A113726

Included Lab Sample IDs: 2343094, 2343096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A113730

Included Lab Sample IDs: 2343094, 2343096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	100	P/P	90 - 110
Total-P	101	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A113739

Included Lab Sample IDs: 2343094, 2343096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.4	98.2	P/P	90 - 110
Ammonia-N	98.2	99.0	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A113778

Included Lab Sample IDs: 2343093, 2343095

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.4	97.9	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A113778

Included Lab Sample IDs: 2343093, 2343095

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	107	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A113782

Included Lab Sample IDs: 2343094, 2343096

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.7	96.2	P/P	90 - 110
Kjeldahl Nitrogen	96.2	98.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A113834

Included Lab Sample IDs: 2343101

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Iron	100	100	P/P	90 - 110
Magnesium	100	99.7	P/P	90 - 110
Potassium	101	100	P/P	90 - 110
Sodium	100	101	P/P	90 - 110
Strontium	102	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A113834

Included Lab Sample IDs: 2343101

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Tin	97.0	97.9	P/P	90 - 110
Titanium	97.5	97.4	P/P	90 - 110
Vanadium	97.9	98.8	P/P	90 - 110
Zinc	97.4	97.0	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
DEP SOP: NU-094-1	Color (true)	99.6				0.0162	
EPA 180.1 Rev. 2.0	Turbidity	96.4				13.4	
EPA 200.7 Rev. 4.4	Calcium	103	103	108			3.63
	Iron	103	104	102	110		2.28
	Magnesium	102	104	99.9	108		2.89
	Potassium	102	104	102	105		1.97
	Sodium	102	102	108			2.13
	Strontium	106	108	106	110		2.30
	Tin	102	103	100	106		3.16
	Titanium	102	104	101	107		2.83
	Vanadium	101	104	100	107		3.71
	Zinc	99.5	104	99.6	106		3.71
EPA 200.8 Rev. 5.4	Aluminum	98.8	97.2	99.6	100		2.19
	Antimony	95.9	95.4	97.3	95.6		1.92
	Arsenic	96.3	95.5	97.7	96.5		2.26
	Barium	99.2	98.9	100	99.3		1.16
	Beryllium	91.5	90.5	91.8	91.4		1.41
	Boron	104	103	103	105		0.128
	Cadmium	94.8	94.2	94.8	94.7		0.599
	Chromium	94.7	96.1	97.4	94.6		1.26
	Cobalt	97.3	97.0	97.2	96.6		0.201
	Copper	96.3	96.1	97.2	97.4		1.13
	Lead	98.8	99.2	100	99.0		1.15
	Manganese	95.2	96.5	97.0	96.1		0.376
	Molybdenum	94.8	96.8	98.4	95.1		1.63
	Nickel	97.5	97.7	98.8	96.5		1.12
	Selenium	94.1	93.9	96.6	93.4		2.73
	Silver	100	99.5	103	99.8		3.26
	Thallium	97.7	99.4	101	96.9		1.59
EPA 300.0 Rev. 2.1	Chloride	98.7	94.3	94.4		0.347	
	Sulfate	97.7	91.4	94.9		0.503	
EPA 350.1 Rev. 2.0	Ammonia-N	96.6	98.4	100			1.44
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109					3.50
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	101			0.374
EPA 365.1 Rev. 2.0	Total-P	101	102	104			1.41
SM 2320 B-2011	Total Alkalinity	99.1				0.352	
SM 2540 C-2011	TDS					5.98	
SM 4500-F- C-2011	Fluoride	104	103	103			0.0
SM 5310 B-2011	Organic Carbon	95.6	98.2	101			1.48

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2343093, 2343095
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2343093, 2343095
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2343101
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2343101
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2343093, 2343095
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2343093, 2343095
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2343094, 2343096
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2343094, 2343096

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2343094, 2343096
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2343094, 2343096
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2343093, 2343095
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2343101
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2343093, 2343095
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2343093, 2343095
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2343093, 2343095
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2343094, 2343096

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	07/21/2022			07/21/2022 14:32	Blanca Fach	2343095
	07/21/2022			07/21/2022 14:59	Blanca Fach	2343093
EPA 180.1 Rev. 2.0	07/21/2022			07/21/2022 13:54	Anna M. Plaviak	2343093
	07/21/2022			07/21/2022 13:55	Anna M. Plaviak	2343095
EPA 200.7 Rev. 4.4	07/21/2022	07/22/2022 10:20	Megan Whitefoot	08/01/2022 19:43	McKinley C Carter	2343101
EPA 200.8 Rev. 5.4	07/21/2022	07/22/2022 10:20	Megan Whitefoot	07/25/2022 19:03	Alexander Thompson	2343101
EPA 300.0 Rev. 2.1	07/21/2022			07/28/2022 15:43	Anna M. Plaviak	2343093
	07/21/2022			07/28/2022 15:55	Anna M. Plaviak	2343095
EPA 350.1 Rev. 2.0	07/21/2022			07/27/2022 12:11	Judith K. Clark	2343094
	07/21/2022			07/27/2022 13:26	Judith K. Clark	2343096
EPA 351.2 Rev. 2.0	07/21/2022	07/27/2022 16:00	Simonne.V. Calhoun	07/28/2022 15:15	Samantha L Bates	2343094
	07/21/2022	07/27/2022 16:00	Simonne.V. Calhoun	07/28/2022 15:20	Samantha L Bates	2343096
EPA 353.2 Rev. 2.0	07/21/2022			07/27/2022 10:48	Beverly Y. Sanders	2343094
	07/21/2022			07/27/2022 10:49	Beverly Y. Sanders	2343096
EPA 365.1 Rev. 2.0	07/21/2022	07/25/2022 15:50	Adam P Silver	07/27/2022 10:27	James L Waggeberby	2343094
	07/21/2022	07/25/2022 15:50	Adam P Silver	07/27/2022 10:38	James L Waggeberby	2343096
SM 2320 B-2011	07/21/2022			07/29/2022 00:36	Dale L. Simmons	2343093
	07/21/2022			07/29/2022 00:50	Dale L. Simmons	2343095
SM 2340 B-2011	07/21/2022			08/01/2022 19:43	McKinley C Carter	2343101
SM 2540 C-2011	07/21/2022			07/26/2022 15:02	Yijie Li	2343093, 2343095
SM 2540 D-2011	07/21/2022			07/26/2022 15:02	Yijie Li	2343093, 2343095
SM 4500-F- C-2011	07/21/2022			07/29/2022 00:36	Dale L. Simmons	2343093
	07/21/2022			07/29/2022 00:50	Dale L. Simmons	2343095
SM 5310 B-2011	07/21/2022			07/26/2022 15:52	Khloe J Berg	2343096
	07/21/2022			07/26/2022 22:08	Khloe J Berg	2343094