

Chemical Analysis Report

TLH-ROC-2022-01-06-01

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

Event Description: **Run 9**
Request ID: **RQ-2022-01-03-60**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 27-JAN-2022 15:02

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: East Bay (Apalachicola)

Collection Date/Time: 01/06/2022 10:20

Field ID: G2TLHR0027

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2297988	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P408197	
	SM 2320 B-2011	Total Alkalinity	60	A	mg CaCO3/L	P408277	
	SM 2540 D-2011	TSS	9	IA	mg/L	P408440	
	SM 4500 F-C-2011	Fluoride	0.30		mg F/L	P408280	
2297990	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P408414	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P408325	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P408290	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P408336	
	SM 5310 B-2011	Organic Carbon	4.4		mg C/L	P408350	
2297992	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P408247	
2298000	EPA 200.7 Rev. 4.4	Calcium	102		mg/L	P408533	
		Iron	210	I	ug/L	P408533	
		Magnesium	281		mg/L	P408533	
		Strontium	1.63E+03		ug/L	P408533	
		Tin	9.0	U	ug/L	P408533	
		Vanadium	6.0	U	ug/L	P408533	
		Zinc	15	U	ug/L	P408533	
	EPA 200.8 Rev. 5.4	Aluminum	140	I	ug/L	P408533	
		Antimony	0.20	U	ug/L	P408533	
		Arsenic	0.83		ug/L	P408533	
		Beryllium	0.10	U	ug/L	P408533	
		Cadmium	0.080	U	ug/L	P408533	
		Chromium	1.6	U	ug/L	P408533	
		Cobalt	0.12	I	ug/L	P408533	
		Copper	1.6	U	ug/L	P408533	
		Lead	0.80	U	ug/L	P408533	
		Manganese	25.7		ug/L	P408533	
		Molybdenum	3.1		ug/L	P408533	
		Nickel	2.0	U	ug/L	P408533	
		Selenium	0.80	U	ug/L	P408533	
		Silver	0.040	U	ug/L	P408533	

Ref. Method and Comment:

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable because of high analyte concentration in the QC sample.

Sample Location: East Bay ENCOC FCOLI

Collection Date/Time: 01/06/2022 10:30

Field ID: G2TLHR0051

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2297989	EPA 180.1 Rev. 2.0	Turbidity	6.7		NTU	P408197	
	SM 2320 B-2011	Total Alkalinity	74		mg CaCO3/L	P408277	
	SM 2540 D-2011	TSS	17		mg/L	P408442	
	SM 4500 F-C-2011	Fluoride	0.46	I	mg F/L	P408280	
2297991	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P408414	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P408325	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.028		mg N/L	P408290	
	EPA 365.1 Rev. 2.0	Total-P	0.047		mg P/L	P408336	
	SM 5310 B-2011	Organic Carbon	4.5		mg C/L	P408313	
2297993	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P408247	
2298001	EPA 200.7 Rev. 4.4	Calcium	158		mg/L	P408533	
		Iron	210	I	ug/L	P408533	
		Magnesium	466		mg/L	P408533	
		Strontium	2.68E+03		ug/L	P408533	
		Tin	9.0	U	ug/L	P408533	
		Vanadium	6.0	U	ug/L	P408533	
		Zinc	15	U	ug/L	P408533	
	EPA 200.8 Rev. 5.4	Aluminum	150	I	ug/L	P408533	
		Antimony	0.20	U	ug/L	P408533	
		Arsenic	1.08		ug/L	P408533	
		Beryllium	0.10	U	ug/L	P408533	
		Cadmium	0.080	U	ug/L	P408533	
		Chromium	1.6	U	ug/L	P408533	
		Cobalt	0.12	I	ug/L	P408533	
		Copper	1.6	U	ug/L	P408533	
		Lead	0.80	U	ug/L	P408533	
		Manganese	32.4		ug/L	P408533	
		Molybdenum	4.8		ug/L	P408533	
		Nickel	2.0	U	ug/L	P408533	
		Selenium	0.80	U	ug/L	P408533	
		Silver	0.040	U	ug/L	P408533	

Ref. Method and Comment:

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium and magnesium are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P408197

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P408533

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	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: P408533

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408414

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P408325

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P408290

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408336

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408247

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2320 B-2011
Batch ID: P408277

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

Reference Method: SM 2540 D-2011
Batch ID: P408440

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P408442

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P408280

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P408313

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

Reference Method: SM 5310 B-2011
Batch ID: P408350

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P408533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	111		P	85 - 115
Magnesium	103		P	85 - 115
Strontium	103		P	85 - 115
Tin	108		P	85 - 115
Vanadium	104		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P408533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	98.8		P	85 - 115
Arsenic	96.5		P	85 - 115
Beryllium	95.8		P	85 - 115
Cadmium	99.3		P	85 - 115
Chromium	100		P	85 - 115
Cobalt	98.0		P	85 - 115
Copper	98.3		P	85 - 115
Lead	94.9		P	85 - 115
Manganese	100		P	85 - 115
Molybdenum	98.8		P	85 - 115
Nickel	98.8		P	85 - 115
Selenium	97.6		P	85 - 115
Silver	99.5		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408414

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P408325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P408290

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P408336

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408247

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	100		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P408277

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P408280

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.6		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P408313

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P408350

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P408533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298000	Iron	105	106	P/P	70 - 130
2298000	Strontium	99.1	100	P/P	70 - 130
2298000	Tin	91.7	96.3	P/P	70 - 130
2298000	Vanadium	106	107	P/P	70 - 130
2298000	Zinc	97.3	100	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P408533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2298000	Aluminum	104	105	P/P	70 - 130
2298000	Antimony	110	109	P/P	70 - 130
2298000	Arsenic	117	115	P/P	70 - 130
2298000	Beryllium	117	112	P/P	70 - 130
2298000	Cadmium	102	103	P/P	70 - 130
2298000	Chromium	111	111	P/P	70 - 130
2298000	Cobalt	118	117	P/P	70 - 130
2298000	Copper	112	112	P/P	70 - 130
2298000	Lead	106	105	P/P	70 - 130
2298000	Manganese	106	106	P/P	70 - 130
2298000	Molybdenum	116	116	P/P	70 - 130
2298000	Nickel	119	118	P/P	70 - 130
2298000	Selenium	110	111	P/P	70 - 130
2298000	Silver	97.9	97.3	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P408414

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2297662	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P408325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2297945	Kjeldahl Nitrogen	96.2	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P408290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2297990	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P408336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2297945	Total-P	103	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P408247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2297992	O-Phosphate-P	99.6	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P408280

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2297988	Fluoride	99.7	100	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P408313

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2297673	Organic Carbon	97.2	95.5	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P408350

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2297650	Organic Carbon	97.4	98.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P408197

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297671	Turbidity	4.06	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P408533

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298000	Calcium	0.561	Spike	P	0 - 20
2298000	Iron	0.429	Spike	P	0 - 20
2298000	Magnesium	0.182	Spike	P	0 - 20
2298000	Strontium	0.645	Spike	P	0 - 20
2298000	Tin	4.97	Spike	P	0 - 20
2298000	Vanadium	0.985	Spike	P	0 - 20
2298000	Zinc	2.96	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P408533

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2298000	Aluminum	0.734	Spike	P	0 - 20
2298000	Antimony	1.41	Spike	P	0 - 20
2298000	Arsenic	1.17	Spike	P	0 - 20
2298000	Beryllium	4.07	Spike	P	0 - 20
2298000	Cadmium	0.408	Spike	P	0 - 20
2298000	Chromium	0.0363	Spike	P	0 - 20
2298000	Cobalt	0.918	Spike	P	0 - 20
2298000	Copper	0.649	Spike	P	0 - 20
2298000	Lead	0.885	Spike	P	0 - 20
2298000	Manganese	0.278	Spike	P	0 - 20
2298000	Molybdenum	0.250	Spike	P	0 - 20
2298000	Nickel	1.36	Spike	P	0 - 20
2298000	Selenium	0.610	Spike	P	0 - 20
2298000	Silver	0.593	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P408414

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297662	Ammonia-N	0.186	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P408325

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297945	Kjeldahl Nitrogen	6.09	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P408290

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297990	NO2NO3-N	0.318	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P408336

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297945	Total-P	1.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P408247

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297992	O-Phosphate-P	2.58	Spike	P	0 - 20

Reference Method: SM 2320 B-2011

Batch ID: P408277

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297988	Total Alkalinity	2.63	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011

Batch ID: P408280

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297988	Fluoride	0.483	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011

Batch ID: P408313

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297673	Organic Carbon	1.54	Spike	P	0 - 20

Reference Method: SM 5310 B-2011

Batch ID: P408350

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2297650	Organic Carbon	0.838	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: A109721

Included Lab Sample IDs: 2297988, 2297989

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A109743

Included Lab Sample IDs: 2297992, 2297993

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	99.7	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A109759

Included Lab Sample IDs: 2297988, 2297989

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

Reference Method: SM 4500 F-C-2011

Run ID: A109759

Included Lab Sample IDs: 2297988, 2297989

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A109769

Included Lab Sample IDs: 2297990, 2297991

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A109779

Included Lab Sample IDs: 2297991

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	95.2	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A109789

Included Lab Sample IDs: 2297990

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109818

Included Lab Sample IDs: 2297990, 2297991

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	99.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109845

Included Lab Sample IDs: 2297990, 2297991

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.6	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109871

Included Lab Sample IDs: 2297990, 2297991

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A109915

Included Lab Sample IDs: 2298000, 2298001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	96.6	96.3	P/P	90 - 110
Arsenic	97.4	97.8	P/P	90 - 110
Cadmium	95.4	94.9	P/P	90 - 110
Chromium	96.8	96.6	P/P	90 - 110
Cobalt	97.3	96.8	P/P	90 - 110
Copper	98.9	97.9	P/P	90 - 110
Manganese	98.5	98.4	P/P	90 - 110
Molybdenum	94.9	94.2	P/P	90 - 110
Nickel	100	99.6	P/P	90 - 110
Selenium	97.9	97.5	P/P	90 - 110
Silver	96.1	94.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A109916

Included Lab Sample IDs: 2298000, 2298001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	90 - 110
Calcium	103	103	P/P	90 - 110
Iron	103	103	P/P	90 - 110
Iron	103	103	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Strontium	102	101	P/P	90 - 110
Strontium	99.8	102	P/P	90 - 110
Tin	101	102	P/P	90 - 110
Tin	102	101	P/P	90 - 110
Vanadium	100	99.4	P/P	90 - 110
Vanadium	99.3	100	P/P	90 - 110
Zinc	98.7	99.5	P/P	90 - 110
Zinc	99.5	97.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A109933

Included Lab Sample IDs: 2298000, 2298001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A109933

Included Lab Sample IDs: 2298000, 2298001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.8	103	P/P	90 - 110
Beryllium	96.4	98.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A109952

Included Lab Sample IDs: 2298000, 2298001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	96.3	96.0	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		LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					4.06	
EPA 200.7 Rev. 4.4	Calcium	106					0.561
	Iron	111	105	106			0.429
	Magnesium	103					0.182
	Strontium	103	99.1	100			0.645
	Tin	108	91.7	96.3			4.97
	Vanadium	104	106	107			0.985
	Zinc	103	97.3	100			2.96
EPA 200.8 Rev. 5.4	Aluminum	102	104	105			0.734
	Antimony	98.8	110	109			1.41
	Arsenic	96.5	117	115			1.17
	Beryllium	95.8	117	112			4.07
	Cadmium	99.3	102	103			0.408
	Chromium	100	111	111			0.0363
	Cobalt	98.0	118	117			0.918
	Copper	98.3	112	112			0.649
	Lead	94.9	106	105			0.885
	Manganese	100	106	106			0.278
	Molybdenum	98.8	116	116			0.250
	Nickel	98.8	119	118			1.36
	Selenium	97.6	110	111			0.610
	Silver	99.5	97.9	97.3			0.593
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	100	101			0.186
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	96.2	104			6.09
EPA 353.2 Rev. 2.0	NO2NO3-N	103	103	102			0.318
EPA 365.1 Rev. 2.0	Total-P	107	103	101			1.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.6	102			2.58
SM 2320 B-2011	Total Alkalinity	100				2.63	
SM 4500 F-C-2011	Fluoride	99.6	99.7	100			0.483
SM 5310 B-2011	Organic Carbon	96.8	97.2	95.5			1.54
	Organic Carbon	95.2	97.4	98.8			0.838

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2297988, 2297989
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2298000, 2298001
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2298000, 2298001
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2297990, 2297991
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2297990, 2297991
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2297990, 2297991
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2297990, 2297991
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2297992, 2297993
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2297988, 2297989
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2297988, 2297989
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2297988, 2297989
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2297990, 2297991

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/06/2022			01/06/2022 16:50	Khloe J Berg	2297988, 2297989
EPA 200.7 Rev. 4.4	01/06/2022	01/14/2022 11:10	Vijayalakshmi Reddy	01/19/2022 00:22	Josef B Mick	2298000
	01/06/2022	01/14/2022 11:10	Vijayalakshmi Reddy	01/19/2022 01:56	Josef B Mick	2298001
	01/06/2022	01/14/2022 11:10	Vijayalakshmi Reddy	01/19/2022 02:04	Josef B Mick	2298001
EPA 200.8 Rev. 5.4	01/06/2022	01/14/2022 11:10	Vijayalakshmi Reddy	01/18/2022 16:33	Alexander Thompson	2298001
	01/06/2022	01/14/2022 11:10	Vijayalakshmi Reddy	01/18/2022 17:12	Alexander Thompson	2298000
	01/06/2022	01/14/2022 11:10	Vijayalakshmi Reddy	01/19/2022 13:26	Alexander Thompson	2298001
	01/06/2022	01/14/2022 11:10	Vijayalakshmi Reddy	01/19/2022 13:44	Alexander Thompson	2298000
	01/06/2022	01/14/2022 11:10	Vijayalakshmi Reddy	01/20/2022 12:07	Alexander Thompson	2298001
	01/06/2022	01/14/2022 11:10	Vijayalakshmi Reddy	01/20/2022 12:23	Alexander Thompson	2298000
EPA 350.1 Rev. 2.0	01/06/2022			01/12/2022 11:33	Ping Hua	2297990
	01/06/2022			01/12/2022 11:35	Ping Hua	2297991
EPA 351.2 Rev. 2.0	01/06/2022	01/12/2022 10:53	Samantha L Bates	01/13/2022 10:01	Alexandra J Mattheus	2297990
	01/06/2022	01/12/2022 10:53	Samantha L Bates	01/13/2022 10:02	Alexandra J Mattheus	2297991
EPA 353.2 Rev. 2.0	01/06/2022			01/10/2022 11:08	Beverly Y. Sanders	2297990
	01/06/2022			01/10/2022 11:14	Beverly Y. Sanders	2297991
EPA 365.1 Rev. 2.0	01/06/2022	01/12/2022 15:15	Simonne.V. Calhoun	01/13/2022 15:56	Shengyu Ding	2297991
	01/06/2022	01/12/2022 15:15	Simonne.V. Calhoun	01/13/2022 16:00	Shengyu Ding	2297990
EPA 365.1 Rev. 2.0 dissolved	01/06/2022			01/07/2022 15:24	James L Waggeberby	2297992
	01/06/2022			01/07/2022 15:27	James L Waggeberby	2297993
SM 2320 B-2011	01/06/2022			01/08/2022 05:10	Dale L. Simmons	2297988
	01/06/2022			01/08/2022 05:58	Dale L. Simmons	2297989
SM 2540 D-2011	01/06/2022			01/07/2022 14:36	Yijie Li	2297988, 2297989
SM 4500 F-C-2011	01/06/2022			01/08/2022 04:19	Dale L. Simmons	2297988
	01/06/2022			01/08/2022 04:49	Dale L. Simmons	2297989
SM 5310 B-2011	01/06/2022			01/10/2022 01:43	Touraj Touran	2297990
	01/06/2022			01/11/2022 05:08	Khloe J Berg	2297991