

Chemical Analysis Report

NE-DIST-2019-04-26-01

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

Event Description: **SCI Thomas 2161**

Request ID: **RQ-2019-03-25-08**

Customer: **NE-DIST**

Project ID: **SMP**

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Date Certified: 13-MAY-2019 13:59



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: THOMAS CREEK AT US1

Collection Date/Time: 04/25/2019 10:15

Field ID: 19020034

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2081350	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P362941	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P363392	
		Sulfate	1.4		mg SO4/L	P363394	
		Color (true)	260		PCU	P362955	
	SM 2320 B-97	Total Alkalinity	6.7		mg CaCO3/L	P363361	
	SM 2540 C-97	TDS	99		mg/L	P363475	
	SM 2540 D-97	TSS	2	U	mg/L	P363418	
	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P363555	
2081351	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P363037	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P363190	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P363079	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P363174	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P363084	
2081352	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P362932	
2081355	EPA 200.7 Rev. 4.4	Barium	13.7		ug/L	P363113	
		Calcium	5.83		mg/L	P363113	
		Iron	550		ug/L	P363113	
		Magnesium	2.07		mg/L	P363113	
		Potassium	0.32	I	mg/L	P363113	
		Sodium	7.5		mg/L	P363113	
		Zinc	5.0	U	ug/L	P363113	
	EPA 200.8 Rev. 5.4	Aluminum	349		ug/L	P363113	
		Antimony	0.050	U	ug/L	P363113	
		Arsenic	0.27		ug/L	P363113	
		Boron**	17.1		ug/L	P363113	
		Cadmium	0.020	U	ug/L	P363113	
		Chromium	0.47	I	ug/L	P363113	
		Copper	0.40	U	ug/L	P363113	
		Lead	0.38	I	ug/L	P363113	
		Nickel	0.50	U	ug/L	P363113	
		Selenium	0.20	U	ug/L	P363113	
		Silver	0.010	U	ug/L	P363113	
		Thallium	0.10	U	ug/L	P363113	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362941

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363113

Component	Result	Code	Units
Barium	1.0	U	ug/L
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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363113

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	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: P363392

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363394

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363037

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363190

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363079

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363174

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362932

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

Reference Method: SM 2120 B
Batch ID: P362955

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P363361

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P363475

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P363418

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P363555

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P363084

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: P363113

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	103		P	85 - 115
Iron	106		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	101		P	85 - 115
Sodium	105		P	85 - 115
Zinc	99.0		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363113

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	99.8		P	85 - 115
Arsenic	101		P	85 - 115
Boron	107		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	95.6		P	85 - 115
Copper	100		P	85 - 115
Lead	96.4		P	85 - 115
Nickel	100		P	85 - 115
Selenium	101		P	85 - 115
Silver	102		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363392

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363394

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363037

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363190

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363079

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363174

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362932

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

Reference Method: SM 2120 B
Batch ID: P362955

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.0		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P363361

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P363555

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P363084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363113

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081423	Barium	101	101	P/P	80 - 120
2081423	Calcium	99.9		P	80 - 120
2081423	Iron	108	106	P/P	80 - 120
2081423	Magnesium	102		P	80 - 120
2081423	Potassium	109	109	P/P	80 - 120
2081423	Sodium	104	105	P/P	80 - 120
2081423	Zinc	99.3	100	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363113

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081423	Aluminum	100	100	P/P	80 - 120
2081423	Antimony	102	101	P/P	80 - 120
2081423	Arsenic	103	102	P/P	80 - 120
2081423	Boron	106	107	P/P	80 - 120
2081423	Cadmium	102	103	P/P	80 - 120
2081423	Chromium	94.6	94.7	P/P	80 - 120
2081423	Copper	97.9	96.9	P/P	80 - 120
2081423	Lead	95.9	96.2	P/P	80 - 120
2081423	Nickel	97.5	97.4	P/P	80 - 120
2081423	Selenium	99.8	101	P/P	80 - 120
2081423	Silver	102	104	P/P	80 - 120
2081423	Thallium	104	104	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363392

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081350	Chloride	100		P	90 - 110
2081699	Chloride	95.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081350	Sulfate	101		P	90 - 110
2081699	Sulfate	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363037

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080300	Ammonia-N	99.1	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363190

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081265	Kjeldahl Nitrogen	105	108	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363079

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081351	NO2NO3-N	98.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363174

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081415	Total-P	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362932

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081267	O-Phosphate-P	93.7	95.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P363555

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081358	Fluoride	97.3	97.3	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P363084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2081062	Organic Carbon	101	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081287	Turbidity	3.25	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P363113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081423	Barium	0.427	Spike	P	0 - 20
2081423	Calcium	0.571	Spike	P	0 - 20
2081423	Iron	1.82	Spike	P	0 - 20
2081423	Magnesium	0.342	Spike	P	0 - 20
2081423	Potassium	0.0762	Spike	P	0 - 20
2081423	Sodium	0.499	Spike	P	0 - 20
2081423	Zinc	0.699	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P363113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081423	Aluminum	0.109	Spike	P	0 - 20
2081423	Antimony	0.0461	Spike	P	0 - 20
2081423	Arsenic	1.35	Spike	P	0 - 20
2081423	Boron	0.736	Spike	P	0 - 20
2081423	Cadmium	0.649	Spike	P	0 - 20
2081423	Chromium	0.147	Spike	P	0 - 20
2081423	Copper	1.05	Spike	P	0 - 20
2081423	Lead	0.354	Spike	P	0 - 20
2081423	Nickel	0.0398	Spike	P	0 - 20
2081423	Selenium	1.01	Spike	P	0 - 20
2081423	Silver	1.32	Spike	P	0 - 20
2081423	Thallium	0.698	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363392

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081699	Chloride	0.350	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081699	Sulfate	0.344	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080300	Ammonia-N	1.05	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081265	Kjeldahl Nitrogen	1.77	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081351	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081415	Total-P	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362932

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081267	O-Phosphate-P	1.60	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P362955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079086	Color (true)	0.563	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P363361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081358	Total Alkalinity	0.293	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P363475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081358	TDS	0.522	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P363555

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081358	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P363084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2081062	Organic Carbon	0.0826	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91040

Included Lab Sample IDs: 2081352

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	96.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91042

Included Lab Sample IDs: 2081350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A91047

Included Lab Sample IDs: 2081350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	101	P/P	90 - 115

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91072

Included Lab Sample IDs: 2081351

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91088

Included Lab Sample IDs: 2081351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	95.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A91089

Included Lab Sample IDs: 2081351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	103	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A91105

Included Lab Sample IDs: 2081350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	101	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A91140

Included Lab Sample IDs: 2081355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	103	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A91140

Included Lab Sample IDs: 2081355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	95 - 105
Iron	102	103	P/P	95 - 105
Magnesium	102	103	P/P	95 - 105
Potassium	99.8	99.7	P/P	95 - 105
Sodium	102	102	P/P	95 - 105
Zinc	103	104	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91161

Included Lab Sample IDs: 2081351

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

Reference Method: SM 2320 B-97

Run ID: A91204

Included Lab Sample IDs: 2081350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A91227

Included Lab Sample IDs: 2081355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	99.9	P/P	90 - 110
Antimony	95.9	96.6	P/P	90 - 110
Arsenic	99.7	98.7	P/P	90 - 110
Boron	105	108	P/P	90 - 110
Cadmium	99.6	100	P/P	90 - 110
Chromium	100	100	P/P	90 - 110
Copper	100	99.6	P/P	90 - 110
Lead	97.3	97.0	P/P	90 - 110
Nickel	98.4	99.1	P/P	90 - 110
Selenium	99.5	98.7	P/P	90 - 110
Silver	100	100	P/P	90 - 110
Thallium	96.9	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91251

Included Lab Sample IDs: 2081351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A91266

Included Lab Sample IDs: 2081350

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

Reference Method: SM 4500 F-C-97

Run ID: A91266

Included Lab Sample IDs: 2081350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	97.6	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					3.25	
EPA 200.7 Rev. 4.4	Barium	101	101	101			0.427
	Calcium	103	99.9				0.571
	Iron	106	108	106			1.82
	Magnesium	102	102				0.342
	Potassium	101	109	109			0.0762
	Sodium	105	104	105			0.499
	Zinc	99.0	99.3	100			0.699
EPA 200.8 Rev. 5.4	Aluminum	102	100	100			0.109
	Antimony	99.8	102	101			0.0461
	Arsenic	101	103	102			1.35
	Boron	107	106	107			0.736
	Cadmium	103	102	103			0.649
	Chromium	95.6	94.6	94.7			0.147
	Copper	100	97.9	96.9			1.05
	Lead	96.4	95.9	96.2			0.354
	Nickel	100	97.5	97.4			0.0398
	Selenium	101	99.8	101			1.01
	Silver	102	102	104			1.32
	Thallium	103	104	104			0.698
EPA 300.0 Rev. 2.1	Chloride	99.5	95.6	100		0.350	
	Sulfate	101	98.6	101		0.344	
EPA 350.1 Rev. 2.0	Ammonia-N	98.3	99.1	97.8			1.05
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	105	108			1.77
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	98.0	98.0			0.0
EPA 365.1 Rev. 2.0	Total-P	99.9	102	101			1.04
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.6	93.7	95.6			1.60
SM 2120 B	Color (true)	98.0				0.563	
SM 2320 B-97	Total Alkalinity	102				0.293	
SM 2540 C-97	TDS					0.522	
SM 4500 F-C-97	Fluoride	96.5	97.3	97.3			0.0
SM 5310 B-00	Organic Carbon	99.2	101	101			0.0826

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2081350
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2081355
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2081355
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2081350
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2081350
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2081351
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2081351
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2081351
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2081351

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2081352
SM 2120 B / E31780	True Color measured at 450 nm	2081350
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2081350
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2081350
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2081350
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2081350
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2081351

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	04/26/2019			04/26/2019 16:11	Adrian Shelby	2081350
EPA 200.7 Rev. 4.4	04/26/2019	04/30/2019 16:30	Elliott D. Healy	05/01/2019 15:34	Betina Topolski	2081355
EPA 200.8 Rev. 5.4	04/26/2019	04/30/2019 16:30	Elliott D. Healy	05/06/2019 23:17	Robert K Palmer	2081355
EPA 300.0 Rev. 2.1	04/26/2019			05/02/2019 15:35	Lipi Saha	2081350
EPA 350.1 Rev. 2.0	04/26/2019			04/29/2019 10:35	Ping Hua	2081351
EPA 351.2 Rev. 2.0	04/26/2019	05/01/2019 11:45	Adrian Shelby	05/07/2019 09:27	Joseph Suarez	2081351
EPA 353.2 Rev. 2.0	04/26/2019			04/30/2019 10:52	Beverly Y. Sanders	2081351
EPA 365.1 Rev. 2.0	04/26/2019	05/01/2019 14:25	Sima Feizi	05/02/2019 13:37	Rosalyn Ballman	2081351
EPA 365.1 Rev. 2.0 dissolved	04/26/2019			04/26/2019 15:23	Jhamieka S. Greenwood	2081352
SM 2120 B	04/26/2019			04/26/2019 16:08	Blanca Fach	2081350
SM 2320 B-97	04/26/2019			05/04/2019 15:40	Samantha Davila	2081350
SM 2540 C-97	04/26/2019			05/01/2019 14:56	Yijie Li	2081350
SM 2540 D-97	04/26/2019			05/01/2019 14:56	Yijie Li	2081350
SM 4500 F-C-97	04/26/2019			05/07/2019 18:30	Dale L. Simmons	2081350
SM 5310 B-00	04/26/2019			04/30/2019 05:11	Julia Storbeck	2081351