

Chemical Analysis Report

SW-DIST-2019-11-15-01

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

Event Description: **SCI**
Request ID: **RQ-2019-11-11-60**
Customer: **SW-DIST**
Project ID: **SMP**

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Date Certified: 03-DEC-2019 10:39



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: Lil Alafia below SR60

Collection Date/Time: 11/14/2019 12:10

Field ID: G2SW0114

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2136533	EPA 180.1 Rev. 2.0	Turbidity	4.3	A	NTU	P374352	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P374401	
		Sulfate	26		mg SO4/L	P374404	
	SM 2120 B	Color (true)	62	A	PCU	P374314	
	SM 2320 B-97	Total Alkalinity	81	A	mg CaCO3/L	P374661	
	SM 2540 C-97	TDS	210		mg/L	P374862	
	SM 2540 D-97	TSS	3	I	mg/L	P374854	
	SM 4500 F-C-97	Fluoride	0.35		mg F/L	P374663	
2136534	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P374676	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P374618	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.8		mg N/L	P374476	
	EPA 365.1 Rev. 2.0	Total-P	0.54		mg P/L	P374586	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P374428	
2136535	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.41		mg P/L	P374379	
2136539	EPA 200.7 Rev. 4.4	Barium	3.9	I	ug/L	P374364	
		Calcium	34.3		mg/L	P374364	
		Iron	230		ug/L	P374364	
		Magnesium	12.3		mg/L	P374364	
		Potassium	6.7		mg/L	P374364	
		Sodium	14.2		mg/L	P374364	
		Zinc	5.0	U	ug/L	P374364	
		Aluminum	106		ug/L	P374364	
		Antimony	0.37		ug/L	P374364	
		Arsenic	1.48		ug/L	P374364	
	EPA 200.8 Rev. 5.4	Boron**	51.3		ug/L	P374364	
		Cadmium	0.460		ug/L	P374364	
		Chromium	0.65	I	ug/L	P374364	
		Copper	2.15		ug/L	P374364	
		Lead	0.22	I	ug/L	P374364	
		Nickel	1.6	I	ug/L	P374364	
		Selenium	0.40	I	ug/L	P374364	
		Silver	0.010	U	ug/L	P374364	
		Thallium	0.10	U	ug/L	P374364	

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: P374352

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374364

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: P374364

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: P374401

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374404

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374676

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: P374618

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374476

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374586

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374379

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

Reference Method: SM 2120 B
Batch ID: P374314

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P374661

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

Reference Method: SM 2540 C-97
Batch ID: P374862

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P374854

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P374663

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: P374428

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: P374364

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	99.4		P	85 - 115
Calcium	102		P	85 - 115
Iron	101		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	103		P	85 - 115
Sodium	101		P	85 - 115
Zinc	96.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374364

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	94.6		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	96.1		P	85 - 115
Boron	101		P	85 - 115
Cadmium	91.4		P	85 - 115
Chromium	94.0		P	85 - 115
Copper	100		P	85 - 115
Lead	93.0		P	85 - 115
Nickel	98.2		P	85 - 115
Selenium	87.8		P	85 - 115
Silver	97.8		P	85 - 115
Thallium	97.9		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374404

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374676

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374618

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: P374476

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374586

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374379

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.8		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P374314

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P374661

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P374663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P374428

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	103		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136241	Barium	98.5		P	80 - 120
2136241	Calcium	98.2		P	80 - 120
2136241	Iron	105		P	80 - 120
2136241	Magnesium	111		P	80 - 120
2136241	Potassium	112		P	80 - 120
2136241	Sodium	105		P	80 - 120
2136241	Zinc	95.5		P	80 - 120
2136502	Barium	96.9	96.2	P/P	80 - 120
2136502	Calcium	102		P	80 - 120
2136502	Iron	105	104	P/P	80 - 120
2136502	Magnesium	111	108	P/P	80 - 120
2136502	Potassium	101	100	P/P	80 - 120
2136502	Sodium	99.7		P	80 - 120
2136502	Zinc	96.3	95.2	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136241	Aluminum	94.2		P	80 - 120
2136241	Antimony	102		P	80 - 120
2136241	Arsenic	93.7		P	80 - 120
2136241	Boron	99.1		P	80 - 120
2136241	Cadmium	92.8		P	80 - 120
2136241	Chromium	92.0		P	80 - 120
2136241	Copper	97.5		P	80 - 120
2136241	Lead	90.9		P	80 - 120
2136241	Nickel	96.3		P	80 - 120
2136241	Selenium	84.8		P	80 - 120
2136241	Silver	99.5		P	80 - 120
2136241	Thallium	98.0		P	80 - 120
2136502	Aluminum	97.5	97.2	P/P	80 - 120
2136502	Antimony	103	101	P/P	80 - 120
2136502	Arsenic	97.1	95.3	P/P	80 - 120
2136502	Boron	105	104	P/P	80 - 120
2136502	Cadmium	95.6	95.2	P/P	80 - 120
2136502	Chromium	97.0	95.5	P/P	80 - 120
2136502	Copper	101	102	P/P	80 - 120
2136502	Lead	95.8	94.2	P/P	80 - 120
2136502	Nickel	97.8	99.3	P/P	80 - 120
2136502	Selenium	84.3	86.4	P/P	80 - 120
2136502	Silver	99.8	100	P/P	80 - 120
2136502	Thallium	101	103	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136471	Chloride	99.8		P	90 - 110
2136626	Chloride	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P374404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136471	Sulfate	100		P	90 - 110
2136626	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P374676

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136430	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P374618

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136474	Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P374476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136478	NO2NO3-N	98.5	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P374586

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136455	Total-P	102	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P374379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136479	O-Phosphate-P	95.2	96.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P374663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136533	Fluoride	97.9	98.8	P/P	89 - 106

Reference Method: SM 5310 B-00
 Batch ID: P374428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2136271	Organic Carbon	103		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P374352

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136533	Turbidity	7.44	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136502	Barium	0.684	Spike	P	0 - 20
2136502	Calcium	0.160	Spike	P	0 - 20
2136502	Iron	1.24	Spike	P	0 - 20
2136502	Magnesium	1.50	Spike	P	0 - 20
2136502	Potassium	0.768	Spike	P	0 - 20
2136502	Sodium	0.639	Spike	P	0 - 20
2136502	Zinc	1.09	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136502	Aluminum	0.163	Spike	P	0 - 20
2136502	Antimony	1.67	Spike	P	0 - 20
2136502	Arsenic	1.81	Spike	P	0 - 20
2136502	Boron	0.853	Spike	P	0 - 20
2136502	Cadmium	0.339	Spike	P	0 - 20
2136502	Chromium	1.57	Spike	P	0 - 20
2136502	Copper	1.13	Spike	P	0 - 20
2136502	Lead	1.61	Spike	P	0 - 20
2136502	Nickel	1.33	Spike	P	0 - 20
2136502	Selenium	2.51	Spike	P	0 - 20
2136502	Silver	0.447	Spike	P	0 - 20
2136502	Thallium	1.81	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136471	Chloride	0.0552	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136471	Sulfate	0.271	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P374676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136430	Ammonia-N	0.981	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P374618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136474	Kjeldahl Nitrogen	1.24	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P374476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136478	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P374586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136455	Total-P	2.55	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P374379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136479	O-Phosphate-P	1.06	Spike	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P374314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136533	Color (true)	4.05	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P374661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136533	Total Alkalinity	0.443	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
 Batch ID: P374862

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136477	TDS	4.18	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P374663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136533	Fluoride	0.473	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P374428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2136271	Organic Carbon	0.565	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A95765

Included Lab Sample IDs: 2136533

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

Reference Method: SM 2120 B

Run ID: A95771

Included Lab Sample IDs: 2136533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A95786

Included Lab Sample IDs: 2136533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	98.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A95799

Included Lab Sample IDs: 2136535

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.4	98.1	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A95823

Included Lab Sample IDs: 2136534

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A95833

Included Lab Sample IDs: 2136539

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	97.3	97.4	P/P	90 - 110
Calcium	99.5	100	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	104	104	P/P	90 - 110
Potassium	96.5	96.2	P/P	90 - 110
Sodium	102	101	P/P	90 - 110
Zinc	97.0	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A95835

Included Lab Sample IDs: 2136534

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A95901
Included Lab Sample IDs: 2136533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A95901
Included Lab Sample IDs: 2136533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A95904
Included Lab Sample IDs: 2136534

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A95908
Included Lab Sample IDs: 2136534

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A95943
Included Lab Sample IDs: 2136534

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A95998
Included Lab Sample IDs: 2136539

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.8	97.5	P/P	90 - 110
Antimony	94.8	97.0	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Boron	104	102	P/P	90 - 110
Cadmium	97.4	99.4	P/P	90 - 110
Chromium	98.6	101	P/P	90 - 110
Copper	105	105	P/P	90 - 110
Lead	97.3	98.7	P/P	90 - 110
Nickel	101	103	P/P	90 - 110
Selenium	93.3	94.4	P/P	90 - 110
Silver	101	103	P/P	90 - 110
Thallium	94.0	94.4	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				
EPA 180.1 Rev. 2.0	Turbidity					7.44	
EPA 200.7 Rev. 4.4	Barium	99.4		98.5	96.9		0.684
	Calcium	102		98.2	102		0.160
	Iron	101		105	105		1.24
	Magnesium	110		111	111		1.50
	Potassium	103		112	101		0.768
	Sodium	101		105	99.7		0.639
	Zinc	96.5		95.5	96.3		1.09
EPA 200.8 Rev. 5.4	Aluminum	94.6		94.2	97.5		0.163
	Antimony	100		103	101		1.67
	Arsenic	96.1		97.1	95.3		1.81
	Boron	101		99.1	105		0.853
	Cadmium	91.4		92.8	95.6		0.339
	Chromium	94.0		97.0	95.5		1.57
	Copper	100		97.5	101		1.13
	Lead	93.0		95.8	94.2		1.61
	Nickel	98.2		96.3	97.8		1.33
	Selenium	87.8		84.8	84.3		2.51
	Silver	97.8		99.5	99.8		0.447
	Thallium	97.9		98.0	101		1.81
EPA 300.0 Rev. 2.1	Chloride	98.9		99.8	102	0.0552	
	Sulfate	98.7		100	101	0.271	
EPA 350.1 Rev. 2.0	Ammonia-N	97.3		103	104		0.981
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101		102	101		1.24
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101		98.5	98.5		0.0
EPA 365.1 Rev. 2.0	Total-P	103		102	99.7		2.55
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8		95.2	96.6		1.06
SM 2120 B	Color (true)	101				4.05	
SM 2320 B-97	Total Alkalinity	101				0.443	
SM 2540 C-97	TDS					4.18	
SM 4500 F-C-97	Fluoride	95.9		97.9	98.8		0.473
SM 5310 B-00	Organic Carbon	103		103			0.565

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2136533
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2136539
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2136539
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2136533
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2136533
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2136534
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2136534
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2136534
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2136534

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	2136535
SM 2120 B / E31780	True Color measured at 450 nm	2136533
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2136533
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2136533
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2136533
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2136533
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2136534

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	11/15/2019			11/15/2019 17:09	Samantha Davila	2136533
EPA 200.7 Rev. 4.4	11/15/2019	11/18/2019 14:25	Elliott D. Healy	11/19/2019 14:28	Betina Topolski	2136539
EPA 200.8 Rev. 5.4	11/15/2019	11/18/2019 14:25	Elliott D. Healy	11/27/2019 07:58	Robert K Palmer	2136539
EPA 300.0 Rev. 2.1	11/15/2019			11/19/2019 06:04	Lipi Saha	2136533
EPA 350.1 Rev. 2.0	11/15/2019			11/21/2019 13:56	Ping Hua	2136534
EPA 351.2 Rev. 2.0	11/15/2019	11/21/2019 12:36	Sima Feizi	11/22/2019 14:37	Jhamieka S. Greenwood	2136534
EPA 353.2 Rev. 2.0	11/15/2019			11/19/2019 11:03	Beverly Y. Sanders	2136534
EPA 365.1 Rev. 2.0	11/15/2019	11/21/2019 13:00	Yen Ta	11/22/2019 15:36	Benjamin T. Nordmann	2136534
EPA 365.1 Rev. 2.0 dissolved	11/15/2019			11/15/2019 15:07	Ping Hua	2136535
SM 2120 B	11/15/2019			11/15/2019 18:00	Madeline Funaro	2136533
SM 2320 B-97	11/15/2019			11/20/2019 18:13	Dale L. Simmons	2136533
SM 2540 C-97	11/15/2019			11/19/2019 15:21	Yijie Li	2136533
SM 2540 D-97	11/15/2019			11/19/2019 15:21	Yijie Li	2136533
SM 4500 F-C-97	11/15/2019			11/20/2019 18:03	Dale L. Simmons	2136533
SM 5310 B-00	11/15/2019			11/18/2019 21:40	Lauren Lees	2136534