

Chemical Analysis Report

CEN-DIST-2019-11-20-02

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

Event Description: **SJR ab Lk Poinsett + HA**
Request ID: **RQ-2019-11-18-57**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

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

Date Certified: 05-DEC-2019 10:08

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: SJR @ S of Lake Poinsett

Collection Date/Time: 11/19/2019 11:30

Field ID: G3CE0023

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2137524	EPA 180.1 Rev. 2.0	Turbidity	4.2	A	NTU	P374540	
	EPA 300.0 Rev. 2.1	Chloride	130		mg Cl/L	P375157	
		Sulfate	34		mg SO4/L	P375161	
		Color (true)	220		PCU	P374546	
	SM 2320 B-97	Total Alkalinity	81	A	mg CaCO3/L	P374900	
	SM 2540 C-97	TDS	452	A	mg/L	P375016	
	SM 2540 D-97	TSS	4	IA	mg/L	P375107	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P374904	
2137525	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P374838	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P374845	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P374699	
	EPA 365.1 Rev. 2.0	Total-P	0.077		mg P/L	P374959	
	SM 5310 B-00	Organic Carbon	31		mg C/L	P374730	
2137526	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.048		mg P/L	P374577	
2137543	EPA 200.7 Rev. 4.4	Barium	31.9		ug/L	P374612	
		Calcium	49.6		mg/L	P374612	
		Iron	440		ug/L	P374612	
		Magnesium	10.3		mg/L	P374612	
		Potassium	3.0		mg/L	P374612	
		Sodium	57.8		mg/L	P374612	
		Zinc	8.1	I	ug/L	P374612	
	EPA 200.8 Rev. 5.4	Aluminum	96		ug/L	P374612	
		Antimony	0.052	I	ug/L	P374612	
		Arsenic	0.80		ug/L	P374612	
		Boron**	35.3		ug/L	P374612	
		Cadmium	0.020	U	ug/L	P374612	
		Chromium	0.40	U	ug/L	P374612	
		Copper	0.68	I	ug/L	P374612	
		Lead	0.24	I	ug/L	P374612	
		Nickel	0.50	U	ug/L	P374612	
		Selenium	0.20	U	ug/L	P374612	
		Silver	0.010	U	ug/L	P374612	
		Thallium	0.10	U	ug/L	P374612	

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: P374540

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374612

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: P374612

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: P375157

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375161

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374838

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: P374845

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374699

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374959

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374577

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

Reference Method: SM 2120 B
Batch ID: P374546

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P374900

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

Reference Method: SM 2540 C-97
Batch ID: P375016

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P375107

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P374904

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: P374730

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: P374612

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	99.6		P	85 - 115
Iron	101		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	97.5		P	85 - 115
Sodium	98.0		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374612

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.0		P	85 - 115
Antimony	95.9		P	85 - 115
Arsenic	96.0		P	85 - 115
Boron	99.9		P	85 - 115
Cadmium	94.8		P	85 - 115
Chromium	94.7		P	85 - 115
Copper	97.8		P	85 - 115
Lead	95.0		P	85 - 115
Nickel	96.6		P	85 - 115
Selenium	88.9		P	85 - 115
Silver	99.7		P	85 - 115
Thallium	97.9		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375157

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375161

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374838

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374845

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374699

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: P374959

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: P374577

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

Reference Method: SM 2120 B
Batch ID: P374546

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P374900

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

Reference Method: SM 4500 F-C-97
Batch ID: P374904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P374730

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	106		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137204	Barium	100		P	80 - 120
2137204	Calcium	100		P	80 - 120
2137204	Iron	99.9		P	80 - 120
2137204	Magnesium	99.3		P	80 - 120
2137204	Potassium	96.3		P	80 - 120
2137204	Sodium	97.5		P	80 - 120
2137204	Zinc	106		P	80 - 120
2137595	Barium	104	102	P/P	80 - 120
2137595	Calcium	97.9		P	80 - 120
2137595	Iron	102	99.2	P/P	80 - 120
2137595	Magnesium	104	99.9	P/P	80 - 120
2137595	Potassium	98.7	96.0	P/P	80 - 120
2137595	Sodium	96.9		P	80 - 120
2137595	Zinc	105	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137204	Aluminum	96.5		P	80 - 120
2137204	Antimony	97.0		P	80 - 120
2137204	Arsenic	98.5		P	80 - 120
2137204	Boron	103		P	80 - 120
2137204	Cadmium	93.7		P	80 - 120
2137204	Chromium	93.2		P	80 - 120
2137204	Copper	97.7		P	80 - 120
2137204	Lead	97.5		P	80 - 120
2137204	Nickel	96.9		P	80 - 120
2137204	Selenium	86.4		P	80 - 120
2137204	Silver	98.2		P	80 - 120
2137204	Thallium	106		P	80 - 120
2137595	Aluminum	96.8	97.9	P/P	80 - 120
2137595	Antimony	96.0	97.8	P/P	80 - 120
2137595	Arsenic	96.4	97.7	P/P	80 - 120
2137595	Boron	101	103	P/P	80 - 120
2137595	Cadmium	93.5	95.0	P/P	80 - 120
2137595	Chromium	91.5	93.8	P/P	80 - 120
2137595	Copper	98.7	99.9	P/P	80 - 120
2137595	Lead	95.5	96.5	P/P	80 - 120
2137595	Nickel	96.2	98.7	P/P	80 - 120
2137595	Selenium	86.7	88.2	P/P	80 - 120
2137595	Silver	97.1	99.7	P/P	80 - 120
2137595	Thallium	99.1	101	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375157

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137195	Chloride	95.8		P	90 - 110
2137255	Chloride	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137195	Sulfate	99.5		P	90 - 110
2137255	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374838

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137612	Ammonia-N	100	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374845

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137571	Kjeldahl Nitrogen	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P374699

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137525	NO2NO3-N	97.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374959

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137418	Total-P	106	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P374577

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137569	O-Phosphate-P	96.8	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P374904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137524	Fluoride	98.2	99.5	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P374730

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2137263	Organic Carbon	102	105	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P374540

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137524	Turbidity	0.239	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P374612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137595	Barium	1.19	Spike	P	0 - 20
2137595	Calcium	0.350	Spike	P	0 - 20
2137595	Iron	2.75	Spike	P	0 - 20
2137595	Magnesium	2.42	Spike	P	0 - 20
2137595	Potassium	2.26	Spike	P	0 - 20
2137595	Sodium	0.274	Spike	P	0 - 20
2137595	Zinc	1.17	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P374612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137595	Aluminum	1.10	Spike	P	0 - 20
2137595	Antimony	1.89	Spike	P	0 - 20
2137595	Arsenic	1.37	Spike	P	0 - 20
2137595	Boron	2.18	Spike	P	0 - 20
2137595	Cadmium	1.63	Spike	P	0 - 20
2137595	Chromium	2.38	Spike	P	0 - 20
2137595	Copper	1.26	Spike	P	0 - 20
2137595	Lead	1.06	Spike	P	0 - 20
2137595	Nickel	2.59	Spike	P	0 - 20
2137595	Selenium	1.71	Spike	P	0 - 20
2137595	Silver	2.71	Spike	P	0 - 20
2137595	Thallium	1.54	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375157

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137195	Chloride	0.682	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137195	Sulfate	1.10	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P374838

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137612	Ammonia-N	0.429	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P374845

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137571	Kjeldahl Nitrogen	0.499	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P374699

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137525	NO2NO3-N	0.226	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P374959

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137418	Total-P	6.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P374577

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137569	O-Phosphate-P	2.35	Spike	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P374546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137603	Color (true)	0.0126	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P374900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137524	Total Alkalinity	0.546	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
 Batch ID: P375016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137524	TDS	2.87	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P374904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137524	Fluoride	0.946	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P374730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2137263	Organic Carbon	1.54	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: A95857

Included Lab Sample IDs: 2137524

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

Reference Method: SM 2120 B

Run ID: A95858

Included Lab Sample IDs: 2137524

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A95869

Included Lab Sample IDs: 2137526

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A95909

Included Lab Sample IDs: 2137525

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A95921

Included Lab Sample IDs: 2137543

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	102	103	P/P	90 - 110
Calcium	100	101	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	100	100	P/P	90 - 110
Sodium	99.0	100	P/P	90 - 110
Zinc	105	106	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A95923

Included Lab Sample IDs: 2137525

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	105	108	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A95959

Included Lab Sample IDs: 2137525

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A95978
Included Lab Sample IDs: 2137524

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A95978
Included Lab Sample IDs: 2137524

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A95998
Included Lab Sample IDs: 2137543

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.1	100	P/P	90 - 110
Antimony	97.4	96.9	P/P	90 - 110
Arsenic	100	102	P/P	90 - 110
Boron	106	104	P/P	90 - 110
Cadmium	99.5	98.7	P/P	90 - 110
Chromium	101	99.7	P/P	90 - 110
Copper	104	105	P/P	90 - 110
Lead	98.7	99.0	P/P	90 - 110
Nickel	102	103	P/P	90 - 110
Selenium	95.9	96.0	P/P	90 - 110
Silver	103	102	P/P	90 - 110
Thallium	94.9	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A96013
Included Lab Sample IDs: 2137525

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.9	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A96048
Included Lab Sample IDs: 2137525

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A96087
Included Lab Sample IDs: 2137524

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

Quality Assurance Report

Calibration Verification

* 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					0.239	
EPA 200.7 Rev. 4.4	Barium	102	100	104	102		1.19
	Calcium	99.6	100	97.9			0.350
	Iron	101	99.9	102	99.2		2.75
	Magnesium	103	99.3	104	99.9		2.42
	Potassium	97.5	96.3	98.7	96.0		2.26
	Sodium	98.0	97.5	96.9			0.274
	Zinc	104	106	105	104		1.17
EPA 200.8 Rev. 5.4	Aluminum	95.0	96.5	96.8	97.9		1.10
	Antimony	95.9	97.0	96.0	97.8		1.89
	Arsenic	96.0	98.5	96.4	97.7		1.37
	Boron	99.9	103	101	103		2.18
	Cadmium	94.8	93.7	93.5	95.0		1.63
	Chromium	94.7	93.2	91.5	93.8		2.38
	Copper	97.8	97.7	98.7	99.9		1.26
	Lead	95.0	97.5	95.5	96.5		1.06
	Nickel	96.6	96.9	96.2	98.7		2.59
	Selenium	88.9	86.4	86.7	88.2		1.71
	Silver	99.7	98.2	97.1	99.7		2.71
	Thallium	97.9	106	99.1	101		1.54
EPA 300.0 Rev. 2.1	Chloride	103	95.8	102		0.682	
	Sulfate	102	99.5	100		1.10	
EPA 350.1 Rev. 2.0	Ammonia-N	97.9	100	100			0.429
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	104	105			0.499
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	97.2				0.226
EPA 365.1 Rev. 2.0	Total-P	103	106	98.9			6.23
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	96.8	99.1			2.35
SM 2120 B	Color (true)	102				0.0126	
SM 2320 B-97	Total Alkalinity	101				0.546	
SM 2540 C-97	TDS					2.87	
SM 4500 F-C-97	Fluoride	97.8	98.2	99.5			0.946
SM 5310 B-00	Organic Carbon	106	102	105			1.54

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2137524
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2137543
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2137543
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2137524
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2137524
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2137525
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2137525
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2137525
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2137525

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	2137526
SM 2120 B / E31780	True Color measured at 450 nm	2137524
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2137524
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2137524
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2137524
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2137524
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2137525

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	11/20/2019			11/20/2019 16:28	Samantha Davila	2137524
EPA 200.7 Rev. 4.4	11/20/2019	11/21/2019 15:55	Elliott D. Healy	11/22/2019 14:06	Betina Topolski	2137543
EPA 200.8 Rev. 5.4	11/20/2019	11/21/2019 15:55	Elliott D. Healy	11/26/2019 23:39	Robert K Palmer	2137543
EPA 300.0 Rev. 2.1	11/20/2019			12/03/2019 12:00	Lipi Saha	2137524
EPA 350.1 Rev. 2.0	11/20/2019			11/25/2019 11:35	Ping Hua	2137525
EPA 351.2 Rev. 2.0	11/20/2019	11/26/2019 12:31	Sima Feizi	11/27/2019 15:14	Jhamieka S. Greenwood	2137525
EPA 353.2 Rev. 2.0	11/20/2019			11/22/2019 10:52	Beverly Y. Sanders	2137525
EPA 365.1 Rev. 2.0	11/20/2019	11/27/2019 13:48	Yen Ta	12/02/2019 14:20	Benjamin T. Nordmann	2137525
EPA 365.1 Rev. 2.0 dissolved	11/20/2019			11/20/2019 15:35	Ping Hua	2137526
SM 2120 B	11/20/2019			11/20/2019 18:37	Julia Storbeck	2137524
SM 2320 B-97	11/20/2019			11/26/2019 07:46	Dale L. Simmons	2137524
SM 2540 C-97	11/20/2019			11/22/2019 15:46	Yijie Li	2137524
SM 2540 D-97	11/20/2019			11/22/2019 15:21	Yijie Li	2137524
SM 4500 F-C-97	11/20/2019			11/26/2019 07:35	Dale L. Simmons	2137524
SM 5310 B-00	11/20/2019			11/22/2019 21:52	Lauren Lees	2137525