

Chemical Analysis Report

SO-DIST-2021-05-25-01

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

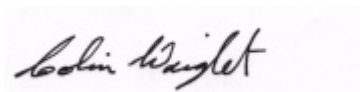
Event Description: **2021 SMP: DeSoto Cricks**
Request ID: **RQ-2021-05-24-13**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: William Mullen

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: Colin Wright, Program Administrator

Date Certified: 15-JUN-2021 10:23

A handwritten signature in black ink, appearing to read "Colin Wright", 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: Hawthorne Creek @ Reynolds St

Collection Date/Time: 05/24/2021 11:30

Field ID: G3SD0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2249890	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P398746	
	EPA 300.0 Rev. 2.1	Chloride	220		mg Cl/L	P399194	
		Sulfate	190		mg SO4/L	P399196	
		Color (true)	38		PCU	P398739	
	SM 2320 B-2011	Total Alkalinity	158		mg CaCO3/L	P398968	
	SM 2540 C-2011	TDS	734		mg/L	P399198	
	SM 2540 D-2011	TSS	4	I	mg/L	P399001	
	SM 4500 F-C-2011	Fluoride	0.85		mg F/L	P398971	
2249891	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P399517	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P398948	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P398776	
	EPA 365.1 Rev. 2.0	Total-P	0.40		mg P/L	P398921	
	SM 5310 B-2011	Organic Carbon	8.9		mg C/L	P398926	
2249892	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.35		mg P/L	P398749	
2249899	EPA 200.7 Rev. 4.4	Barium	46.5		ug/L	P398817	
		Calcium	115		mg/L	P398817	
		Iron	86	I	ug/L	P398817	
		Magnesium	39.7		mg/L	P398817	
		Manganese	35.7		ug/L	P398817	
		Potassium	8.7		mg/L	P398817	
		Sodium	95.8		mg/L	P398817	
	EPA 200.8 Rev. 5.4	Zinc	5.6	I	ug/L	P398817	
		Aluminum	22		ug/L	P398817	
		Antimony	0.44		ug/L	P399110	
		Arsenic	2.48		ug/L	P399110	
		Boron**	61.9		ug/L	P399110	
		Cadmium	0.027	I	ug/L	P399110	
		Chromium	0.40	U	ug/L	P398817	
		Copper	0.86		ug/L	P398817	
		Lead	0.20	U	ug/L	P399110	
		Nickel	1.3	I	ug/L	P398817	
		Selenium	0.20	U	ug/L	P398817	
		Silver	0.010	U	ug/L	P398817	
		Thallium	0.10	U	ug/L	P399110	
	SM 2340B	Hardness	450		mg/L	P398817	

Ref. Method and Comment:

SM 2540 D-2011: 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: P398746

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398817

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
Manganese	1.0	U	ug/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: P398817

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399110

Component	Result	Code	Units
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Lead	0.20	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399194

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399196

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399517

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398948

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398776

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398921

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398749

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

Reference Method: SM 2120 B-2011
Batch ID: P398739

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P398968

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

Reference Method: SM 2540 C-2011
Batch ID: P399198

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P399001

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P398971

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P398926

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: P398817

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	97.5		P	85 - 115
Calcium	107		P	85 - 115
Iron	103		P	85 - 115
Magnesium	104		P	85 - 115
Manganese	99.1		P	85 - 115
Potassium	101		P	85 - 115
Sodium	103		P	85 - 115
Zinc	95.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398817

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.3		P	80 - 120
Chromium	95.2		P	80 - 120
Copper	97.1		P	80 - 120
Nickel	97.8		P	80 - 120
Selenium	97.1		P	80 - 120
Silver	98.8		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P399110

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Antimony	103		P	85 - 115
Arsenic	100		P	85 - 115
Boron	97.8		P	85 - 115
Cadmium	102		P	85 - 115
Lead	112		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399194

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399196

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399517

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.6		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398948

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398776

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398921

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398749

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.6		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P398739

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.2		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P398968

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.6		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P398971

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P398926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P398817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249623	Barium	99.1		P	80 - 120
2249623	Calcium	103		P	80 - 120
2249623	Iron	107		P	80 - 120
2249623	Magnesium	101		P	80 - 120
2249623	Manganese	100		P	80 - 120
2249623	Potassium	101		P	80 - 120
2249623	Sodium	104		P	80 - 120
2249623	Zinc	99.1		P	80 - 120
2249798	Barium	100	102	P/P	80 - 120
2249798	Calcium	110	110	P/P	80 - 120
2249798	Iron	105	105	P/P	80 - 120
2249798	Magnesium	106	105	P/P	80 - 120
2249798	Manganese	102	102	P/P	80 - 120
2249798	Potassium	100	98.9	P/P	80 - 120
2249798	Sodium	103		P	80 - 120
2249798	Zinc	102	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P398817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249623	Aluminum	119		P	80 - 120
2249623	Chromium	118		P	80 - 120
2249623	Copper	119		P	80 - 120
2249623	Nickel	120		P	80 - 120
2249623	Selenium	119		P	80 - 120
2249623	Silver	97.8		P	80 - 120
2249798	Aluminum	95.5	95.0	P/P	80 - 120
2249798	Chromium	95.9	96.5	P/P	80 - 120
2249798	Copper	97.6	97.9	P/P	80 - 120
2249798	Nickel	95.7	94.3	P/P	80 - 120
2249798	Selenium	96.1	95.2	P/P	80 - 120
2249798	Silver	98.7	98.5	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P399110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249624	Antimony	101	100	P/P	80 - 120
2249624	Arsenic	100	98.4	P/P	80 - 120
2249624	Boron	98.5	95.5	P/P	80 - 120
2249624	Cadmium	102	102	P/P	80 - 120
2249624	Lead	113	111	P/P	80 - 120
2249624	Thallium	104	104	P/P	80 - 120
2249920	Antimony	103		P	80 - 120
2249920	Arsenic	102		P	80 - 120
2249920	Boron	97.3		P	80 - 120
2249920	Cadmium	102		P	80 - 120
2249920	Lead	114		P	80 - 120
2249920	Thallium	106		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249571	Chloride	91.2		P	90 - 110
2249944	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249571	Sulfate	100		P	90 - 110
2249944	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399517

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249891	Ammonia-N	92.4	90.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249826	Kjeldahl Nitrogen	106	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398776

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249808	NO2NO3-N	97.5	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249809	Total-P	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398749

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249782	O-Phosphate-P	94.2	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P398971

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249937	Fluoride	97.2	97.8	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P398926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2249572	Organic Carbon	95.2	96.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P398746

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249616	Turbidity	0.976	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P398817

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249798	Barium	1.22	Spike	P	0 - 20
2249798	Calcium	0.0379	Spike	P	0 - 20
2249798	Iron	0.252	Spike	P	0 - 20
2249798	Magnesium	1.24	Spike	P	0 - 20
2249798	Manganese	0.0800	Spike	P	0 - 20
2249798	Potassium	1.33	Spike	P	0 - 20
2249798	Sodium	0.722	Spike	P	0 - 20
2249798	Zinc	0.627	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P398817

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249798	Aluminum	0.509	Spike	P	0 - 20
2249798	Chromium	0.625	Spike	P	0 - 20
2249798	Copper	0.342	Spike	P	0 - 20
2249798	Nickel	1.41	Spike	P	0 - 20
2249798	Selenium	0.886	Spike	P	0 - 20
2249798	Silver	0.249	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P399110

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249624	Antimony	1.45	Spike	P	0 - 20
2249624	Arsenic	1.89	Spike	P	0 - 20
2249624	Boron	2.76	Spike	P	0 - 20
2249624	Cadmium	0.00947	Spike	P	0 - 20
2249624	Lead	1.94	Spike	P	0 - 20
2249624	Thallium	0.216	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P399194

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249944	Chloride	0.0352	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P399196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249944	Sulfate	0.515	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399517

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249891	Ammonia-N	1.44	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249826	Kjeldahl Nitrogen	3.31	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249808	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249809	Total-P	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249782	O-Phosphate-P	3.03	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P398739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249616	Color (true)	0.908	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P398968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249937	Total Alkalinity	1.38	Sample	P	0 - 5.2

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P399198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249807	TDS	0.837	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P398971

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249937	Fluoride	0.464	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P398926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2249572	Organic Carbon	0.907	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B-2011

Run ID: A105647

Included Lab Sample IDs: 2249890

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.3	99.3	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A105648

Included Lab Sample IDs: 2249890

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A105649

Included Lab Sample IDs: 2249892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A105660

Included Lab Sample IDs: 2249891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A105730

Included Lab Sample IDs: 2249891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	98.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105746

Included Lab Sample IDs: 2249899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	103	P/P	90 - 110
Chromium	95.4	96.0	P/P	90 - 110
Copper	97.7	101	P/P	90 - 110
Nickel	98.3	101	P/P	90 - 110
Selenium	99.7	101	P/P	90 - 110
Silver	96.9	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105754

Included Lab Sample IDs: 2249891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	105	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A105756

Included Lab Sample IDs: 2249890

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.6	97.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A105756

Included Lab Sample IDs: 2249890

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A105794

Included Lab Sample IDs: 2249891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	92.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A105834

Included Lab Sample IDs: 2249890

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	100	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A105861

Included Lab Sample IDs: 2249899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	102	102	P/P	90 - 110
Calcium	101	98.5	P/P	90 - 110
Iron	102	100	P/P	90 - 110
Magnesium	102	99.5	P/P	90 - 110
Manganese	103	103	P/P	90 - 110
Potassium	101	100	P/P	90 - 110
Sodium	101	101	P/P	90 - 110
Zinc	104	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105950

Included Lab Sample IDs: 2249899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	104	104	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Boron	98.8	101	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Thallium	96.9	95.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105975

Included Lab Sample IDs: 2249899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	101	109	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A105993

Included Lab Sample IDs: 2249891

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.6	97.0	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.976	
EPA 200.7 Rev. 4.4	Barium	97.5	99.1	100	102		1.22
	Calcium	107	103	110	110		0.0379
	Iron	103	107	105	105		0.252
	Magnesium	104	101	106	105		1.24
	Manganese	99.1	100	102	102		0.0800
	Potassium	101	101	100	98.9		1.33
	Sodium	103	104	103			0.722
	Zinc	95.5	99.1	102	102		0.627
EPA 200.8 Rev. 5.4	Aluminum	96.3	95.5	95.0	119		0.509
	Antimony	103	101	100	103		1.45
	Arsenic	100	100	98.4	102		1.89
	Boron	97.8	98.5	95.5	97.3		2.76
	Cadmium	102	102	102	102		0.0094
	Chromium	95.2	95.9	96.5	118		0.625
	Copper	97.1	97.6	97.9	119		0.342
	Lead	112	113	111	114		1.94
	Nickel	97.8	95.7	94.3	120		1.41
	Selenium	97.1	96.1	95.2	119		0.886
	Silver	98.8	98.7	98.5	97.8		0.249
	Thallium	102	104	104	106		0.216
EPA 300.0 Rev. 2.1	Chloride	102	102	91.2		0.0352	
	Sulfate	97.4	102	100		0.515	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	92.4	90.0			1.44
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	106	101			3.31
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	97.5	97.5			0.0
EPA 365.1 Rev. 2.0	Total-P	105	105	106			1.49
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	94.2	97.1			3.03
SM 2120 B-2011	Color (true)	98.2				0.908	
SM 2320 B-2011	Total Alkalinity	97.6				1.38	
SM 2540 C-2011	TDS					0.837	
SM 4500 F-C-2011	Fluoride	97.5	97.2	97.8			0.464
SM 5310 B-2011	Organic Carbon	97.6	95.2	96.2			0.907

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2249890
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2249899
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2249899
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2249890
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2249890
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2249891
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2249891
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2249891
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2249891
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2249892
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2249890
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2249890
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2249899

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2249890
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2249890
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2249890
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2249891

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	05/25/2021			05/25/2021 15:36	Yen Ta	2249890
EPA 200.7 Rev. 4.4	05/25/2021	05/26/2021 15:10	Elliott D. Healy	06/03/2021 17:41	Betina Topolski	2249899
EPA 200.8 Rev. 5.4	05/25/2021	05/26/2021 15:10	Elliott D. Healy	05/28/2021 03:24	McKinley C Carter	2249899
	05/25/2021	06/02/2021 16:20	Elliott D. Healy	06/09/2021 02:00	Alexander Thompson	2249899
	05/25/2021	06/02/2021 16:20	Elliott D. Healy	06/09/2021 17:56	Alexander Thompson	2249899
EPA 300.0 Rev. 2.1	05/25/2021			06/03/2021 22:30	Lipi Saha	2249890
EPA 350.1 Rev. 2.0	05/25/2021			06/10/2021 13:23	Roberta Tatti	2249891
EPA 351.2 Rev. 2.0	05/25/2021	05/27/2021 13:11	Benjamin T. Nordmann	06/01/2021 13:57	Virginia P. Brown	2249891
EPA 353.2 Rev. 2.0	05/25/2021			05/26/2021 10:31	Beverly Y. Sanders	2249891
EPA 365.1 Rev. 2.0	05/25/2021	05/27/2021 13:22	Yen Ta	05/28/2021 10:54	Shengyu Ding	2249891
EPA 365.1 Rev. 2.0 dissolved	05/25/2021			05/25/2021 16:03	Ping Hua	2249892
SM 2120 B-2011	05/25/2021			05/25/2021 15:39	Sarah A Nixon	2249890
SM 2320 B-2011	05/25/2021			05/28/2021 02:40	Dale L. Simmons	2249890
SM 2340B	05/25/2021			06/03/2021 17:41	Betina Topolski	2249899
SM 2540 C-2011	05/25/2021			05/27/2021 14:42	Yijie Li	2249890
SM 2540 D-2011	05/25/2021			05/27/2021 14:42	Yijie Li	2249890
SM 4500 F-C-2011	05/25/2021			05/28/2021 02:40	Dale L. Simmons	2249890
SM 5310 B-2011	05/25/2021			05/27/2021 10:15	Madeline Gruver	2249891