Chemical Analysis Report

NE-DIST-2021-02-11-02

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

Event Description: **LSJR West 2021**
Request ID: **RQ-2021-02-08-32**
Customer: **NE-DIST**
Project ID: **SMP**

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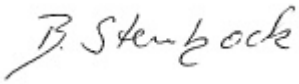
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 05-MAR-2021 17:32



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: Cedar CR Blanding Blvd BR RT 21 **Collection Date/Time: 02/10/2021 11:50**

Field ID: 20030083 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2224892	EPA 180.1 Rev. 2.0	Turbidity	8.2		NTU	P393680	
	EPA 300.0 Rev. 2.1	Bromide	0.29		mg Br/L	P394011	
		Chloride	87		mg Cl/L	P393882	
	SM 2320 B-2011	Total Alkalinity	71	A	mg CaCO3/L	P393787	
	SM 2540 D-2011	TSS	7	I	mg/L	P394095	
	SM 4500 F-C-2011	Fluoride	0.080	I	mg F/L	P393945	
2224893	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P394071	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P393893	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P393756	
	EPA 365.1 Rev. 2.0	Total-P	0.099		mg P/L	P393777	
	SM 5310 B-2011	Organic Carbon	9.9		mg C/L	P394395	
2224894	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P393676	
2224900	EPA 200.7 Rev. 4.4	Calcium	33.5		mg/L	P393675	
		Iron	510		ug/L	P393675	
		Magnesium	8.46		mg/L	P393675	
		Manganese	25.7		ug/L	P393675	
		Zinc	20	I	ug/L	P393675	
	EPA 200.8 Rev. 5.4	Aluminum	252		ug/L	P393675	
		Antimony	0.32		ug/L	P393675	
		Arsenic	1.18		ug/L	P393675	
		Beryllium	0.010	U	ug/L	P393675	
		Cadmium	0.020	U	ug/L	P393675	
		Chromium	0.80	I	ug/L	P393675	
		Copper	3.78		ug/L	P393675	
		Lead	1.96		ug/L	P393675	
		Nickel	0.65	I	ug/L	P393675	
		Selenium	0.20	U	ug/L	P393675	
		Silver	0.010	U	ug/L	P393675	
		Thallium	0.10	U	ug/L	P393675	

Ref. Method and Comment:
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable because of high analyte concentration in the QC sample.

Sample Location: Wills BR at Watergate Rd **Collection Date/Time: 02/10/2021 10:35**

Field ID: G2NE1183 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2224889	EPA 180.1 Rev. 2.0	Turbidity	12	A	NTU	P393680	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P393882	
		Sulfate	15		mg SO4/L	P393885	
	SM 2120 B-2011	Color (true)	64		PCU	P393683	
	SM 2320 B-2011	Total Alkalinity	56		mg CaCO3/L	P393787	
	SM 2540 C-2011	TDS	131		mg/L	P394108	
	SM 2540 D-2011	TSS	6	I	mg/L	P394092	
	SM 4500 F-C-2011	Fluoride	0.053	I	mg F/L	P393944	
2224890	EPA 350.1 Rev. 2.0	Ammonia-N	0.13		mg N/L	P394071	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P393893	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.29		mg N/L	P393756	
	EPA 365.1 Rev. 2.0	Total-P	0.078		mg P/L	P393777	
	SM 5310 B-2011	Organic Carbon	9.7		mg C/L	P394395	
2224891	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P393676	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2120 B-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P393680

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P393675

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P393675

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
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: P393882

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393885

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394011

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394071

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: P393893

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393756

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393777

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393676

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

Reference Method: SM 2120 B-2011
Batch ID: P393683

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P393787

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

Reference Method: SM 2540 C-2011
Batch ID: P394108

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P394092

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P394095

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P393944

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P393945

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P394395

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: P393675

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	104		P	85 - 115
Magnesium	103		P	85 - 115
Manganese	104		P	85 - 115
Zinc	111		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P393675

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	104		P	85 - 115
Antimony	99.5		P	85 - 115
Arsenic	99.3		P	85 - 115
Beryllium	89.5		P	85 - 115
Cadmium	97.6		P	85 - 115
Chromium	95.7		P	85 - 115
Copper	96.8		P	85 - 115
Lead	102		P	85 - 115
Nickel	95.7		P	85 - 115
Selenium	99.3		P	85 - 115
Silver	113		P	85 - 115
Thallium	94.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393882

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393885

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394011

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	99.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394071

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393893

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: P393756

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393777

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393676

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.2		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P393683

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.5		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P393787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.5		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P393944

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.4		P	90 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P393945

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	92.1		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P394395

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.3		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P393675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224718	Iron	108	109	P/P	80 - 120
2224718	Magnesium	104		P	80 - 120
2224718	Manganese	104	105	P/P	80 - 120
2224718	Zinc	110	112	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P393675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224718	Aluminum	103	95.2	P/P	80 - 120
2224718	Antimony	104	95.8	P/P	80 - 120
2224718	Arsenic	102	94.0	P/P	80 - 120
2224718	Beryllium	88.5	84.2	P/P	80 - 120
2224718	Cadmium	100	91.8	P/P	80 - 120
2224718	Chromium	99.5	91.0	P/P	80 - 120
2224718	Copper	93.8	85.6	P/P	80 - 120
2224718	Lead	105	97.6	P/P	80 - 120
2224718	Nickel	95.6	87.7	P/P	80 - 120
2224718	Selenium	98.8	90.6	P/P	80 - 120
2224718	Silver	99.3	106	P/P	80 - 120
2224718	Thallium	97.9	92.7	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224866	Chloride	106		P	90 - 110
2224986	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393885

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224866	Sulfate	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394011

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224351	Bromide	95.5	96.8	P/P	90 - 110
2225313	Bromide	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394071

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224851	Ammonia-N	96.6	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224890	NO2NO3-N	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393777

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224893	Total-P	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393676

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224793	O-Phosphate-P	98.0	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P393944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224849	Fluoride	94.6	94.1	P/P	94 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P393945

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224892	Fluoride	93.9	94.5	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P394395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2224940	Organic Carbon	91.4		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P393680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224889	Turbidity	1.71	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P393675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224718	Calcium	1.36	Spike	P	0 - 20
2224718	Iron	0.942	Spike	P	0 - 20
2224718	Magnesium	1.42	Spike	P	0 - 20
2224718	Manganese	0.940	Spike	P	0 - 20
2224718	Zinc	1.59	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P393675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224718	Aluminum	7.79	Spike	P	0 - 20
2224718	Antimony	8.15	Spike	P	0 - 20
2224718	Arsenic	8.59	Spike	P	0 - 20
2224718	Beryllium	5.07	Spike	P	0 - 20
2224718	Cadmium	8.65	Spike	P	0 - 20
2224718	Chromium	8.94	Spike	P	0 - 20
2224718	Copper	8.57	Spike	P	0 - 20
2224718	Lead	7.19	Spike	P	0 - 20
2224718	Nickel	8.59	Spike	P	0 - 20
2224718	Selenium	8.54	Spike	P	0 - 20
2224718	Silver	6.37	Spike	P	0 - 20
2224718	Thallium	5.53	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224866	Chloride	0.00940	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393885

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224866	Sulfate	1.00	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P394011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224351	Bromide	0.855	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P394071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224851	Ammonia-N	0.617	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224867	Kjeldahl Nitrogen	6.77	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P393756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224890	NO2NO3-N	0.404	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224893	Total-P	0.972	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P393676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224793	O-Phosphate-P	1.03	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P393787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224892	Total Alkalinity	1.49	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P394108

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224788	TDS	3.21	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P394095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224811	TSS	5.13	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P393944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224849	Fluoride	0.484	Spike	P	0 - 2.8

Reference Method: SM 4500 F-C-2011
Batch ID: P393945

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224892	Fluoride	0.484	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P394395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2224940	Organic Carbon	1.84	Sample	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A103541
Included Lab Sample IDs: 2224891, 2224894

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	98.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A103542
Included Lab Sample IDs: 2224889, 2224892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: SM 2120 B-2011
Run ID: A103543
Included Lab Sample IDs: 2224889

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	98.3	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A103580
Included Lab Sample IDs: 2224890, 2224893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	106	106	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A103594
Included Lab Sample IDs: 2224889, 2224892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.1	99.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A103597
Included Lab Sample IDs: 2224900

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	90 - 110
Iron	102	101	P/P	90 - 110
Magnesium	101	100	P/P	90 - 110
Manganese	101	101	P/P	90 - 110
Zinc	109	110	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A103606
Included Lab Sample IDs: 2224890, 2224893

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A103628
Included Lab Sample IDs: 2224889, 2224892

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 300.0 Rev. 2.1
Run ID: A103651
Included Lab Sample IDs: 2224892

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

Reference Method: SM 4500 F-C-2011
Run ID: A103652
Included Lab Sample IDs: 2224889, 2224892

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.2	95.2	P/P	90 - 110
Fluoride	98.0	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A103666
Included Lab Sample IDs: 2224890, 2224893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	97.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A103671
Included Lab Sample IDs: 2224900

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	103	P/P	90 - 110
Antimony	99.2	96.0	P/P	90 - 110
Arsenic	99.8	98.2	P/P	90 - 110
Beryllium	93.6	91.7	P/P	90 - 110
Cadmium	102	99.9	P/P	90 - 110
Chromium	98.5	95.4	P/P	90 - 110
Copper	96.5	94.8	P/P	90 - 110
Lead	107	106	P/P	90 - 110
Nickel	98.0	95.0	P/P	90 - 110
Selenium	99.8	98.7	P/P	90 - 110
Thallium	103	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A103712
Included Lab Sample IDs: 2224890, 2224893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.1	97.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A103714
Included Lab Sample IDs: 2224900

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	108	107	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A103849
Included Lab Sample IDs: 2224890, 2224893

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.4	94.6	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			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						1.71	
EPA 200.7 Rev. 4.4	Calcium	104						1.36
	Iron	104	108	109				0.942
	Magnesium	103	104					1.42
	Manganese	104	104	105				0.940
	Zinc	111	110	112				1.59
EPA 200.8 Rev. 5.4	Aluminum	104	103	95.2				7.79
	Antimony	99.5	104	95.8				8.15
	Arsenic	99.3	102	94.0				8.59
	Beryllium	89.5	88.5	84.2				5.07
	Cadmium	97.6	100	91.8				8.65
	Chromium	95.7	99.5	91.0				8.94
	Copper	96.8	93.8	85.6				8.57
	Lead	102	105	97.6				7.19
	Nickel	95.7	95.6	87.7				8.59
	Selenium	99.3	98.8	90.6				8.54
	Silver	113	99.3	106				6.37
	Thallium	94.4	97.9	92.7				5.53
EPA 300.0 Rev. 2.1	Bromide	99.3	95.5	96.8	97.9			0.855
	Chloride	103	106	101			0.0094	
	Sulfate	103	105				1.00	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	96.6	97.4				0.617
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105						6.77
EPA 353.2 Rev. 2.0	NO2NO3-N	106	99.8					0.404
EPA 365.1 Rev. 2.0	Total-P	106	106	107				0.972
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.2	98.0	97.0				1.03
SM 2120 B-2011	Color (true)	97.5						
SM 2320 B-2011	Total Alkalinity	96.5					1.49	
SM 2540 C-2011	TDS						3.21	
SM 2540 D-2011	TSS						5.13	
SM 4500 F-C-2011	Fluoride	93.4	94.1	94.6				0.484
	Fluoride	92.1	93.9	94.5				0.484
SM 5310 B-2011	Organic Carbon	97.3	91.4				1.84	

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2224889, 2224892
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2224900
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2224900
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2224892
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2224889, 2224892
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2224889
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2224890, 2224893
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2224890, 2224893
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2224890, 2224893
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2224890, 2224893
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2224891, 2224894
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2224889
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2224889, 2224892

Reference Method Descriptions

Method	Description	Associated Samples
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2224889
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2224889, 2224892
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2224889, 2224892
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2224890, 2224893

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	02/11/2021			02/11/2021 15:08	Yen Ta	2224889, 2224892
EPA 200.7 Rev. 4.4	02/11/2021	02/11/2021 15:50	Elliott D. Healy	02/15/2021 16:07	Betina Topolski	2224900
EPA 200.8 Rev. 5.4	02/11/2021	02/11/2021 15:50	Elliott D. Healy	02/18/2021 21:16	Alexander Thompson	2224900
	02/11/2021	02/11/2021 15:50	Elliott D. Healy	02/19/2021 17:40	Alexander Thompson	2224900
EPA 300.0 Rev. 2.1	02/11/2021			02/16/2021 13:00	Lipi Saha	2224889
	02/11/2021			02/16/2021 13:12	Lipi Saha	2224892
	02/11/2021			02/18/2021 18:28	Lipi Saha	2224892
EPA 350.1 Rev. 2.0	02/11/2021			02/22/2021 19:01	Ping Hua	2224890
	02/11/2021			02/22/2021 19:02	Ping Hua	2224893
EPA 351.2 Rev. 2.0	02/11/2021	02/17/2021 12:20	Yen Ta	02/18/2021 16:34	Julia Storbeck	2224890
	02/11/2021	02/17/2021 12:20	Yen Ta	02/18/2021 16:36	Julia Storbeck	2224893
EPA 353.2 Rev. 2.0	02/11/2021			02/15/2021 10:08	Beverly Y. Sanders	2224890
	02/11/2021			02/15/2021 10:14	Beverly Y. Sanders	2224893
EPA 365.1 Rev. 2.0	02/11/2021	02/15/2021 19:15	Madeline Gruver	02/16/2021 12:33	Shengyu Wang	2224890
	02/11/2021	02/15/2021 19:15	Madeline Gruver	02/16/2021 12:34	Shengyu Wang	2224893
EPA 365.1 Rev. 2.0 dissolved	02/11/2021			02/11/2021 15:11	Blanca Fach	2224891
	02/11/2021			02/11/2021 15:12	Blanca Fach	2224894
SM 2120 B-2011	02/11/2021			02/11/2021 17:37	Madeline Gruver	2224889
SM 2320 B-2011	02/11/2021			02/12/2021 22:13	Dale L. Simmons	2224892
	02/11/2021			02/12/2021 22:46	Dale L. Simmons	2224889
SM 2540 C-2011	02/11/2021			02/15/2021 14:26	Yijie Li	2224889
SM 2540 D-2011	02/11/2021			02/15/2021 14:26	Yijie Li	2224889, 2224892
SM 4500 F-C-2011	02/11/2021			02/18/2021 10:14	Dale L. Simmons	2224889
	02/11/2021			02/18/2021 11:34	Dale L. Simmons	2224892
SM 5310 B-2011	02/11/2021			02/26/2021 05:09	Madeline Gruver	2224890
	02/11/2021			02/26/2021 05:20	Madeline Gruver	2224893