

Chemical Analysis Report

NE-DIST-2021-01-22-01

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

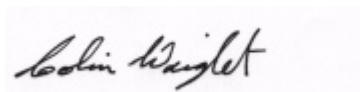
Event Description: **LSJR South West Boat 2021**
Request ID: **RQ-2021-01-18-16**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 12-FEB-2021 08:20

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular 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: Black CR @ RR Bridge Below Milllog Cr

Collection Date/Time: 01/21/2021 10:30

Field ID: 20030204

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220807	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P392826	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P392954	
		Sulfate	5.1		mg SO4/L	P392956	
	SM 2120 B-2011	Color (true)	140		PCU	P392771	
	SM 2320 B-2011	Total Alkalinity	18		mg CaCO3/L	P392871	
	SM 2540 C-2011	TDS	68		mg/L	P393353	
	SM 2540 D-2011	TSS	2	U	mg/L	P393296	
	SM 4500 F-C-2011	Fluoride	0.054	I	mg F/L	P393220	
2220808	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P393458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P393300	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.049		mg N/L	P392884	
	EPA 365.1 Rev. 2.0	Total-P	0.067		mg P/L	P393247	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P393048	
2220809	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.048		mg P/L	P392769	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Swimming Pen CR @ Sr 220

Collection Date/Time: 01/21/2021 11:35

Field ID: 20030191

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220804	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P392826	
	EPA 300.0 Rev. 2.1	Chloride	250		mg Cl/L	P392955	
		Sulfate	54		mg SO4/L	P392957	
		Color (true)	110		PCU	P392771	
	SM 2320 B-2011	Total Alkalinity	60		mg CaCO3/L	P392871	
	SM 2540 C-2011	TDS	590		mg/L	P393353	
	SM 2540 D-2011	TSS	2	I	mg/L	P393296	
	SM 4500 F-C-2011	Fluoride	0.10		mg F/L	P393220	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P393458	
2220805	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P393181	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P392884	
	EPA 365.1 Rev. 2.0	Total-P	0.085		mg P/L	P393247	
	SM 5310 B-2011	Organic Carbon	18		mg C/L	P393048	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.047		mg P/L	P392769	
2220815	EPA 200.7 Rev. 4.4	Barium	10.9		ug/L	P392911	
		Calcium	34.5		mg/L	P392911	
		Iron	120	I	ug/L	P392911	
		Magnesium	21.4		mg/L	P392911	
		Manganese	6.2		ug/L	P392911	
		Potassium	6.4		mg/L	P392911	
		Sodium	143		mg/L	P392911	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P392911	
		Aluminum	58		ug/L	P392911	
		Antimony	0.10	I	ug/L	P392911	
		Arsenic	1.86		ug/L	P392911	
		Beryllium	0.014	I	ug/L	P392911	
		Boron**	80.1		ug/L	P392911	
		Cadmium	0.020	U	ug/L	P392911	
		Chromium	0.40	U	ug/L	P392911	
		Copper	1.14		ug/L	P392911	
		Lead	0.34	I	ug/L	P392911	
		Nickel	0.50	U	ug/L	P392911	
		Selenium	0.20	U	ug/L	P392911	
		Silver	0.010	U	ug/L	P392911	
		Thallium	0.10	U	ug/L	P392911	

Ref. Method and Comment:

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.

Sample Location: Swimming Pen Creek at Eagles Creek Dr.

Collection Date/Time: 01/21/2021 12:10

Field ID: G2NE1188

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220816	EPA 200.7 Rev. 4.4	Barium	28.7		ug/L	P392911	
		Calcium	33.4		mg/L	P392911	
		Iron	610		ug/L	P392911	
		Magnesium	3.73		mg/L	P392911	
		Manganese	7.8		ug/L	P392911	
		Potassium	3.2		mg/L	P392911	
		Sodium	19.1		mg/L	P392911	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P392911	
		Aluminum	30		ug/L	P392911	
		Antimony	0.13	I	ug/L	P392911	
		Arsenic	0.58		ug/L	P392911	
		Beryllium	0.010	U	ug/L	P392911	
		Boron**	39.1		ug/L	P392911	
		Cadmium	0.020	U	ug/L	P392911	
		Chromium	0.40	U	ug/L	P392911	
		Copper	3.55		ug/L	P392911	
		Lead	0.20	U	ug/L	P392911	
		Nickel	0.52	I	ug/L	P392911	
		Selenium	0.20	U	ug/L	P392911	
		Silver	0.010	U	ug/L	P392911	
		Thallium	0.10	U	ug/L	P392911	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P392826

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P392911

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: P392911

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
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: P392954

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392955

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392956

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392957

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393458

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393181

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393300

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392884

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393247

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392769

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

Reference Method: SM 2120 B-2011
Batch ID: P392771

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P392871

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P393353

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P393296

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P393220

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P393048

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: P392911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	98.8		P	85 - 115
Calcium	106		P	85 - 115
Iron	103		P	85 - 115
Magnesium	105		P	85 - 115
Manganese	99.9		P	85 - 115
Potassium	101		P	85 - 115
Sodium	102		P	85 - 115
Zinc	98.1		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P392911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	86.7		P	85 - 115
Antimony	96.2		P	85 - 115
Arsenic	90.5		P	85 - 115
Beryllium	94.2		P	85 - 115
Boron	94.7		P	85 - 115
Cadmium	88.0		P	85 - 115
Chromium	101		P	85 - 115
Copper	98.5		P	85 - 115
Lead	93.2		P	85 - 115
Nickel	99.3		P	85 - 115
Selenium	89.4		P	85 - 115
Silver	101		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392954

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392955

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392956

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392957

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.7		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393458

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393181

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393300

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392884

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: P393247

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: P392769

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

Reference Method: SM 2120 B-2011
Batch ID: P392771

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.7		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P392871

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.4		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P393220

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	90 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P393048

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P392911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220668	Barium	98.8		P	80 - 120
2220668	Calcium	102		P	80 - 120
2220668	Iron	98.3		P	80 - 120
2220668	Magnesium	101		P	80 - 120
2220668	Manganese	97.6		P	80 - 120
2220668	Potassium	100		P	80 - 120
2220668	Sodium	101		P	80 - 120
2220668	Zinc	97.8		P	80 - 120
2220913	Barium	103	103	P/P	80 - 120
2220913	Calcium	108	109	P/P	80 - 120
2220913	Iron	105	107	P/P	80 - 120
2220913	Magnesium	106	108	P/P	80 - 120
2220913	Manganese	103	103	P/P	80 - 120
2220913	Potassium	106	107	P/P	80 - 120
2220913	Sodium	104	105	P/P	80 - 120
2220913	Zinc	99.1	98.7	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P392911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220668	Aluminum	88.3		P	80 - 120
2220668	Antimony	98.6		P	80 - 120
2220668	Arsenic	91.1		P	80 - 120
2220668	Beryllium	93.8		P	80 - 120
2220668	Boron	95.7		P	80 - 120
2220668	Cadmium	89.0		P	80 - 120
2220668	Chromium	96.0		P	80 - 120
2220668	Copper	94.4		P	80 - 120
2220668	Lead	95.4		P	80 - 120
2220668	Nickel	94.8		P	80 - 120
2220668	Selenium	90.1		P	80 - 120
2220668	Silver	101		P	80 - 120
2220668	Thallium	102		P	80 - 120
2220913	Aluminum	87.5	87.9	P/P	80 - 120
2220913	Antimony	95.8	95.5	P/P	80 - 120
2220913	Arsenic	90.3	89.7	P/P	80 - 120
2220913	Beryllium	92.8	93.3	P/P	80 - 120
2220913	Boron	95.8	96.6	P/P	80 - 120
2220913	Cadmium	87.4	89.7	P/P	80 - 120
2220913	Chromium	100	100	P/P	80 - 120
2220913	Copper	95.5	96.4	P/P	80 - 120
2220913	Lead	94.9	93.7	P/P	80 - 120
2220913	Nickel	96.5	96.8	P/P	80 - 120
2220913	Selenium	89.4	89.7	P/P	80 - 120
2220913	Silver	102	101	P/P	80 - 120
2220913	Thallium	99.7	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P392954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220450	Chloride	93.1		P	90 - 110
2220520	Chloride	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392955

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220626	Chloride	97.7		P	90 - 110
2220705	Chloride	97.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220450	Sulfate	93.6		P	90 - 110
2220520	Sulfate	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220626	Sulfate	98.4		P	90 - 110
2220705	Sulfate	97.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393458

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220861	Ammonia-N	95.3	94.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221124	Kjeldahl Nitrogen	104	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392884

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220788	NO2NO3-N	97.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220788	Total-P	107	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392769

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

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392769

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220897	O-Phosphate-P	98.1	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P393220

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2221661	Fluoride	101	101	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P393048

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220678	Organic Carbon	100	99.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P392826

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220786	Turbidity	0.233	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P392911

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220913	Barium	0.218	Spike	P	0 - 20
2220913	Calcium	1.25	Spike	P	0 - 20
2220913	Iron	1.85	Spike	P	0 - 20
2220913	Magnesium	1.56	Spike	P	0 - 20
2220913	Manganese	0.171	Spike	P	0 - 20
2220913	Potassium	0.705	Spike	P	0 - 20
2220913	Sodium	0.494	Spike	P	0 - 20
2220913	Zinc	0.399	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P392911

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220913	Aluminum	0.451	Spike	P	0 - 20
2220913	Antimony	0.303	Spike	P	0 - 20
2220913	Arsenic	0.697	Spike	P	0 - 20
2220913	Beryllium	0.541	Spike	P	0 - 20
2220913	Boron	0.789	Spike	P	0 - 20
2220913	Cadmium	2.53	Spike	P	0 - 20
2220913	Chromium	0.274	Spike	P	0 - 20
2220913	Copper	0.886	Spike	P	0 - 20
2220913	Lead	1.28	Spike	P	0 - 20
2220913	Nickel	0.337	Spike	P	0 - 20
2220913	Selenium	0.406	Spike	P	0 - 20
2220913	Silver	1.01	Spike	P	0 - 20
2220913	Thallium	2.45	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P392954

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220450	Chloride	0.232	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P392955

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220626	Chloride	0.0401	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220450	Sulfate	0.315	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220626	Sulfate	0.576	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393458

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220861	Ammonia-N	0.643	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393181

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220793	Kjeldahl Nitrogen	2.92	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221124	Kjeldahl Nitrogen	2.84	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392884

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220788	NO2NO3-N	0.897	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P393247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220788	Total-P	0.382	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220897	O-Phosphate-P	1.22	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P392771

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220787	Color (true)	0.991	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P392871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220787	Total Alkalinity	3.43	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P393353

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220795	TDS	5.88	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P393220

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2221661	Fluoride	0.0	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P393048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220678	Organic Carbon	0.532	Spike	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: A103194

Included Lab Sample IDs: 2220806, 2220809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	99.5	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A103195

Included Lab Sample IDs: 2220804, 2220807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A103212

Included Lab Sample IDs: 2220804, 2220807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	100	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A103226

Included Lab Sample IDs: 2220804, 2220807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	98.0	P/P	90 - 110
Chloride	99.1	98.8	P/P	90 - 110
Sulfate	97.7	97.0	P/P	90 - 110
Sulfate	97.9	98.0	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A103229

Included Lab Sample IDs: 2220804, 2220807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.9	96.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A103236

Included Lab Sample IDs: 2220805, 2220808

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: A103283

Included Lab Sample IDs: 2220805, 2220808

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	98.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A103301

Included Lab Sample IDs: 2220815, 2220816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	101	100	P/P	90 - 110
Iron	99.8	99.0	P/P	90 - 110
Magnesium	101	100	P/P	90 - 110
Manganese	102	103	P/P	90 - 110
Potassium	99.1	100	P/P	90 - 110
Sodium	100	101	P/P	90 - 110
Zinc	101	99.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103349

Included Lab Sample IDs: 2220805

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.2	96.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A103352

Included Lab Sample IDs: 2220804, 2220807

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: A103353

Included Lab Sample IDs: 2220815, 2220816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	91.5	93.2	P/P	90 - 110
Antimony	95.4	97.2	P/P	90 - 110
Arsenic	92.6	92.8	P/P	90 - 110
Cadmium	91.1	92.8	P/P	90 - 110
Lead	94.7	96.8	P/P	90 - 110
Selenium	92.1	93.4	P/P	90 - 110
Silver	99.6	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A103379

Included Lab Sample IDs: 2220815, 2220816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Beryllium	99.9	101	P/P	90 - 110
Copper	101	101	P/P	90 - 110
Nickel	101	102	P/P	90 - 110
Thallium	109	110	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A103391

Included Lab Sample IDs: 2220805, 2220808

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A103391

Included Lab Sample IDs: 2220805, 2220808

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.4	99.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A103399

Included Lab Sample IDs: 2220815, 2220816

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Boron	101	98.3	P/P	90 - 110
Chromium	101	96.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103409

Included Lab Sample IDs: 2220808

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.7	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A103454

Included Lab Sample IDs: 2220805, 2220808

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	97.9	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					0.233	
EPA 200.7 Rev. 4.4	Barium	98.8	98.8	103	103		0.218
	Calcium	106	102	108	109		1.25
	Iron	103	98.3	105	107		1.85
	Magnesium	105	101	106	108		1.56
	Manganese	99.9	97.6	103	103		0.171
	Potassium	101	100	106	107		0.705
	Sodium	102	101	104	105		0.494
	Zinc	98.1	97.8	99.1	98.7		0.399
EPA 200.8 Rev. 5.4	Aluminum	86.7	87.5	87.9	88.3		0.451
	Antimony	96.2	95.8	95.5	98.6		0.303
	Arsenic	90.5	90.3	89.7	91.1		0.697
	Beryllium	94.2	92.8	93.3	93.8		0.541
	Boron	94.7	95.8	96.6	95.7		0.789
	Cadmium	88.0	87.4	89.7	89.0		2.53
	Chromium	101	100	100	96.0		0.274
	Copper	98.5	95.5	96.4	94.4		0.886
	Lead	93.2	94.9	93.7	95.4		1.28
	Nickel	99.3	96.5	96.8	94.8		0.337
	Selenium	89.4	89.4	89.7	90.1		0.406
	Silver	101	102	101	101		1.01
	Thallium	101	99.7	102	102		2.45
EPA 300.0 Rev. 2.1	Chloride	98.0	93.1	96.8		0.232	
	Chloride	98.3	97.7	97.4		0.0401	
	Sulfate	97.7	93.6	96.8		0.315	
	Sulfate	97.7	98.4	97.4		0.576	
EPA 350.1 Rev. 2.0	Ammonia-N	98.1	95.3	94.6			0.643
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100					2.92
	Kjeldahl Nitrogen	108	104	100			2.84
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	97.0	98.0			0.897
EPA 365.1 Rev. 2.0	Total-P	105	107	107			0.382
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	98.1	99.3			1.22
SM 2120 B-2011	Color (true)	97.7				0.991	
SM 2320 B-2011	Total Alkalinity	96.4				3.43	
SM 2540 C-2011	TDS					5.88	
SM 4500 F-C-2011	Fluoride	100	101	101			0.0
SM 5310 B-2011	Organic Carbon	96.8	100	99.2			0.532

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2220804, 2220807
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2220815, 2220816
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2220815, 2220816
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2220804, 2220807
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2220804, 2220807
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2220805, 2220808
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2220805, 2220808
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2220805, 2220808
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2220805, 2220808

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2220806, 2220809
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2220804, 2220807
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2220804, 2220807
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2220804, 2220807
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2220804, 2220807
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2220804, 2220807
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2220805, 2220808

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	01/22/2021			01/22/2021 15:44	Yen Ta	2220804, 2220807
EPA 200.7 Rev. 4.4	01/22/2021	01/26/2021 15:00	Elliott D. Healy	01/27/2021 17:24	Betina Topolski	2220815
	01/22/2021	01/26/2021 15:00	Elliott D. Healy	01/27/2021 17:32	Betina Topolski	2220816
EPA 200.8 Rev. 5.4	01/22/2021	01/26/2021 15:00	Elliott D. Healy	02/02/2021 02:22	Alexander Thompson	2220815
	01/22/2021	01/26/2021 15:00	Elliott D. Healy	02/02/2021 02:29	Alexander Thompson	2220816
	01/22/2021	01/26/2021 15:00	Elliott D. Healy	02/02/2021 19:16	Alexander Thompson	2220815
	01/22/2021	01/26/2021 15:00	Elliott D. Healy	02/02/2021 19:21	Alexander Thompson	2220816
	01/22/2021	01/26/2021 15:00	Elliott D. Healy	02/03/2021 13:25	Alexander Thompson	2220815
	01/22/2021	01/26/2021 15:00	Elliott D. Healy	02/03/2021 13:30	Alexander Thompson	2220816
EPA 300.0 Rev. 2.1	01/22/2021			01/26/2021 15:55	Lipi Saha	2220807
	01/22/2021			01/26/2021 21:56	Lipi Saha	2220804
EPA 350.1 Rev. 2.0	01/22/2021			02/05/2021 18:50	Ping Hua	2220805
	01/22/2021			02/05/2021 18:51	Ping Hua	2220808
EPA 351.2 Rev. 2.0	01/22/2021	02/01/2021 09:53	Yen Ta	02/01/2021 19:48	Julia Storbeck	2220805
	01/22/2021	02/03/2021 12:10	Yen Ta	02/03/2021 19:07	Julia Storbeck	2220808
EPA 353.2 Rev. 2.0	01/22/2021			01/26/2021 09:55	Beverly Y. Sanders	2220805
	01/22/2021			01/26/2021 09:56	Beverly Y. Sanders	2220808
EPA 365.1 Rev. 2.0	01/22/2021	02/02/2021 13:00	Lipi Saha	02/03/2021 14:14	Shengyu Wang	2220805
	01/22/2021	02/02/2021 13:00	Lipi Saha	02/03/2021 14:15	Shengyu Wang	2220808
EPA 365.1 Rev. 2.0 dissolved	01/22/2021			01/22/2021 16:42	Ping Hua	2220806
	01/22/2021			01/22/2021 16:43	Ping Hua	2220809
SM 2120 B-2011	01/22/2021			01/22/2021 16:56	Madeline Gruver	2220804
	01/22/2021			01/22/2021 16:57	Madeline Gruver	2220807
SM 2320 B-2011	01/22/2021			01/25/2021 21:00	Dale L. Simmons	2220807
	01/22/2021			01/25/2021 21:13	Dale L. Simmons	2220804
SM 2540 C-2011	01/22/2021			01/26/2021 14:21	Yijie Li	2220804, 2220807
SM 2540 D-2011	01/22/2021			01/26/2021 14:21	Yijie Li	2220804, 2220807
SM 4500 F-C-2011	01/22/2021			01/30/2021 10:43	Dale L. Simmons	2220804
	01/22/2021			01/30/2021 10:48	Dale L. Simmons	2220807
SM 5310 B-2011	01/22/2021			01/27/2021 03:04	Touraj Touran	2220805
	01/22/2021			01/27/2021 03:17	Touraj Touran	2220808