

Chemical Analysis Report

NE-DIST-2020-06-11-01

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

Event Description: **Melrose Lakes**
Request ID: **RQ-2020-04-20-30**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 02-JUL-2020 11:43

A handwritten signature in black ink, appearing to read "Liang Lin", 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: Goose Lake

Collection Date/Time: 06/10/2020 11:40

Field ID: 20030980

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2175760	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P383091	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P383379	
		Sulfate	0.72		mg SO4/L	P383383	
	SM 2120 B-2011	Color (true)	330		PCU	P383100	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P383248	
	SM 2540 C-2011	TDS	82		mg/L	P383515	
	SM 2540 D-2011	TSS	2	U	mg/L	P383449	
	SM 4500 F-C-2011	Fluoride	0.052	I	mg F/L	P383251	
2175762	EPA 350.1 Rev. 2.0	Ammonia-N	0.084		mg N/L	P383173	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P383263	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P383124	
	EPA 365.1 Rev. 2.0	Total-P	0.25		mg P/L	P383229	
	SM 5310 B-2011	Organic Carbon	30		mg C/L	P383198	
2175764	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.22		mg P/L	P383107	

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: Lake Rowan CTR

Collection Date/Time: 06/10/2020 12:50

Field ID: 20030923

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2175754	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P383091	
	EPA 300.0 Rev. 2.1	Chloride	6.5		mg Cl/L	P383379	
		Sulfate	1.3		mg SO4/L	P383383	
		Color (true)	170		PCU	P383100	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P383248	
	SM 2540 C-2011	TDS	66		mg/L	P383515	
	SM 2540 D-2011	TSS	2	U	mg/L	P383449	
2175756	SM 4500 F-C-2011	Fluoride	0.039	I	mg F/L	P383251	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P383173	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P383263	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.044		mg N/L	P383124	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P383229	
2175758	SM 5310 B-2011	Organic Carbon	35		mg C/L	P383198	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P383107	
2175770	EPA 200.7 Rev. 4.4	Barium	13.2		ug/L	P383291	
		Calcium	2.00		mg/L	P383291	
		Iron	290		ug/L	P383291	
		Magnesium	1.43		mg/L	P383291	
		Potassium	0.55	I	mg/L	P383291	
		Sodium	3.7		mg/L	P383291	
		Zinc	5.0	U	ug/L	P383291	
	EPA 200.8 Rev. 5.4	Aluminum	143		ug/L	P383291	
		Antimony	0.050	U	ug/L	P383291	
		Arsenic	0.59		ug/L	P383291	
		Boron**	19.4		ug/L	P383291	
		Cadmium	0.035	I	ug/L	P383744	
		Chromium	0.40	U	ug/L	P383291	
		Copper	0.40	U	ug/L	P383291	
		Lead	0.40	I	ug/L	P383744	
		Nickel	0.50	U	ug/L	P383291	
		Selenium	0.20	U	ug/L	P383291	
		Silver	0.010	U	ug/L	P383291	
		Thallium	0.10	U	ug/L	P383744	
		Hardness	10.9		mg/L	P383291	
	SM 2340B						

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: Ross Lake Center

Collection Date/Time: 06/10/2020 11:15

Field ID: 20030454

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2175761	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P383091	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P383379	
		Sulfate	0.72		mg SO4/L	P383383	
	SM 2120 B-2011	Color (true)	330		PCU	P383100	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P383248	
	SM 2540 C-2011	TDS	71		mg/L	P383514	
	SM 2540 D-2011	TSS	2	I	mg/L	P383448	
	SM 4500 F-C-2011	Fluoride	0.052	I	mg F/L	P383251	
2175763	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P383173	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P383263	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P383124	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P383229	
	SM 5310 B-2011	Organic Carbon	29		mg C/L	P383198	
2175765	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.058		mg P/L	P383107	

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: Lake Suggs CTR

Collection Date/Time: 06/10/2020 12:00

Field ID: 20030922

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2175755	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P383091	
	EPA 300.0 Rev. 2.1	Chloride	9.5		mg Cl/L	P383379	
		Sulfate	0.96		mg SO4/L	P383383	
	SM 2120 B-2011	Color (true)	380		PCU	P383100	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P383248	
	SM 2540 C-2011	TDS	84		mg/L	P383515	
	SM 2540 D-2011	TSS	2	U	mg/L	P383449	
	SM 4500 F-C-2011	Fluoride	0.053	I	mg F/L	P383251	
2175757	EPA 350.1 Rev. 2.0	Ammonia-N	0.22		mg N/L	P383173	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P383263	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.046		mg N/L	P383124	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P383229	
	SM 5310 B-2011	Organic Carbon	36		mg C/L	P383198	
2175759	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P383107	
2175771	EPA 200.7 Rev. 4.4	Barium	13.7		ug/L	P383291	
		Calcium	2.53		mg/L	P383291	
		Iron	570		ug/L	P383291	
		Magnesium	1.78		mg/L	P383291	
		Potassium	2.2		mg/L	P383291	
		Sodium	5.1		mg/L	P383291	
		Zinc	5.6	I	ug/L	P383291	
	EPA 200.8 Rev. 5.4	Aluminum	293		ug/L	P383291	
		Antimony	0.050	U	ug/L	P383291	
		Arsenic	1.01		ug/L	P383291	
		Boron**	19.6		ug/L	P383291	
		Cadmium	0.020	U	ug/L	P383744	
		Chromium	0.49	I	ug/L	P383291	
		Copper	0.51	I	ug/L	P383291	
		Lead	0.44		ug/L	P383744	
		Nickel	0.58	I	ug/L	P383291	
		Selenium	0.20	U	ug/L	P383291	
		Silver	0.010	U	ug/L	P383291	
		Thallium	0.10	U	ug/L	P383744	
	SM 2340B	Hardness	13.6		mg/L	P383291	

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: P383091

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P383291

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383291

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
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: P383744

Component	Result	Code	Units
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: P383379

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383383

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383173

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383173

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383263

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383124

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383229

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383107

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

Reference Method: SM 2120 B-2011
Batch ID: P383100

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P383248

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

Reference Method: SM 2540 C-2011
Batch ID: P383514

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P383515

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P383448

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P383449

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P383251

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P383198

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: P383291

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	103		P	85 - 115
Iron	101		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	98.1		P	85 - 115
Sodium	99.1		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383291

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.7		P	85 - 115
Antimony	97.1		P	85 - 115
Arsenic	97.3		P	85 - 115
Boron	98.8		P	85 - 115
Chromium	99.8		P	85 - 115
Copper	97.6		P	85 - 115
Nickel	98.2		P	85 - 115
Selenium	94.2		P	85 - 115
Silver	99.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383744

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cadmium	98.0		P	85 - 115
Lead	96.1		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383379

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383383

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383173

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383263

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383263

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383124

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383229

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383107

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

Reference Method: SM 2120 B-2011
Batch ID: P383100

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

Reference Method: SM 2320 B-2011
Batch ID: P383248

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P383251

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P383198

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P383291

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2176121	Barium	102		P	80 - 120
2176121	Calcium	102		P	80 - 120
2176121	Iron	102		P	80 - 120
2176121	Magnesium	102		P	80 - 120
2176121	Potassium	95.0		P	80 - 120
2176121	Sodium	99.9		P	80 - 120
2176121	Zinc	108		P	80 - 120
2176243	Barium	105	106	P/P	80 - 120
2176243	Calcium	106	105	P/P	80 - 120
2176243	Iron	103	104	P/P	80 - 120
2176243	Magnesium	105	105	P/P	80 - 120
2176243	Potassium	104	103	P/P	80 - 120
2176243	Sodium	99.9	99.7	P/P	80 - 120
2176243	Zinc	108	108	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383291

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2176121	Aluminum	93.3		P	80 - 120
2176121	Antimony	94.9		P	80 - 120
2176121	Arsenic	97.5		P	80 - 120
2176121	Boron	96.4		P	80 - 120
2176121	Chromium	93.2		P	80 - 120
2176121	Copper	96.5		P	80 - 120
2176121	Nickel	96.2		P	80 - 120
2176121	Selenium	93.2		P	80 - 120
2176121	Silver	96.0		P	80 - 120
2176243	Aluminum	92.8	92.5	P/P	80 - 120
2176243	Antimony	94.1	94.2	P/P	80 - 120
2176243	Arsenic	94.9	94.8	P/P	80 - 120
2176243	Boron	95.2	94.6	P/P	80 - 120
2176243	Chromium	97.5	97.1	P/P	80 - 120
2176243	Copper	96.7	96.6	P/P	80 - 120
2176243	Nickel	94.2	95.0	P/P	80 - 120
2176243	Selenium	90.1	91.9	P/P	80 - 120
2176243	Silver	96.6	96.4	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383744

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2175770	Cadmium	93.6	101	P/P	80 - 120
2175770	Lead	89.9	97.9	P/P	80 - 120
2175770	Thallium	102	112	P/P	80 - 120
2175771	Cadmium	94.6		P	80 - 120
2175771	Lead	89.3		P	80 - 120
2175771	Thallium	103		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2175754	Chloride	99.1		P	90 - 110
2175909	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2175754	Sulfate	99.5		P	90 - 110
2175909	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383173

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2175737	Ammonia-N	98.8	98.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383263

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2175736	Kjeldahl Nitrogen	99.8	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2175736	NO2NO3-N	100	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383229

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2175756	Total-P	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2175871	O-Phosphate-P	100	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P383251

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2176090	Fluoride	98.4	95.2	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P383198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2175869	Organic Carbon	108	104	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P383091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175832	Turbidity	1.16	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P383291

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176243	Barium	0.732	Spike	P	0 - 20
2176243	Calcium	0.419	Spike	P	0 - 20
2176243	Iron	0.419	Spike	P	0 - 20
2176243	Magnesium	0.142	Spike	P	0 - 20
2176243	Potassium	0.993	Spike	P	0 - 20
2176243	Sodium	0.100	Spike	P	0 - 20
2176243	Zinc	0.399	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383291

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176243	Aluminum	0.371	Spike	P	0 - 20
2176243	Antimony	0.0296	Spike	P	0 - 20
2176243	Arsenic	0.133	Spike	P	0 - 20
2176243	Boron	0.641	Spike	P	0 - 20
2176243	Chromium	0.414	Spike	P	0 - 20
2176243	Copper	0.0300	Spike	P	0 - 20
2176243	Nickel	0.846	Spike	P	0 - 20
2176243	Selenium	1.94	Spike	P	0 - 20
2176243	Silver	0.133	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175770	Cadmium	7.68	Spike	P	0 - 20
2175770	Lead	8.36	Spike	P	0 - 20
2175770	Thallium	8.96	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175909	Chloride	1.10	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P383383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175909	Sulfate	1.48	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P383173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175737	Ammonia-N	0.0774	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175736	Kjeldahl Nitrogen	1.83	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P383124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175736	NO2NO3-N	1.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383229

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175756	Total-P	0.778	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175871	O-Phosphate-P	0.200	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P383100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175734	Color (true)	0.00217	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P383248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176090	Total Alkalinity	0.437	Sample	P	0 - 8.1

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P383514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175545	TDS	5.96	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P383515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175566	TDS	0.898	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P383251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2176090	Fluoride	2.37	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P383198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2175869	Organic Carbon	2.10	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A99273

Included Lab Sample IDs: 2175754, 2175755, 2175760, 2175761

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

Reference Method: SM 2120 B-2011

Run ID: A99274

Included Lab Sample IDs: 2175754, 2175755, 2175760, 2175761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A99275

Included Lab Sample IDs: 2175758, 2175759, 2175764, 2175765

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	100	P/P	90 - 110
O-Phosphate-P	99.5	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A99290

Included Lab Sample IDs: 2175756, 2175757, 2175762, 2175763

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A99309

Included Lab Sample IDs: 2175756, 2175757, 2175762, 2175763

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.1	P/P	90 - 110
Ammonia-N	102	101	P/P	90 - 110
Ammonia-N	99.1	99.7	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A99314

Included Lab Sample IDs: 2175756, 2175757, 2175762, 2175763

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	100	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A99334

Included Lab Sample IDs: 2175754, 2175755, 2175760, 2175761

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-2011

Run ID: A99334

Included Lab Sample IDs: 2175754, 2175755, 2175760, 2175761

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A99360

Included Lab Sample IDs: 2175757, 2175762, 2175763

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A99366

Included Lab Sample IDs: 2175756

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.0	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A99379

Included Lab Sample IDs: 2175756, 2175757, 2175762, 2175763

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	99.5	P/P	90 - 110
Kjeldahl Nitrogen	99.5	99.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A99401

Included Lab Sample IDs: 2175754, 2175755, 2175760, 2175761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.4	96.8	P/P	90 - 110
Sulfate	98.3	97.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A99460

Included Lab Sample IDs: 2175770, 2175771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	100	102	P/P	90 - 110
Calcium	101	103	P/P	90 - 110
Iron	101	102	P/P	90 - 110
Magnesium	101	103	P/P	90 - 110
Potassium	97.2	99.7	P/P	90 - 110
Sodium	99.4	101	P/P	90 - 110
Zinc	101	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99537

Included Lab Sample IDs: 2175770, 2175771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	94.0	92.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99537

Included Lab Sample IDs: 2175770, 2175771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	93.9	91.7	P/P	90 - 110
Arsenic	94.7	93.4	P/P	90 - 110
Boron	93.9	94.5	P/P	90 - 110
Chromium	95.8	92.3	P/P	90 - 110
Copper	94.5	93.0	P/P	90 - 110
Nickel	95.0	93.4	P/P	90 - 110
Selenium	93.2	92.3	P/P	90 - 110
Silver	95.7	94.3	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99609

Included Lab Sample IDs: 2175771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	97.1	91.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99618

Included Lab Sample IDs: 2175770, 2175771

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	95.3	95.9	P/P	90 - 110
Cadmium	95.9	95.3	P/P	90 - 110
Lead	94.0	94.9	P/P	90 - 110
Lead	94.7	94.0	P/P	90 - 110
Thallium	93.0	94.1	P/P	90 - 110
Thallium	94.1	92.2	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					1.16	
EPA 200.7 Rev. 4.4	Barium	102	102	105	106		0.732
	Calcium	103	102	106	105		0.419
	Iron	101	102	103	104		0.419
	Magnesium	102	102	105	105		0.142
	Potassium	98.1	95.0	104	103		0.993
	Sodium	99.1	99.9	99.9	99.7		0.100
	Zinc	104	108	108	108		0.399
EPA 200.8 Rev. 5.4	Aluminum	95.7	92.8	92.5	93.3		0.371
	Antimony	97.1	94.1	94.2	94.9		0.0296
	Arsenic	97.3	94.9	97.5	94.8		0.133
	Boron	98.8	95.2	94.6	96.4		0.641
	Cadmium	98.0	93.6	101	94.6		7.68
	Chromium	99.8	97.5	97.1	93.2		0.414
	Copper	97.6	96.7	96.6	96.5		0.0300
	Lead	96.1	89.9	97.9	89.3		8.36
	Nickel	98.2	94.2	95.0	96.2		0.846
	Selenium	94.2	90.1	91.9	93.2		1.94
	Silver	99.3	96.6	96.4	96.0		0.133
	Thallium	101	102	112	103		8.96
EPA 300.0 Rev. 2.1	Chloride	99.6	104	99.1		1.10	
	Sulfate	101	102	99.5		1.48	
EPA 350.1 Rev. 2.0	Ammonia-N	99.9	98.8	98.9			0.0774
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	99.8	102			1.83
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	100	98.6			1.44
EPA 365.1 Rev. 2.0	Total-P	103	103	104			0.778
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	108	100	100			0.200
SM 2120 B-2011	Color (true)	102				0.0021	
SM 2320 B-2011	Total Alkalinity	101				0.437	
SM 2540 C-2011	TDS					5.96	
	TDS					0.898	
SM 4500 F-C-2011	Fluoride	99.5	98.4	95.2			2.37
SM 5310 B-2011	Organic Carbon	104	108	104			2.10

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2175754, 2175755, 2175760, 2175761
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2175770, 2175771
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2175770, 2175771
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2175754, 2175755, 2175760, 2175761
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2175754, 2175755, 2175760, 2175761
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2175756, 2175757, 2175762, 2175763
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2175756, 2175757, 2175762, 2175763
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2175756, 2175757, 2175762, 2175763
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2175756, 2175757, 2175762, 2175763
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2175758, 2175759, 2175764, 2175765
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2175754, 2175755, 2175760, 2175761
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2175754, 2175755, 2175760, 2175761
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2175770, 2175771

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2175754, 2175755, 2175760, 2175761
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2175754, 2175755, 2175760, 2175761
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2175754, 2175755, 2175760, 2175761
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2175756, 2175757, 2175762, 2175763

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	06/11/2020			06/11/2020 15:04	Yen Ta	2175754, 2175755, 2175760, 2175761
EPA 200.7 Rev. 4.4	06/11/2020	06/16/2020 16:20	Elliott D. Healy	06/17/2020 17:48	Betina Topolski	2175770
	06/11/2020	06/16/2020 16:20	Elliott D. Healy	06/17/2020 17:53	Betina Topolski	2175771
EPA 200.8 Rev. 5.4	06/11/2020	06/16/2020 16:20	Elliott D. Healy	06/23/2020 20:24	Justin Cutchin	2175770
	06/11/2020	06/16/2020 16:20	Elliott D. Healy	06/23/2020 20:31	Justin Cutchin	2175771
	06/11/2020	06/16/2020 16:20	Elliott D. Healy	06/30/2020 13:35	Justin Cutchin	2175771
	06/11/2020	06/26/2020 14:45	Justin Cutchin	06/30/2020 19:51	Justin Cutchin	2175770
	06/11/2020	06/26/2020 14:45	Justin Cutchin	06/30/2020 20:12	Justin Cutchin	2175771
EPA 300.0 Rev. 2.1	06/11/2020			06/16/2020 17:10	Elliott Rodriguez	2175754
	06/11/2020			06/16/2020 17:36	Elliott Rodriguez	2175755
	06/11/2020			06/16/2020 17:49	Elliott Rodriguez	2175760
	06/11/2020			06/16/2020 18:02	Elliott Rodriguez	2175761
EPA 350.1 Rev. 2.0	06/11/2020			06/13/2020 15:41	Ping Hua	2175756
	06/11/2020			06/13/2020 15:56	Ping Hua	2175763
	06/11/2020			06/13/2020 16:52	Ping Hua	2175757
	06/11/2020			06/13/2020 16:53	Ping Hua	2175762
EPA 351.2 Rev. 2.0	06/11/2020	06/16/2020 10:50	Sima Feizi	06/17/2020 10:32	Jhamieka S. Greenwood	2175756
	06/11/2020	06/16/2020 10:50	Sima Feizi	06/17/2020 10:33	Jhamieka S. Greenwood	2175757
	06/11/2020	06/16/2020 10:50	Sima Feizi	06/17/2020 10:38	Jhamieka S. Greenwood	2175762
	06/11/2020	06/16/2020 10:50	Sima Feizi	06/17/2020 10:40	Jhamieka S. Greenwood	2175763
EPA 353.2 Rev. 2.0	06/11/2020			06/12/2020 08:50	Beverly Y. Sanders	2175756
	06/11/2020			06/12/2020 08:51	Beverly Y. Sanders	2175757
	06/11/2020			06/12/2020 08:52	Beverly Y. Sanders	2175762
	06/11/2020			06/12/2020 08:54	Beverly Y. Sanders	2175763
EPA 365.1 Rev. 2.0	06/11/2020	06/15/2020 15:28	Yen Ta	06/16/2020 13:10	Lipi Saha	2175757
	06/11/2020	06/15/2020 15:28	Yen Ta	06/16/2020 13:11	Lipi Saha	2175762
	06/11/2020	06/15/2020 15:28	Yen Ta	06/16/2020 13:12	Lipi Saha	2175763
	06/11/2020	06/15/2020 15:28	Yen Ta	06/17/2020 08:19	Lipi Saha	2175756
EPA 365.1 Rev. 2.0 dissolved	06/11/2020			06/11/2020 16:56	Julia Storbeck	2175759
	06/11/2020			06/11/2020 16:57	Julia Storbeck	2175764
	06/11/2020			06/11/2020 16:58	Julia Storbeck	2175765
	06/11/2020			06/11/2020 17:21	Julia Storbeck	2175758
SM 2120 B-2011	06/11/2020			06/11/2020 16:33	Benjamin T. Nordmann	2175754, 2175755
	06/11/2020			06/11/2020 16:34	Benjamin T. Nordmann	2175760
	06/11/2020			06/11/2020 16:35	Benjamin T. Nordmann	2175761
SM 2320 B-2011	06/11/2020			06/16/2020 00:32	Dale L. Simmons	2175754
	06/11/2020			06/16/2020 00:41	Dale L. Simmons	2175755
	06/11/2020			06/16/2020 00:49	Dale L. Simmons	2175760
	06/11/2020			06/16/2020 00:57	Dale L. Simmons	2175761
SM 2340B	06/11/2020			06/17/2020 17:48	Betina Topolski	2175770

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2340B	06/11/2020			06/17/2020 17:53	Betina Topolski	2175771
SM 2540 C-2011	06/11/2020			06/12/2020 15:15	Yijie Li	2175754, 2175755, 2175760, 2175761
SM 2540 D-2011	06/11/2020			06/12/2020 15:15	Yijie Li	2175754, 2175755, 2175760, 2175761
SM 4500 F-C-2011	06/11/2020			06/16/2020 00:32	Dale L. Simmons	2175754
	06/11/2020			06/16/2020 00:41	Dale L. Simmons	2175755
	06/11/2020			06/16/2020 00:49	Dale L. Simmons	2175760
	06/11/2020			06/16/2020 00:57	Dale L. Simmons	2175761
SM 5310 B-2011	06/11/2020			06/12/2020 15:54	David Boose	2175756
	06/11/2020			06/12/2020 16:06	David Boose	2175757
	06/11/2020			06/12/2020 16:20	David Boose	2175762
	06/11/2020			06/12/2020 16:34	David Boose	2175763