

Chemical Analysis Report

NE-DIST-2020-07-22-01

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

Event Description: **Nassauwannee Lakes**
Request ID: **RQ-2020-07-20-23**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 07-AUG-2020 18:47



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: Ocean Pond Center

Collection Date/Time: 07/21/2020 09:55

Field ID: 21010011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184610	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P385058	
	EPA 300.0 Rev. 2.1	Chloride	7.9		mg Cl/L	P385318	
		Sulfate	2.0		mg SO4/L	P385322	
		Color (true)	130		PCU	P385029	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P385103	
	SM 2540 C-2011	TDS	51		mg/L	P385595	
	SM 2540 D-2011	TSS	2	I	mg/L	P385590	
2184612	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P385106	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P385143	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P385056	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P385049	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P385235	
2184614	SM 5310 B-2011	Organic Carbon	12		mg C/L	P385262	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385013	
2184618	EPA 200.7 Rev. 4.4	Barium	8.8		ug/L	P385027	
		Calcium	1.56		mg/L	P385027	
		Iron	790		ug/L	P385027	
		Magnesium	0.83		mg/L	P385027	
		Potassium	0.30	U	mg/L	P385027	
		Sodium	4.4		mg/L	P385027	
		Zinc	5.0	U	ug/L	P385027	
	EPA 200.8 Rev. 5.4	Aluminum	362		ug/L	P385027	
		Antimony	0.070	I	ug/L	P385027	
		Arsenic	0.57		ug/L	P385027	
		Boron**	20.2		ug/L	P385027	
		Cadmium	0.020	U	ug/L	P385027	
		Chromium	0.40	U	ug/L	P385027	
		Copper	0.48	I	ug/L	P385027	
		Lead	0.88		ug/L	P385027	
		Nickel	0.50	U	ug/L	P385027	
		Selenium	0.20	U	ug/L	P385027	
		Silver	0.010	U	ug/L	P385211	
		Thallium	0.10	U	ug/L	P385027	
		Hardness	7.3		mg/L	P385027	

Ref. Method and Comment:

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

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/24/2020.

Sample Location: Palestine Lake Center

Collection Date/Time: 07/21/2020 10:55

Field ID: 19010044

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184611	EPA 180.1 Rev. 2.0	Turbidity	10		NTU	P385059	
	EPA 300.0 Rev. 2.1	Chloride	8.5		mg Cl/L	P385318	
		Sulfate	4.0		mg SO4/L	P385322	
		Color (true)	100		PCU	P385029	
	SM 2120 B-2011	Total Alkalinity	0.91	I	mg CaCO3/L	P385103	
	SM 2540 C-2011	TDS	50		mg/L	P385595	
	SM 2540 D-2011	TSS	4	I	mg/L	P385590	
	SM 4500 F-C-2011	Fluoride	0.037	I	mg F/L	P385106	
2184613	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P385143	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P385056	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.060		mg N/L	P385049	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P385235	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P385262	
2184615	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385013	
2184619	EPA 200.7 Rev. 4.4	Barium	12.0		ug/L	P385027	
		Calcium	2.03		mg/L	P385027	
		Iron	240		ug/L	P385027	
		Magnesium	1.31		mg/L	P385027	
		Potassium	0.48	I	mg/L	P385027	
		Sodium	5.1		mg/L	P385027	
		Zinc	5.0	U	ug/L	P385027	
	EPA 200.8 Rev. 5.4	Aluminum	221		ug/L	P385027	
		Antimony	0.090	I	ug/L	P385027	
		Arsenic	0.44		ug/L	P385027	
		Boron**	25.2		ug/L	P385027	
		Cadmium	0.020	U	ug/L	P385027	
		Chromium	0.40	U	ug/L	P385027	
		Copper	0.40	U	ug/L	P385027	
		Lead	0.70		ug/L	P385027	
		Nickel	0.50	U	ug/L	P385027	
		Selenium	0.20	U	ug/L	P385027	
		Silver	0.010	U	ug/L	P385211	
		Thallium	0.10	U	ug/L	P385027	
		Hardness	10.5		mg/L	P385027	
	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.

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/24/2020.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385058

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385059

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385027

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: P385027

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385211

Component	Result	Code	Units
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385318

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385322

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385322

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385143

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385056

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385049

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385235

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385013

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

Reference Method: SM 2120 B-2011
Batch ID: P385029

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P385103

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

Reference Method: SM 2540 C-2011
Batch ID: P385595

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P385590

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385106

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P385262

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: P385027

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	100		P	85 - 115
Calcium	104		P	85 - 115
Iron	101		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	100		P	85 - 115
Sodium	97.1		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385027

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.6		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	102		P	85 - 115
Boron	101		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	102		P	85 - 115
Copper	101		P	85 - 115
Lead	103		P	85 - 115
Nickel	100		P	85 - 115
Selenium	99.9		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385211

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Silver	98.6		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385318

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385322

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385143

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385056

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: P385056

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385049

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385235

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.2		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P385029

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P385103

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P385106

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

Reference Method: SM 5310 B-2011
Batch ID: P385262

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385027

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184454	Barium	106	101	P/P	80 - 120
2184454	Calcium	105		P	80 - 120
2184454	Iron	109	107	P/P	80 - 120
2184454	Magnesium	111	107	P/P	80 - 120
2184454	Potassium	105	101	P/P	80 - 120
2184454	Sodium	99.9		P	80 - 120
2184454	Zinc	109	105	P/P	80 - 120
2184537	Barium	105		P	80 - 120
2184537	Calcium	103		P	80 - 120
2184537	Iron	105		P	80 - 120
2184537	Magnesium	103		P	80 - 120
2184537	Potassium	102		P	80 - 120
2184537	Sodium	99.4		P	80 - 120
2184537	Zinc	108		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385027

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184454	Aluminum	99.8	101	P/P	80 - 120
2184454	Antimony	104	104	P/P	80 - 120
2184454	Arsenic	104	104	P/P	80 - 120
2184454	Boron	100	102	P/P	80 - 120
2184454	Cadmium	101	103	P/P	80 - 120
2184454	Chromium	105	105	P/P	80 - 120
2184454	Copper	102	103	P/P	80 - 120
2184454	Lead	104	106	P/P	80 - 120
2184454	Nickel	102	104	P/P	80 - 120
2184454	Selenium	99.7	102	P/P	80 - 120
2184454	Thallium	107	106	P/P	80 - 120
2184537	Aluminum	101		P	80 - 120
2184537	Antimony	104		P	80 - 120
2184537	Arsenic	103		P	80 - 120
2184537	Boron	102		P	80 - 120
2184537	Cadmium	105		P	80 - 120
2184537	Chromium	105		P	80 - 120
2184537	Copper	100		P	80 - 120
2184537	Lead	104		P	80 - 120
2184537	Nickel	101		P	80 - 120
2184537	Selenium	99.9		P	80 - 120
2184537	Thallium	103		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184535	Silver	99.1	95.2	P/P	80 - 120
2184717	Silver	95.3		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385318

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184605	Chloride	99.2		P	90 - 110
2184710	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184605	Sulfate	96.5		P	90 - 110
2184710	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385143

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184564	Ammonia-N	100	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385056

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184564	Kjeldahl Nitrogen	99.0	95.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385049

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184612	NO2NO3-N	97.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184557	Total-P	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184565	O-Phosphate-P	96.6	97.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P385106

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184563	Fluoride	107	106	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P385262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2184625	Organic Carbon	93.0	94.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184801	Turbidity	3.51	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184555	Turbidity	4.79	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P385027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184454	Barium	4.05	Spike	P	0 - 20
2184454	Calcium	2.56	Spike	P	0 - 20
2184454	Iron	2.16	Spike	P	0 - 20
2184454	Magnesium	2.36	Spike	P	0 - 20
2184454	Potassium	2.85	Spike	P	0 - 20
2184454	Sodium	4.03	Spike	P	0 - 20
2184454	Zinc	3.69	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184454	Aluminum	1.04	Spike	P	0 - 20
2184454	Antimony	0.0786	Spike	P	0 - 20
2184454	Arsenic	0.507	Spike	P	0 - 20
2184454	Boron	1.31	Spike	P	0 - 20
2184454	Cadmium	2.48	Spike	P	0 - 20
2184454	Chromium	0.650	Spike	P	0 - 20
2184454	Copper	1.05	Spike	P	0 - 20
2184454	Lead	1.74	Spike	P	0 - 20
2184454	Nickel	1.33	Spike	P	0 - 20
2184454	Selenium	2.05	Spike	P	0 - 20
2184454	Thallium	0.995	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P385211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184535	Silver	4.01	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385318

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: P385318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184605	Chloride	0.724	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184605	Sulfate	0.692	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184564	Ammonia-N	0.865	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385056

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184564	Kjeldahl Nitrogen	2.94	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385049

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184612	NO2NO3-N	0.512	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184557	Total-P	1.56	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184565	O-Phosphate-P	0.682	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P385029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184563	Color (true)	9.86	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P385103

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184563	Total Alkalinity	1.17	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P385595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184563	TDS	0.784	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P385106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184563	Fluoride	0.464	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P385262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184625	Organic Carbon	0.813	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: A100021

Included Lab Sample IDs: 2184614, 2184615

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

Reference Method: SM 2120 B-2011

Run ID: A100026

Included Lab Sample IDs: 2184610, 2184611

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100035

Included Lab Sample IDs: 2184612, 2184613

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A100038

Included Lab Sample IDs: 2184610, 2184611

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A100050

Included Lab Sample IDs: 2184618, 2184619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	102	P/P	90 - 110
Antimony	102	103	P/P	90 - 110
Arsenic	103	103	P/P	90 - 110
Boron	101	102	P/P	90 - 110
Cadmium	103	104	P/P	90 - 110
Chromium	99.9	98.9	P/P	90 - 110
Copper	99.1	98.4	P/P	90 - 110
Lead	104	105	P/P	90 - 110
Nickel	100	99.2	P/P	90 - 110
Selenium	103	102	P/P	90 - 110
Thallium	101	99.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A100051

Included Lab Sample IDs: 2184618, 2184619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	104	P/P	90 - 110
Calcium	107	104	P/P	90 - 110
Iron	104	101	P/P	90 - 110
Magnesium	105	103	P/P	90 - 110
Potassium	101	98.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A100051

Included Lab Sample IDs: 2184618, 2184619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	100	98.0	P/P	90 - 110
Zinc	105	105	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A100054

Included Lab Sample IDs: 2184610, 2184611

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	99.5	P/P	90 - 110
Total Alkalinity	99.5	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A100054

Included Lab Sample IDs: 2184610, 2184611

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A100064

Included Lab Sample IDs: 2184612, 2184613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	105	P/P	90 - 110
Kjeldahl Nitrogen	96.5	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100073

Included Lab Sample IDs: 2184612, 2184613

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

Reference Method: SM 5310 B-2011

Run ID: A100127

Included Lab Sample IDs: 2184612, 2184613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	96.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A100152

Included Lab Sample IDs: 2184610, 2184611

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	101	99.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A100180

Included Lab Sample IDs: 2184618, 2184619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	96.3	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100186

Included Lab Sample IDs: 2184612, 2184613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.8	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					3.51	
	Turbidity					4.79	
EPA 200.7 Rev. 4.4	Barium	100	106	101	105		4.05
	Calcium	104	105	103			2.56
	Iron	101	109	107	105		2.16
	Magnesium	105	111	107	103		2.36
	Potassium	100	105	101	102		2.85
	Sodium	97.1	99.9	99.4			4.03
	Zinc	104	105	108	109		3.69
EPA 200.8 Rev. 5.4	Aluminum	99.6	99.8	101	101		1.04
	Antimony	101	104	104	104		0.0786
	Arsenic	102	104	104	103		0.507
	Boron	101	100	102	102		1.31
	Cadmium	102	101	103	105		2.48
	Chromium	102	105	105	105		0.650
	Copper	101	102	103	100		1.05
	Lead	103	104	106	104		1.74
	Nickel	100	102	104	101		1.33
	Selenium	99.9	99.7	102	99.9		2.05
	Silver	98.6	99.1	95.2	95.3		4.01
	Thallium	101	107	106	103		0.995
EPA 300.0 Rev. 2.1	Chloride	100	99.2	99.7		0.724	
	Sulfate	98.8	96.5	98.2		0.692	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	100	98.8			0.865
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	99.0	95.5			2.94
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	97.5	98.0			0.512
EPA 365.1 Rev. 2.0	Total-P	102	104	106			1.56
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.2	96.6	97.3			0.682
SM 2120 B-2011	Color (true)	101				9.86	
SM 2320 B-2011	Total Alkalinity	100				1.17	
SM 2540 C-2011	TDS					0.784	
SM 4500 F-C-2011	Fluoride	100	107	106			0.464
SM 5310 B-2011	Organic Carbon	97.0	93.0	94.5			0.813

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2184610, 2184611
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2184618, 2184619
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2184618, 2184619
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2184610, 2184611
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2184610, 2184611
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2184612, 2184613
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2184612, 2184613
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2184612, 2184613
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2184612, 2184613
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2184614, 2184615
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2184610, 2184611
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2184610, 2184611
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2184618, 2184619

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2184610, 2184611
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2184610, 2184611
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2184610, 2184611
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2184612, 2184613

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	07/22/2020			07/22/2020 16:45	Blanca Fach	2184610, 2184611
EPA 200.7 Rev. 4.4	07/22/2020	07/22/2020 16:25	Elliott D. Healy	07/23/2020 18:45	Betina Topolski	2184618
	07/22/2020	07/22/2020 16:25	Elliott D. Healy	07/23/2020 18:53	Betina Topolski	2184619
EPA 200.8 Rev. 5.4	07/22/2020	07/22/2020 16:25	Elliott D. Healy	07/23/2020 19:09	Alexander Thompson	2184618
	07/22/2020	07/22/2020 16:25	Elliott D. Healy	07/23/2020 19:17	Alexander Thompson	2184619
	07/22/2020	07/27/2020 12:45	Elliott D. Healy	07/30/2020 12:18	Alexander Thompson	2184618
	07/22/2020	07/27/2020 12:45	Elliott D. Healy	07/30/2020 12:22	Alexander Thompson	2184619
EPA 300.0 Rev. 2.1	07/22/2020			07/29/2020 03:17	Julia Storbeck	2184610
	07/22/2020			07/29/2020 03:29	Julia Storbeck	2184611
EPA 350.1 Rev. 2.0	07/22/2020			07/25/2020 12:44	Ping Hua	2184612
	07/22/2020			07/25/2020 12:46	Ping Hua	2184613
EPA 351.2 Rev. 2.0	07/22/2020	07/23/2020 10:20	Sima Feizi	07/24/2020 14:03	Jhamieka S. Greenwood	2184612
	07/22/2020	07/23/2020 10:20	Sima Feizi	07/24/2020 14:08	Jhamieka S. Greenwood	2184613
EPA 353.2 Rev. 2.0	07/22/2020			07/23/2020 09:22	Beverly Y. Sanders	2184612
	07/22/2020			07/23/2020 09:23	Beverly Y. Sanders	2184613
EPA 365.1 Rev. 2.0	07/22/2020	07/28/2020 10:00	Lipi Saha	07/30/2020 13:00	Benjamin T. Nordmann	2184612
	07/22/2020	07/28/2020 10:00	Lipi Saha	07/30/2020 13:01	Benjamin T. Nordmann	2184613
EPA 365.1 Rev. 2.0 dissolved	07/22/2020			07/22/2020 14:52	Jhamieka S. Greenwood	2184614
	07/22/2020			07/22/2020 14:53	Jhamieka S. Greenwood	2184615
SM 2120 B-2011	07/22/2020			07/22/2020 16:22	Benjamin T. Nordmann	2184610
	07/22/2020			07/22/2020 16:23	Benjamin T. Nordmann	2184611
SM 2320 B-2011	07/22/2020			07/23/2020 22:09	Dale L. Simmons	2184610
	07/22/2020			07/23/2020 22:50	Dale L. Simmons	2184611
SM 2340B	07/22/2020			07/23/2020 18:45	Betina Topolski	2184618
	07/22/2020			07/23/2020 18:53	Betina Topolski	2184619
SM 2540 C-2011	07/22/2020			07/27/2020 14:36	Yijie Li	2184610, 2184611
SM 2540 D-2011	07/22/2020			07/27/2020 14:36	Yijie Li	2184610, 2184611
SM 4500 F-C-2011	07/22/2020			07/23/2020 22:09	Dale L. Simmons	2184610
	07/22/2020			07/23/2020 22:50	Dale L. Simmons	2184611
SM 5310 B-2011	07/22/2020			07/28/2020 01:43	David Boose	2184612
	07/22/2020			07/28/2020 01:58	David Boose	2184613