

Chemical Analysis Report

NE-DIST-2021-06-30-01

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

Event Description: **Nassau North Boat**
Request ID: **RQ-2021-06-28-13**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 23-JUL-2021 13:11

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: SMR 3.2 MI S TRACY RD

Collection Date/Time: 06/29/2021 13:10

Field ID: 19010157

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2257912	EPA 200.7 Rev. 4.4	Barium	19.9		ug/L	P400573	
		Calcium	4.59		mg/L	P400573	
		Iron	1.02E+03		ug/L	P400573	
		Magnesium	1.39		mg/L	P400573	
		Manganese	21.3		ug/L	P400573	
		Potassium	0.70	I	mg/L	P400573	
	EPA 200.8 Rev. 5.4	Sodium	4.5		mg/L	P400573	
		Zinc	7.0	I	ug/L	P400573	
		Aluminum	832		ug/L	P400573	
		Antimony	0.077	I	ug/L	P400573	
		Arsenic	0.61		ug/L	P400573	
		Beryllium	0.057		ug/L	P400573	
		Boron**	23.7		ug/L	P400573	
		Cadmium	0.024	I	ug/L	P400573	
		Chromium	0.89	I	ug/L	P400573	
		Copper	0.89		ug/L	P400573	
		Lead	0.95		ug/L	P400573	
		Nickel	0.85	I	ug/L	P400573	
		Selenium	0.20	U	ug/L	P400573	
		Silver	0.010	U	ug/L	P400573	
		Thallium	0.10	U	ug/L	P400573	
	SM 2340B	Hardness	17.2		mg/L	P400573	

Ref. Method and Comment:

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/08/2021.

Sample Location: SMR 0.3 MI S TRACY RD

Collection Date/Time: 06/29/2021 12:40

Field ID: 19010156

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2257903	EPA 180.1 Rev. 2.0	Turbidity	8.0		NTU	P400432	
	EPA 300.0 Rev. 2.1	Chloride	6.8		mg Cl/L	P400655	
		Sulfate	4.6		mg SO4/L	P400656	
		Color (true)	390		PCU	P400423	
	SM 2320 B-2011	Total Alkalinity	0.66	I	mg CaCO3/L	P400707	
	SM 2540 C-2011	TDS	100		mg/L	P400764	
	SM 2540 D-2011	TSS	8	I	mg/L	P400672	
2257904	SM 4500 F-C-2011	Fluoride	0.038	I	mg F/L	P400710	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P400693	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P400588	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P400443	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P400527	
2257905	SM 5310 B-2011	Organic Carbon	37		mg C/L	P400568	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P400410	
2257911	EPA 200.7 Rev. 4.4	Barium	19.7		ug/L	P400573	
		Calcium	4.49		mg/L	P400573	
		Iron	1.02E+03		ug/L	P400573	
		Magnesium	1.36		mg/L	P400573	
		Manganese	21.2		ug/L	P400573	
		Potassium	0.72	I	mg/L	P400573	
		Sodium	4.3		mg/L	P400573	
	EPA 200.8 Rev. 5.4	Zinc	7.0	I	ug/L	P400573	
		Aluminum	922		ug/L	P400573	
		Antimony	0.078	I	ug/L	P400573	
		Arsenic	0.62		ug/L	P400573	
		Beryllium	0.058		ug/L	P400573	
		Boron**	23.8		ug/L	P400573	
		Cadmium	0.030	I	ug/L	P400573	
		Chromium	0.94	I	ug/L	P400573	
		Copper	0.88		ug/L	P400573	
		Lead	1.01		ug/L	P400573	
		Nickel	0.86	I	ug/L	P400573	
		Selenium	0.20	U	ug/L	P400573	
		Silver	0.010	U	ug/L	P400573	
		Thallium	0.10	U	ug/L	P400573	
		Hardness	16.8		mg/L	P400573	
	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 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 07/08/2021.

Sample Location: Plummer Creek @ Second Island

Collection Date/Time: 06/29/2021 10:30

Field ID: G4NE0301

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2257900	EPA 180.1 Rev. 2.0	Turbidity	14		NTU	P400432	
	SM 2320 B-2011	Total Alkalinity	27		mg CaCO3/L	P400707	
	SM 2540 D-2011	TSS	19		mg/L	P400673	
	SM 4500 F-C-2011	Fluoride	0.080	I	mg F/L	P400710	
2257901	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P400693	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P400588	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P400443	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P400525	
	SM 5310 B-2011	Organic Carbon	26		mg C/L	P400568	
2257902	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.058		mg P/L	P400402	

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.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P400432

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P400573

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: P400573

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: P400655

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400656

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400693

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400588

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400443

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400525

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400527

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400402

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400410

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

Reference Method: SM 2120 B-2011
Batch ID: P400423

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P400707

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

Reference Method: SM 2540 C-2011
Batch ID: P400764

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P400672

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P400673

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P400710

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P400568

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: P400573

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	99.2		P	85 - 115
Calcium	99.1		P	85 - 115
Iron	95.6		P	85 - 115
Magnesium	102		P	85 - 115
Manganese	99.7		P	85 - 115
Potassium	104		P	85 - 115
Sodium	92.1		P	85 - 115
Zinc	90.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P400573

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	108		P	85 - 115
Antimony	108		P	85 - 115
Arsenic	105		P	85 - 115
Beryllium	105		P	85 - 115
Boron	113		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	102		P	85 - 115
Copper	102		P	85 - 115
Lead	103		P	85 - 115
Nickel	103		P	85 - 115
Selenium	104		P	85 - 115
Silver	100		P	85 - 115
Thallium	107		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400655

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400656

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400693

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P400588

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P400443

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: P400525

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P400527

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P400402

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P400410

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

Reference Method: SM 2120 B-2011
 Batch ID: P400423

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-2011
 Batch ID: P400707

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	94 - 106

Reference Method: SM 4500 F-C-2011
 Batch ID: P400710

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	93 - 104

Reference Method: SM 5310 B-2011
 Batch ID: P400568

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P400573

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257773	Barium	97.2		P	80 - 120
2257773	Calcium	105		P	80 - 120
2257773	Iron	90.4		P	80 - 120
2257773	Magnesium	101		P	80 - 120
2257773	Manganese	97.3		P	80 - 120
2257773	Potassium	108		P	80 - 120
2257773	Sodium	94.7		P	80 - 120
2257773	Zinc	88.7		P	80 - 120
2258458	Barium	100	98.9	P/P	80 - 120
2258458	Calcium	100		P	80 - 120
2258458	Iron	115	109	P/P	80 - 120
2258458	Magnesium	98.0	102	P/P	80 - 120
2258458	Manganese	99.9	98.9	P/P	80 - 120
2258458	Potassium	104	103	P/P	80 - 120
2258458	Sodium	97.7		P	80 - 120
2258458	Zinc	91.9	90.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P400573

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257773	Aluminum	114		P	80 - 120
2257773	Antimony	108		P	80 - 120
2257773	Arsenic	105		P	80 - 120
2257773	Beryllium	104		P	80 - 120
2257773	Boron	113		P	80 - 120
2257773	Cadmium	103		P	80 - 120
2257773	Chromium	102		P	80 - 120
2257773	Copper	105		P	80 - 120
2257773	Lead	104		P	80 - 120
2257773	Nickel	104		P	80 - 120
2257773	Selenium	105		P	80 - 120
2257773	Silver	102		P	80 - 120
2257773	Thallium	111		P	80 - 120
2258458	Aluminum	108	109	P/P	80 - 120
2258458	Antimony	107	108	P/P	80 - 120
2258458	Arsenic	105	106	P/P	80 - 120
2258458	Beryllium	102	105	P/P	80 - 120
2258458	Boron	115	115	P/P	80 - 120
2258458	Cadmium	102	105	P/P	80 - 120
2258458	Chromium	100	101	P/P	80 - 120
2258458	Copper	104	105	P/P	80 - 120
2258458	Lead	105	105	P/P	80 - 120
2258458	Nickel	103	104	P/P	80 - 120
2258458	Selenium	103	102	P/P	80 - 120
2258458	Silver	100	101	P/P	80 - 120
2258458	Thallium	112	111	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P400655

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: P400655

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257613	Chloride	95.4		P	90 - 110
2258001	Chloride	98.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P400656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257613	Sulfate	92.6		P	90 - 110
2258001	Sulfate	93.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P400693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257904	Ammonia-N	100	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P400443

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257782	NO2NO3-N	98.2	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P400527

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257956	Total-P	107	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400402

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257949	O-Phosphate-P	93.5	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P400410

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2258067	O-Phosphate-P	101	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P400710

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257941	Fluoride	95.0	97.3	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P400568

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2257786	Organic Carbon	101		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P400432

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257960	Turbidity	2.63	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P400573

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258458	Barium	1.18	Spike	P	0 - 20
2258458	Calcium	0.163	Spike	P	0 - 20
2258458	Iron	5.17	Spike	P	0 - 20
2258458	Magnesium	2.20	Spike	P	0 - 20
2258458	Manganese	0.958	Spike	P	0 - 20
2258458	Potassium	0.704	Spike	P	0 - 20
2258458	Sodium	2.84	Spike	P	0 - 20
2258458	Zinc	1.21	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P400573

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258458	Aluminum	0.725	Spike	P	0 - 20
2258458	Antimony	0.714	Spike	P	0 - 20
2258458	Arsenic	0.265	Spike	P	0 - 20
2258458	Beryllium	2.82	Spike	P	0 - 20
2258458	Boron	0.190	Spike	P	0 - 20
2258458	Cadmium	2.19	Spike	P	0 - 20
2258458	Chromium	0.976	Spike	P	0 - 20
2258458	Copper	0.924	Spike	P	0 - 20
2258458	Lead	0.310	Spike	P	0 - 20
2258458	Nickel	0.583	Spike	P	0 - 20
2258458	Selenium	0.683	Spike	P	0 - 20
2258458	Silver	0.631	Spike	P	0 - 20
2258458	Thallium	0.784	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P400655

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257613	Chloride	1.54	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P400656

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257613	Sulfate	1.51	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P400693

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257904	Ammonia-N	1.28	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P400588

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257818	Kjeldahl Nitrogen	2.60	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P400443

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257782	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P400525

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257791	Total-P	0.0718	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P400527

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257956	Total-P	1.47	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P400402

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257949	O-Phosphate-P	1.82	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P400410

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2258067	O-Phosphate-P	0.166	Spike	P	0 - 20

Reference Method: SM 2120 B-2011

Batch ID: P400423

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257817	Color (true)	1.39	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P400707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257941	Total Alkalinity	0.884	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P400764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257817	TDS	1.73	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P400710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257941	Fluoride	0.457	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P400568

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2257786	Organic Carbon	0.0481	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: A106369

Included Lab Sample IDs: 2257902, 2257905

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.3	P/P	90 - 110
O-Phosphate-P	98.8	99.6	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A106379

Included Lab Sample IDs: 2257903

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A106383

Included Lab Sample IDs: 2257900, 2257903

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A106386

Included Lab Sample IDs: 2257901, 2257904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A106449

Included Lab Sample IDs: 2257901

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

Reference Method: SM 5310 B-2011

Run ID: A106454

Included Lab Sample IDs: 2257901, 2257904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A106459

Included Lab Sample IDs: 2257904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	98.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A106481

Included Lab Sample IDs: 2257903

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.8	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A106481

Included Lab Sample IDs: 2257903

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	98.6	98.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A106493

Included Lab Sample IDs: 2257911, 2257912

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	103	P/P	90 - 110
Antimony	105	104	P/P	90 - 110
Arsenic	100	99.9	P/P	90 - 110
Beryllium	96.5	93.1	P/P	90 - 110
Boron	105	109	P/P	90 - 110
Cadmium	100	100	P/P	90 - 110
Chromium	99.8	97.4	P/P	90 - 110
Copper	99.5	100	P/P	90 - 110
Lead	98.8	99.0	P/P	90 - 110
Nickel	100	99.5	P/P	90 - 110
Selenium	100	99.2	P/P	90 - 110
Silver	98.7	99.0	P/P	90 - 110
Thallium	98.9	98.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A106506

Included Lab Sample IDs: 2257901, 2257904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	98.0	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A106513

Included Lab Sample IDs: 2257900, 2257903

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A106513

Included Lab Sample IDs: 2257900, 2257903

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A106543

Included Lab Sample IDs: 2257911, 2257912

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	99.6	98.4	P/P	90 - 110
Calcium	101	99.5	P/P	90 - 110
Iron	94.9	96.2	P/P	90 - 110
Magnesium	97.9	97.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A106543

Included Lab Sample IDs: 2257911, 2257912

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Manganese	101	99.6	P/P	90 - 110
Potassium	102	100	P/P	90 - 110
Sodium	96.6	98.5	P/P	90 - 110
Zinc	96.5	92.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A106580

Included Lab Sample IDs: 2257901, 2257904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.3	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					2.63	
EPA 200.7 Rev. 4.4	Barium	99.2	97.2	100	98.9		1.18
	Calcium	99.1	105	100			0.163
	Iron	95.6	90.4	115	109		5.17
	Magnesium	102	101	98.0	102		2.20
	Manganese	99.7	97.3	99.9	98.9		0.958
	Potassium	104	108	104	103		0.704
	Sodium	92.1	94.7	97.7			2.84
	Zinc	90.2	88.7	91.9	90.8		1.21
EPA 200.8 Rev. 5.4	Aluminum	108	114	108	109		0.725
	Antimony	108	108	107	108		0.714
	Arsenic	105	105	105	106		0.265
	Beryllium	105	104	102	105		2.82
	Boron	113	113	115	115		0.190
	Cadmium	102	103	102	105		2.19
	Chromium	102	102	100	101		0.976
	Copper	102	105	104	105		0.924
	Lead	103	104	105	105		0.310
	Nickel	103	104	103	104		0.583
	Selenium	104	105	103	102		0.683
	Silver	100	102	100	101		0.631
	Thallium	107	111	112	111		0.784
EPA 300.0 Rev. 2.1	Chloride	96.7	95.4	98.2		1.54	
	Sulfate	97.3	92.6	93.0		1.51	
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	100	98.8			1.28
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107					2.60
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	98.2	98.2			0.0
EPA 365.1 Rev. 2.0	Total-P	105					0.0718
	Total-P	101	107	104			1.47
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	93.5	95.4			1.82
	O-Phosphate-P	101	101	100			0.166
SM 2120 B-2011	Color (true)	100				1.39	
SM 2320 B-2011	Total Alkalinity	103				0.884	
SM 2540 C-2011	TDS					1.73	
SM 4500 F-C-2011	Fluoride	99.9	95.0	97.3			0.457
SM 5310 B-2011	Organic Carbon	97.1	101				0.0481

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2257900, 2257903
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2257911, 2257912
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2257911, 2257912
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2257903
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2257903
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2257901, 2257904
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2257901, 2257904
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2257901, 2257904
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2257901, 2257904
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2257902, 2257905

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2257903
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2257900, 2257903
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2257911, 2257912
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2257903
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2257900, 2257903
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2257900, 2257903
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2257901, 2257904

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	06/30/2021			06/30/2021 16:33	Sarah A Nixon	2257900, 2257903
EPA 200.7 Rev. 4.4	06/30/2021	07/06/2021 13:45	Elliott D. Healy	07/09/2021 13:40	Betina Topolski	2257911
	06/30/2021	07/06/2021 13:45	Elliott D. Healy	07/09/2021 13:45	Betina Topolski	2257912
EPA 200.8 Rev. 5.4	06/30/2021	07/06/2021 13:45	Elliott D. Healy	07/07/2021 16:15	Alexander Thompson	2257911
	06/30/2021	07/06/2021 13:45	Elliott D. Healy	07/07/2021 16:25	Alexander Thompson	2257912
EPA 300.0 Rev. 2.1	06/30/2021			07/07/2021 17:54	Lipi Saha	2257903
EPA 350.1 Rev. 2.0	06/30/2021			07/08/2021 12:28	Roberta Tatti	2257901
	06/30/2021			07/08/2021 12:29	Roberta Tatti	2257904
EPA 351.2 Rev. 2.0	06/30/2021	07/06/2021 14:20	Benjamin T. Nordmann	07/13/2021 12:03	Letuzia M De Oliveira	2257901
	06/30/2021	07/06/2021 14:20	Benjamin T. Nordmann	07/13/2021 12:04	Letuzia M De Oliveira	2257904
EPA 353.2 Rev. 2.0	06/30/2021			07/01/2021 09:03	Beverly Y. Sanders	2257901
	06/30/2021			07/01/2021 09:05	Beverly Y. Sanders	2257904
EPA 365.1 Rev. 2.0	06/30/2021	07/02/2021 14:09	Madeline Gruver	07/06/2021 08:43	Shengyu Ding	2257901
	06/30/2021	07/02/2021 14:09	Madeline Gruver	07/06/2021 13:25	Shengyu Ding	2257904
EPA 365.1 Rev. 2.0 dissolved	06/30/2021			06/30/2021 12:21	Ping Hua	2257902
	06/30/2021			06/30/2021 14:09	Ping Hua	2257905
SM 2120 B-2011	06/30/2021			06/30/2021 17:35	Sarah A Nixon	2257903
SM 2320 B-2011	06/30/2021			07/09/2021 01:05	Dale L. Simmons	2257900
	06/30/2021			07/09/2021 01:14	Dale L. Simmons	2257903
SM 2340B	06/30/2021			07/09/2021 13:40	Betina Topolski	2257911
	06/30/2021			07/09/2021 13:45	Betina Topolski	2257912
SM 2540 C-2011	06/30/2021			07/01/2021 15:22	Yijie Li	2257903
SM 2540 D-2011	06/30/2021			07/01/2021 15:22	Yijie Li	2257900, 2257903
SM 4500 F-C-2011	06/30/2021			07/09/2021 01:05	Dale L. Simmons	2257900
	06/30/2021			07/09/2021 01:14	Dale L. Simmons	2257903
SM 5310 B-2011	06/30/2021			07/03/2021 04:28	Madeline Gruver	2257901
	06/30/2021			07/03/2021 04:41	Madeline Gruver	2257904