

Chemical Analysis Report

NE-DIST-2022-08-17-01

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

Event Description: **Nassau Lakes & Sampson LVI**
Request ID: **RQ-2022-08-15-31**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 07-SEP-2022 10:30

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: OCEAN POND CENTER

Collection Date/Time: 08/16/2022 10:30

Field ID: 21010011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2349842	DEP SOP: NU-094-1	Color (true)	120		PCU	P418272	
	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P418265	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P418361	
		Sulfate	1.5		mg SO4/L	P418363	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P418391	
	SM 2540 C-2011	TDS	38		mg/L	P418535	
	SM 2540 D-2011	TSS	4	I	mg/L	P418486	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P418401	
2349844	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P418418	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P418448	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P418528	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P418369	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P418470	
2349848	EPA 200.7 Rev. 4.4	Calcium	1.36		mg/L	P418293	
		Iron	510		ug/L	P418293	
		Magnesium	0.61		mg/L	P418293	
		Potassium	0.30	U	mg/L	P418293	
		Sodium	3.5		mg/L	P418293	
		Strontium	6.8	I	ug/L	P418293	
		Tin	3.0	U	ug/L	P418293	
		Titanium	1.4	I	ug/L	P418293	
		Vanadium	2.0	U	ug/L	P418293	
		Zinc	5.0	U	ug/L	P418293	
		Aluminum	272		ug/L	P418293	
		Antimony	0.071	I	ug/L	P418293	
	EPA 200.8 Rev. 5.4	Arsenic	0.54		ug/L	P418293	
		Barium	7.21		ug/L	P418293	
		Beryllium	0.025	I	ug/L	P418293	
		Boron	15.6		ug/L	P418293	
		Cadmium	0.020	U	ug/L	P418293	
		Chromium	0.40	U	ug/L	P418293	
		Cobalt	0.158		ug/L	P418293	
		Copper	0.40	U	ug/L	P418293	
		Lead	0.81		ug/L	P418293	
		Manganese	16.1		ug/L	P418293	
		Molybdenum	0.15	U	ug/L	P418293	
		Nickel	0.50	U	ug/L	P418293	
		Selenium	0.20	U	ug/L	P418293	
		Silver	0.010	U	ug/L	P418293	
		Thallium	0.10	U	ug/L	P418293	
	SM 2340 B-2011	Hardness	5.9		mg/L	P418293	

Field ID: 21010011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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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 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable for one of two spiked samples 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 08/24/2022.

Sample Location: PALESTINE LAKE CENTER

Collection Date/Time: 08/16/2022 11:25

Field ID: 19010044

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2349843	DEP SOP: NU-094-1	Color (true)	100		PCU	P418272	
	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P418266	
	EPA 300.0 Rev. 2.1	Chloride	6.6		mg Cl/L	P418361	
		Sulfate	2.7		mg SO4/L	P418363	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P418391	
	SM 2540 C-2011	TDS	44		mg/L	P418535	
	SM 2540 D-2011	TSS	3	I	mg/L	P418486	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P418401	
2349845	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P418491	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P418449	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P418528	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P418369	
	SM 5310 B-2011	Organic Carbon	12		mg C/L	P418470	
2349849	EPA 200.7 Rev. 4.4	Calcium	1.60		mg/L	P418293	
		Iron	210		ug/L	P418293	
		Magnesium	0.91		mg/L	P418293	
		Potassium	1.1	I	mg/L	P418293	
		Sodium	4.2		mg/L	P418293	
		Strontium	8.6		ug/L	P418293	
		Tin	3.0	U	ug/L	P418293	
		Titanium	1.1	I	ug/L	P418293	
		Vanadium	2.0	U	ug/L	P418293	
		Zinc	26		ug/L	P418293	
	EPA 200.8 Rev. 5.4	Aluminum	170		ug/L	P418293	
		Antimony	0.096	I	ug/L	P418293	
		Arsenic	0.38		ug/L	P418293	
		Barium	9.07		ug/L	P418293	
		Beryllium	0.011	I	ug/L	P418293	
		Boron	18.9		ug/L	P418293	
		Cadmium	0.020	U	ug/L	P418293	
		Chromium	0.40	U	ug/L	P418293	
		Cobalt	0.089		ug/L	P418293	
		Copper	0.40	U	ug/L	P418293	
		Lead	0.49		ug/L	P418293	
		Manganese	18.1		ug/L	P418293	
		Molybdenum	0.15	U	ug/L	P418293	
		Nickel	0.50	U	ug/L	P418293	
		Selenium	0.20	U	ug/L	P418293	
		Silver	0.010	U	ug/L	P418293	
		Thallium	0.10	U	ug/L	P418293	
		Hardness	7.8		mg/L	P418293	

Ref. Method and Comment:

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P418272

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418265

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418266

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418293

Component	Result	Code	Units
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
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418293

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	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
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418361

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418363

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418418

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418491

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418448

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418449

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418528

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418369

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

Reference Method: SM 2320 B-2011
Batch ID: P418391

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P418535

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P418486

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P418401

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P418470

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P418272

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.6		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418265

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	96.5		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418266

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418293

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	99.2		P	80 - 120
Iron	98.7		P	80 - 120
Magnesium	99.2		P	80 - 120
Potassium	104		P	80 - 120
Sodium	104		P	80 - 120
Strontium	101		P	80 - 120
Tin	97.2		P	80 - 120
Titanium	98.4		P	80 - 120
Vanadium	98.4		P	80 - 120
Zinc	97.7		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418293

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	99.2		P	85 - 115
Arsenic	101		P	85 - 115
Barium	104		P	85 - 115
Beryllium	94.9		P	85 - 115
Boron	99.9		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	102		P	85 - 115
Cobalt	96.9		P	85 - 115
Copper	98.3		P	85 - 115
Lead	96.5		P	85 - 115
Manganese	101		P	85 - 115
Molybdenum	99.4		P	85 - 115
Nickel	99.4		P	85 - 115
Selenium	101		P	85 - 115
Silver	102		P	85 - 115
Thallium	97.0		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418361

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418363

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418418

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418491

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418448

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418449

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418528

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418369

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

Reference Method: SM 2320 B-2011
Batch ID: P418391

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.9		P	94 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P418401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P418470

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: P418293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2350007	Iron	96.8		P	80 - 120
2350007	Magnesium	99.9		P	80 - 120
2350007	Potassium	104		P	80 - 120
2350007	Sodium	104		P	80 - 120
2350007	Strontium	99.3		P	80 - 120
2350007	Tin	93.7		P	80 - 120
2350007	Titanium	96.3		P	80 - 120
2350007	Vanadium	97.5		P	80 - 120
2350007	Zinc	94.9		P	80 - 120
2350044	Calcium	101	96.2	P/P	80 - 120
2350044	Iron	99.1	97.1	P/P	80 - 120
2350044	Magnesium	99.6	97.2	P/P	80 - 120
2350044	Potassium	103	99.1	P/P	80 - 120
2350044	Sodium	104	99.3	P/P	80 - 120
2350044	Strontium	100	96.7	P/P	80 - 120
2350044	Tin	97.6	94.9	P/P	80 - 120
2350044	Titanium	98.0	94.4	P/P	80 - 120
2350044	Vanadium	96.7	93.5	P/P	80 - 120
2350044	Zinc	97.2	94.2	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P418293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2350007	Aluminum	97.4		P	75 - 125
2350007	Antimony	102		P	75 - 125
2350007	Arsenic	98.4		P	75 - 125
2350007	Barium	102		P	75 - 125
2350007	Beryllium	91.9		P	75 - 125
2350007	Boron	97.6		P	75 - 125
2350007	Cadmium	104		P	75 - 125
2350007	Chromium	105		P	75 - 125
2350007	Cobalt	92.0		P	75 - 125
2350007	Copper	90.6		P	75 - 125
2350007	Lead	95.7		P	75 - 125
2350007	Manganese	101		P	75 - 125
2350007	Molybdenum	101		P	75 - 125
2350007	Nickel	94.1		P	75 - 125
2350007	Selenium	98.7		P	75 - 125
2350007	Silver	98.9		P	75 - 125
2350007	Thallium	98.3		P	75 - 125
2350044	Aluminum	104	103	P/P	80 - 120
2350044	Antimony	99.4	101	P/P	80 - 120
2350044	Arsenic	100	102	P/P	80 - 120
2350044	Barium	104	105	P/P	80 - 120
2350044	Beryllium	95.5	94.8	P/P	80 - 120
2350044	Boron	101	98.7	P/P	80 - 120
2350044	Cadmium	100	102	P/P	80 - 120
2350044	Chromium	103	102	P/P	80 - 120
2350044	Cobalt	97.5	96.3	P/P	80 - 120
2350044	Copper	101	101	P/P	80 - 120
2350044	Lead	98.7	97.9	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2350044	Manganese	104	103	P/P	80 - 120
2350044	Molybdenum	99.4	101	P/P	80 - 120
2350044	Nickel	101	99.7	P/P	80 - 120
2350044	Selenium	101	102	P/P	80 - 120
2350044	Silver	101	99.8	P/P	80 - 120
2350044	Thallium	98.7	98.6	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418361

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2348793	Chloride	96.0		P	90 - 110
2349378	Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418363

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2348793	Sulfate	96.4		P	90 - 110
2349378	Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418418

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349601	Ammonia-N	105	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349825	Ammonia-N	98.0	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349824	Kjeldahl Nitrogen	99.4	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418528

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349824	NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2350029	Total-P	107	107	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P418401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349634	Fluoride	100	99.2	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P418470

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2349844	Organic Carbon	99.3	99.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P418272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2350028	Color (true)	10.3	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349714	Turbidity	5.40	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P418266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2350028	Turbidity	16.4	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P418293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2350044	Calcium	3.24	Spike	P	0 - 20
2350044	Iron	1.71	Spike	P	0 - 20
2350044	Magnesium	1.92	Spike	P	0 - 20
2350044	Potassium	3.43	Spike	P	0 - 20
2350044	Sodium	2.90	Spike	P	0 - 20
2350044	Strontium	3.67	Spike	P	0 - 20
2350044	Tin	2.80	Spike	P	0 - 20
2350044	Titanium	3.72	Spike	P	0 - 20
2350044	Vanadium	3.45	Spike	P	0 - 20
2350044	Zinc	3.17	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2350044	Aluminum	1.03	Spike	P	0 - 20
2350044	Antimony	1.09	Spike	P	0 - 20
2350044	Arsenic	1.83	Spike	P	0 - 20
2350044	Barium	0.945	Spike	P	0 - 20
2350044	Beryllium	0.704	Spike	P	0 - 20
2350044	Boron	2.31	Spike	P	0 - 20
2350044	Cadmium	1.22	Spike	P	0 - 20
2350044	Chromium	0.615	Spike	P	0 - 20
2350044	Cobalt	1.24	Spike	P	0 - 20
2350044	Copper	0.177	Spike	P	0 - 20
2350044	Lead	0.873	Spike	P	0 - 20
2350044	Manganese	0.230	Spike	P	0 - 20
2350044	Molybdenum	1.68	Spike	P	0 - 20
2350044	Nickel	0.824	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P418293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2350044	Selenium	1.11	Spike	P	0 - 20
2350044	Silver	1.12	Spike	P	0 - 20
2350044	Thallium	0.183	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2348793	Chloride	2.28	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P418363

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2348793	Sulfate	2.62	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418418

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349601	Ammonia-N	1.15	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P418491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349825	Ammonia-N	1.15	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349825	Kjeldahl Nitrogen	0.0836	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P418449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349824	Kjeldahl Nitrogen	1.60	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418528

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P418528

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349824	NO2NO3-N	0.501	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P418369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2350029	Total-P	0.384	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P418391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349634	Total Alkalinity	0.781	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2011
Batch ID: P418535

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349378	TDS	0.851	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P418401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349634	Fluoride	0.940	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P418470

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2349844	Organic Carbon	0.0327	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A114142

Included Lab Sample IDs: 2349842, 2349843

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.1	98.7	P/P	90 - 110
Sulfate	99.4	99.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A114165

Included Lab Sample IDs: 2349842, 2349843

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

Reference Method: DEP SOP: NU-094-1

Run ID: A114167

Included Lab Sample IDs: 2349842, 2349843

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	101	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A114212

Included Lab Sample IDs: 2349842, 2349843

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.0	100	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A114212

Included Lab Sample IDs: 2349842, 2349843

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A114221

Included Lab Sample IDs: 2349844

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	107	106	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A114244

Included Lab Sample IDs: 2349844, 2349845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	96.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A114252

Included Lab Sample IDs: 2349845

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A114252

Included Lab Sample IDs: 2349845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.3	99.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114256

Included Lab Sample IDs: 2349848, 2349849

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.7	97.3	P/P	90 - 110
Antimony	95.3	98.6	P/P	90 - 110
Arsenic	100	98.0	P/P	90 - 110
Barium	97.9	97.9	P/P	90 - 110
Beryllium	95.7	93.9	P/P	90 - 110
Cadmium	102	106	P/P	90 - 110
Chromium	102	105	P/P	90 - 110
Cobalt	96.5	92.3	P/P	90 - 110
Copper	99.4	93.7	P/P	90 - 110
Lead	93.3	92.6	P/P	90 - 110
Manganese	101	101	P/P	90 - 110
Molybdenum	97.0	96.7	P/P	90 - 110
Nickel	98.7	92.5	P/P	90 - 110
Selenium	101	103	P/P	90 - 110
Silver	97.9	97.8	P/P	90 - 110
Thallium	99.5	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A114268

Included Lab Sample IDs: 2349844, 2349845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A114284

Included Lab Sample IDs: 2349848, 2349849

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Boron	93.5	90.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A114298

Included Lab Sample IDs: 2349845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A114304

Included Lab Sample IDs: 2349844, 2349845

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A114314

Included Lab Sample IDs: 2349844

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.9	97.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A114332

Included Lab Sample IDs: 2349848, 2349849

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	94.6	93.6	P/P	90 - 110
Iron	92.2	92.4	P/P	90 - 110
Magnesium	93.0	93.2	P/P	90 - 110
Potassium	99.1	99.8	P/P	90 - 110
Sodium	94.4	94.1	P/P	90 - 110
Strontium	96.8	97.3	P/P	90 - 110
Tin	94.9	90.4	P/P	90 - 110
Titanium	96.6	95.3	P/P	90 - 110
Vanadium	99.8	98.7	P/P	90 - 110
Zinc	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		
						LCS	SMP	MS
DEP SOP: NU-094-1	Color (true)	99.6					10.3	
EPA 180.1 Rev. 2.0	Turbidity	96.5					5.40	
	Turbidity	97.1					16.4	
EPA 200.7 Rev. 4.4	Calcium	99.2	101	96.2				3.24
	Iron	98.7	96.8	99.1	97.1			1.71
	Magnesium	99.2	99.9	99.6	97.2			1.92
	Potassium	104	104	103	99.1			3.43
	Sodium	104	104	104	99.3			2.90
	Strontium	101	99.3	100	96.7			3.67
	Tin	97.2	93.7	97.6	94.9			2.80
	Titanium	98.4	96.3	98.0	94.4			3.72
	Vanadium	98.4	97.5	96.7	93.5			3.45
	Zinc	97.7	94.9	97.2	94.2			3.17
EPA 200.8 Rev. 5.4	Aluminum	103	104	103	97.4			1.03
	Antimony	99.2	99.4	101	102			1.09
	Arsenic	101	100	102	98.4			1.83
	Barium	104	104	105	102			0.945
	Beryllium	94.9	95.5	94.8	91.9			0.704
	Boron	99.9	97.6	101	98.7			2.31
	Cadmium	103	100	102	104			1.22
	Chromium	102	103	102	105			0.615
	Cobalt	96.9	97.5	96.3	92.0			1.24
	Copper	98.3	101	101	90.6			0.177
	Lead	96.5	98.7	97.9	95.7			0.873
	Manganese	101	104	103	101			0.230
	Molybdenum	99.4	99.4	101	101			1.68
	Nickel	99.4	101	99.7	94.1			0.824
	Selenium	101	101	102	98.7			1.11
	Silver	102	101	99.8	98.9			1.12
	Thallium	97.0	98.7	98.6	98.3			0.183
EPA 300.0 Rev. 2.1	Chloride	97.2	96.0	99.3			2.28	
	Sulfate	97.9	96.4	99.9			2.62	
EPA 350.1 Rev. 2.0	Ammonia-N	97.0	105	104				1.15
	Ammonia-N	103	98.0	99.4				1.15
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101						0.0836
	Kjeldahl Nitrogen	94.8	99.4	102				1.60
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	99.5	100				0.501
EPA 365.1 Rev. 2.0	Total-P	108	107	107				0.384
SM 2320 B-2011	Total Alkalinity	98.9					0.781	
SM 2540 C-2011	TDS						0.851	
SM 4500-F- C-2011	Fluoride	101	100	99.2				0.940
SM 5310 B-2011	Organic Carbon	97.0	99.3	99.4				0.0327

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2349842, 2349843
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2349842, 2349843
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2349848, 2349849
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2349848, 2349849
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2349842, 2349843

Reference Method Descriptions

Method	Description	Associated Samples
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2349842, 2349843
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2349844, 2349845
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2349844, 2349845
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2349844, 2349845
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2349844, 2349845
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2349842, 2349843
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2349848, 2349849
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2349842, 2349843
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2349842, 2349843
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2349842, 2349843
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2349844, 2349845

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	08/17/2022			08/17/2022 16:23	Anna M. Plaviak	2349842
	08/17/2022			08/17/2022 16:24	Anna M. Plaviak	2349843
EPA 180.1 Rev. 2.0	08/17/2022			08/17/2022 14:57	Khloe J Berg	2349842
	08/17/2022			08/17/2022 15:04	Khloe J Berg	2349843
EPA 200.7 Rev. 4.4	08/17/2022	08/18/2022 10:30	Megan Whitefoot	08/25/2022 02:44	McKinley C Carter	2349848
	08/17/2022	08/18/2022 10:30	Megan Whitefoot	08/25/2022 02:49	McKinley C Carter	2349849
EPA 200.8 Rev. 5.4	08/17/2022	08/18/2022 10:30	Megan Whitefoot	08/22/2022 17:58	Emily M Philpot	2349848
	08/17/2022	08/18/2022 10:30	Megan Whitefoot	08/22/2022 18:08	Emily M Philpot	2349849
	08/17/2022	08/18/2022 10:30	Megan Whitefoot	08/24/2022 03:49	Megan Whitefoot	2349848
	08/17/2022	08/18/2022 10:30	Megan Whitefoot	08/24/2022 03:58	Megan Whitefoot	2349849
EPA 300.0 Rev. 2.1	08/17/2022			08/18/2022 22:32	Anna M. Plaviak	2349842
	08/17/2022			08/18/2022 22:44	Anna M. Plaviak	2349843
EPA 350.1 Rev. 2.0	08/17/2022			08/19/2022 13:40	Judith K. Clark	2349844
	08/17/2022			08/22/2022 15:56	Judith K. Clark	2349845
EPA 351.2 Rev. 2.0	08/17/2022	08/23/2022 16:31	Samantha L Bates	08/24/2022 13:28	Samantha L Bates	2349845
	08/17/2022	08/23/2022 16:31	Samantha L Bates	08/24/2022 17:05	Samantha L Bates	2349844
EPA 353.2 Rev. 2.0	08/17/2022			08/23/2022 10:16	Beverly Y. Sanders	2349844
	08/17/2022			08/23/2022 10:17	Beverly Y. Sanders	2349845
EPA 365.1 Rev. 2.0	08/17/2022	08/23/2022 18:30	Simonne.V. Calhoun	08/24/2022 16:13	James L Waggeberby	2349844
	08/17/2022	08/23/2022 18:30	Simonne.V. Calhoun	08/24/2022 16:14	James L Waggeberby	2349845
SM 2320 B-2011	08/17/2022			08/19/2022 02:53	Adam P Silver	2349842
	08/17/2022			08/19/2022 03:03	Adam P Silver	2349843
SM 2340 B-2011	08/17/2022			08/25/2022 02:44	McKinley C Carter	2349848
	08/17/2022			08/25/2022 02:49	McKinley C Carter	2349849
SM 2540 C-2011	08/17/2022			08/19/2022 13:18	Ping Hua	2349842, 2349843
SM 2540 D-2011	08/17/2022			08/19/2022 13:47	Ping Hua	2349842, 2349843
SM 4500-F- C-2011	08/17/2022			08/19/2022 02:53	Adam P Silver	2349842
	08/17/2022			08/19/2022 03:03	Adam P Silver	2349843
SM 5310 B-2011	08/17/2022			08/19/2022 20:27	Judith K. Clark	2349844
	08/17/2022			08/19/2022 21:24	Judith K. Clark	2349845