

Chemical Analysis Report

NE-DIST-2022-03-18-01

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

Event Description: **LSJR Lake**
Request ID: **RQ-2022-03-14-22**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 11-APR-2022 08:27

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Lake Broward North

Collection Date/Time: 03/17/2022 11:15

Field ID: G2NE1219

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2313372	DEP SOP: NU-094-1	Color (true)**	8.4		PCU	P411310	
	EPA 180.1 Rev. 2.0	Turbidity	0.85	I	NTU	P411314	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P411617	
		Sulfate	9.7		mg SO4/L	P411619	
	SM 2320 B-2011	Total Alkalinity	2.2	I	mg CaCO3/L	P411602	
	SM 2540 C-2011	TDS	47		mg/L	P411623	
	SM 2540 D-2011	TSS	2	U	mg/L	P411585	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P411605	
2313374	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P411553	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P411768	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P411383	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P411461	
	SM 5310 B-2011	Organic Carbon	4.9		mg C/L	P411474	
2313385	EPA 200.7 Rev. 4.4	Calcium	3.97		mg/L	P411384	
		Iron	30	U	ug/L	P411384	
		Magnesium	1.48		mg/L	P411384	
		Potassium	0.99	I	mg/L	P411384	
		Sodium	8.7		mg/L	P411384	
		Strontium	17.7		ug/L	P411384	
		Tin	3.0	U	ug/L	P411384	
		Titanium	0.75	U	ug/L	P411384	
		Vanadium	2.0	U	ug/L	P411384	
		Zinc	5.0	U	ug/L	P411384	
	EPA 200.8 Rev. 5.4	Aluminum	48		ug/L	P411384	
		Antimony	0.074	I	ug/L	P411384	
		Arsenic	2.01		ug/L	P411384	
		Barium	8.32		ug/L	P411384	
		Beryllium	0.010	U	ug/L	P411384	
		Boron**	28.0		ug/L	P411384	
		Cadmium	0.020	U	ug/L	P411384	
		Chromium	0.40	U	ug/L	P411384	
		Cobalt	0.020	U	ug/L	P411384	
		Copper	0.40	U	ug/L	P411384	
		Lead	0.20	U	ug/L	P411384	
		Manganese	1.72		ug/L	P411384	
		Molybdenum	0.15	U	ug/L	P411384	
		Nickel	0.50	U	ug/L	P411384	
		Selenium	0.20	U	ug/L	P411384	
		Silver	0.010	U	ug/L	P411384	
		Thallium	0.10	U	ug/L	P411384	
		Hardness	16.0		mg/L	P411384	
	SM 2340B	Hardness	16.0		mg/L	P411384	

Ref. Method and Comment:

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

Sample Location: Silver Lake Center

Collection Date/Time: 03/17/2022 10:20

Field ID: G2NE1132

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes	
2313376	DEP SOP: NU-094-1	Color (true)**	350		PCU	P411310		
	EPA 180.1 Rev. 2.0	Turbidity	0.55	I	NTU	P411314		
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P411617		
		Sulfate	3.6		mg SO4/L	P411619		
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P411602		
	SM 2540 C-2011	TDS	81		mg/L	P411622		
	SM 2540 D-2011	TSS	2	U	mg/L	P411584		
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P411605		
	2313377	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P411552	
		EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P411768	
EPA 353.2 Rev. 2.0		NO2NO3-N	0.11		mg N/L	P411383		
EPA 365.1 Rev. 2.0		Total-P	0.031		mg P/L	P411462		
SM 5310 B-2011		Organic Carbon	27		mg C/L	P411474		

Sample Location: Lake Broward South

Collection Date/Time: 03/17/2022 11:30

Field ID: G2NE1218

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2313373	DEP SOP: NU-094-1	Color (true)**	18	A	PCU	P411310	
	EPA 180.1 Rev. 2.0	Turbidity	0.80	I	NTU	P411314	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P411617	
		Sulfate	9.6		mg SO4/L	P411619	
	SM 2320 B-2011	Total Alkalinity	3.1		mg CaCO3/L	P411602	
	SM 2540 C-2011	TDS	56		mg/L	P411623	
	SM 2540 D-2011	TSS	2	U	mg/L	P411585	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P411605	
2313375	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P411702	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P411693	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P411383	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P411461	
	SM 5310 B-2011	Organic Carbon	5.8		mg C/L	P411474	
2313386	EPA 200.7 Rev. 4.4	Calcium	4.58		mg/L	P411384	
		Iron	44	I	ug/L	P411384	
		Magnesium	1.44		mg/L	P411384	
		Potassium	0.97	I	mg/L	P411384	
		Sodium	8.4		mg/L	P411384	
		Strontium	18.3		ug/L	P411384	
		Tin	3.0	U	ug/L	P411384	
		Titanium	0.75	U	ug/L	P411384	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P411384	
		Zinc	5.0	U	ug/L	P411384	
		Aluminum	44		ug/L	P411384	
		Antimony	0.062	I	ug/L	P411384	
		Arsenic	2.84		ug/L	P411384	
		Barium	8.89		ug/L	P411384	
		Beryllium	0.011	I	ug/L	P411384	
		Boron**	30.4		ug/L	P411384	
		Cadmium	0.020	U	ug/L	P411384	
		Chromium	0.40	U	ug/L	P411384	
		Cobalt	0.023	I	ug/L	P411384	
		Copper	0.69	I	ug/L	P411384	
		Lead	0.20	U	ug/L	P411384	
		Manganese	5.43		ug/L	P411384	
		Molybdenum	0.15	U	ug/L	P411384	
		Nickel	0.50	U	ug/L	P411384	
		Selenium	0.20	U	ug/L	P411384	
		Silver	0.010	U	ug/L	P411384	
		Thallium	0.10	U	ug/L	P411384	
	SM 2340B	Hardness	17.4		mg/L	P411384	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P411310

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P411314

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P411384

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: P411384

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411617

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411619

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411552

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411553

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411702

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411693

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411768

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411383

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411461

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411462

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P411602

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-2011
Batch ID: P411622

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P411623

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P411584

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P411585

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P411605

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P411474

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: P411310

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P411314

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P411384

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	105		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	105		P	85 - 115
Sodium	104		P	85 - 115
Strontium	101		P	85 - 115
Tin	103		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	95.4		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411384

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	102		P	85 - 115
Barium	103		P	85 - 115
Beryllium	99.6		P	85 - 115
Boron	104		P	85 - 115
Cadmium	98.4		P	85 - 115
Chromium	97.0		P	85 - 115
Cobalt	99.9		P	85 - 115
Copper	97.6		P	85 - 115
Lead	98.8		P	85 - 115
Manganese	97.8		P	85 - 115
Molybdenum	98.4		P	85 - 115
Nickel	99.2		P	85 - 115
Selenium	101		P	85 - 115
Silver	98.2		P	85 - 115
Thallium	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411617

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.5		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411619

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411552

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411553

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411702

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411693

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411768

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411383

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411461

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411462

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P411602

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P411605

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P411474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P411384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313385	Calcium	95.9	102	P/P	80 - 120
2313385	Iron	98.3	100	P/P	80 - 120
2313385	Magnesium	97.1	100	P/P	80 - 120
2313385	Potassium	96.2	97.7	P/P	80 - 120
2313385	Sodium	95.1		P	80 - 120
2313385	Strontium	94.0	94.5	P/P	80 - 120
2313385	Tin	95.0	98.1	P/P	80 - 120
2313385	Titanium	94.8	96.5	P/P	80 - 120
2313385	Vanadium	88.6	90.1	P/P	80 - 120
2313385	Zinc	94.8	95.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P411384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313385	Aluminum	99.5	101	P/P	80 - 120
2313385	Antimony	101	102	P/P	80 - 120
2313385	Arsenic	103	103	P/P	80 - 120
2313385	Barium	102	103	P/P	80 - 120
2313385	Beryllium	98.6	101	P/P	80 - 120
2313385	Boron	104	104	P/P	80 - 120
2313385	Cadmium	99.4	99.2	P/P	80 - 120
2313385	Chromium	98.8	98.8	P/P	80 - 120
2313385	Cobalt	100	100	P/P	80 - 120
2313385	Copper	100	101	P/P	80 - 120
2313385	Lead	99.6	100	P/P	80 - 120
2313385	Manganese	98.7	98.4	P/P	80 - 120
2313385	Molybdenum	101	102	P/P	80 - 120
2313385	Nickel	99.7	100	P/P	80 - 120
2313385	Selenium	100	102	P/P	80 - 120
2313385	Silver	97.3	97.9	P/P	80 - 120
2313385	Thallium	101	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P411617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313417	Chloride	94.7		P	90 - 110
2313566	Chloride	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P411619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313417	Sulfate	96.0		P	90 - 110
2313566	Sulfate	97.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P411552

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313159	Ammonia-N	98.0	98.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313374	Ammonia-N	97.2	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411702

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313375	Ammonia-N	98.8	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313375	Kjeldahl Nitrogen	106	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313275	Kjeldahl Nitrogen	97.7	96.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313374	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313339	Total-P	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313420	Total-P	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P411605

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313867	Fluoride	96.0	94.1	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P411474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2313160	Organic Carbon	95.3	98.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P411310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313373	Color (true)	7.00	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P411314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313357	Turbidity	5.80	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P411384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313385	Calcium	2.85	Spike	P	0 - 20
2313385	Iron	1.83	Spike	P	0 - 20
2313385	Magnesium	2.16	Spike	P	0 - 20
2313385	Potassium	1.24	Spike	P	0 - 20
2313385	Sodium	0.889	Spike	P	0 - 20
2313385	Strontium	0.518	Spike	P	0 - 20
2313385	Tin	3.26	Spike	P	0 - 20
2313385	Titanium	1.80	Spike	P	0 - 20
2313385	Vanadium	1.69	Spike	P	0 - 20
2313385	Zinc	1.08	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P411384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313385	Aluminum	1.05	Spike	P	0 - 20
2313385	Antimony	0.973	Spike	P	0 - 20
2313385	Arsenic	0.284	Spike	P	0 - 20
2313385	Barium	0.575	Spike	P	0 - 20
2313385	Beryllium	2.17	Spike	P	0 - 20
2313385	Boron	0.389	Spike	P	0 - 20
2313385	Cadmium	0.238	Spike	P	0 - 20
2313385	Chromium	0.0216	Spike	P	0 - 20
2313385	Cobalt	0.0420	Spike	P	0 - 20
2313385	Copper	0.418	Spike	P	0 - 20
2313385	Lead	0.407	Spike	P	0 - 20
2313385	Manganese	0.291	Spike	P	0 - 20
2313385	Molybdenum	0.642	Spike	P	0 - 20
2313385	Nickel	0.539	Spike	P	0 - 20
2313385	Selenium	1.75	Spike	P	0 - 20
2313385	Silver	0.662	Spike	P	0 - 20
2313385	Thallium	1.21	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313417	Chloride	0.00200	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P411619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313417	Sulfate	0.521	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411552

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313159	Ammonia-N	0.311	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313374	Ammonia-N	6.37	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P411702

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313375	Ammonia-N	0.474	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313375	Kjeldahl Nitrogen	0.892	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313275	Kjeldahl Nitrogen	1.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313374	NO2NO3-N	0.939	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313339	Total-P	0.449	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P411462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313420	Total-P	1.92	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P411602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313867	Total Alkalinity	0.862	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P411622

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313265	TDS	5.04	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P411623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313610	TDS	9.78	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P411584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313265	TSS	6.06	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P411605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313867	Fluoride	0.973	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P411474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2313160	Organic Carbon	2.51	Spike	P	0 - 20

Quality Assurance Report Precision

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

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1

Run ID: A111032

Included Lab Sample IDs: 2313372, 2313373, 2313376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.8	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A111034

Included Lab Sample IDs: 2313372, 2313373, 2313376

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A111070

Included Lab Sample IDs: 2313372, 2313373, 2313376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.8	98.3	P/P	90 - 110
Sulfate	98.3	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A111075

Included Lab Sample IDs: 2313374, 2313375, 2313377

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A111092

Included Lab Sample IDs: 2313385, 2313386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.2	102	P/P	90 - 110
Aluminum	98.0	97.2	P/P	90 - 110
Antimony	94.3	92.6	P/P	90 - 110
Antimony	94.3	94.3	P/P	90 - 110
Arsenic	98.2	98.9	P/P	90 - 110
Arsenic	99.6	98.2	P/P	90 - 110
Barium	96.6	96.9	P/P	90 - 110
Barium	97.2	96.6	P/P	90 - 110
Beryllium	94.2	96.1	P/P	90 - 110
Beryllium	94.6	94.2	P/P	90 - 110
Boron	95.3	102	P/P	90 - 110
Boron	96.4	95.3	P/P	90 - 110
Cadmium	96.3	96.6	P/P	90 - 110
Cadmium	96.6	95.5	P/P	90 - 110
Chromium	95.1	95.5	P/P	90 - 110
Chromium	95.5	94.7	P/P	90 - 110
Cobalt	96.5	96.6	P/P	90 - 110
Cobalt	96.6	101	P/P	90 - 110
Copper	97.1	97.3	P/P	90 - 110
Copper	97.3	100	P/P	90 - 110
Lead	95.0	95.3	P/P	90 - 110
Lead	95.7	95.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A111092

Included Lab Sample IDs: 2313385, 2313386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Manganese	95.1	95.8	P/P	90 - 110
Manganese	95.8	96.6	P/P	90 - 110
Molybdenum	97.0	96.2	P/P	90 - 110
Molybdenum	97.5	97.0	P/P	90 - 110
Nickel	96.4	101	P/P	90 - 110
Nickel	97.1	96.4	P/P	90 - 110
Selenium	97.9	98.2	P/P	90 - 110
Selenium	98.2	97.9	P/P	90 - 110
Silver	94.5	94.6	P/P	90 - 110
Silver	94.6	94.4	P/P	90 - 110
Thallium	100	98.8	P/P	90 - 110
Thallium	99.9	100	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A111102

Included Lab Sample IDs: 2313374, 2313375, 2313377

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.0	95.2	P/P	90 - 110
Organic Carbon	95.2	94.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A111123

Included Lab Sample IDs: 2313385, 2313386

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.5	98.8	P/P	90 - 110
Iron	99.8	101	P/P	90 - 110
Magnesium	99.6	99.7	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Sodium	99.5	99.4	P/P	90 - 110
Strontium	93.4	94.5	P/P	90 - 110
Tin	94.5	94.6	P/P	90 - 110
Titanium	93.5	95.2	P/P	90 - 110
Vanadium	93.7	95.0	P/P	90 - 110
Zinc	96.5	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A111133

Included Lab Sample IDs: 2313374, 2313377

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	98.4	P/P	90 - 110
Ammonia-N	99.5	98.2	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A111156

Included Lab Sample IDs: 2313372, 2313373, 2313376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.1	97.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-2011

Run ID: A111156

Included Lab Sample IDs: 2313372, 2313373, 2313376

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A111163

Included Lab Sample IDs: 2313374, 2313375, 2313377

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A111210

Included Lab Sample IDs: 2313375

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	99.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A111296

Included Lab Sample IDs: 2313374, 2313377

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	101	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		LCS	Precision	MS
						SMP	
DEP SOP: NU-094-1	Color (true)	101				7.00	
EPA 180.1 Rev. 2.0	Turbidity	96.5				5.80	
EPA 200.7 Rev. 4.4	Calcium	107	95.9	102			2.85
	Iron	105	98.3	100			1.83
	Magnesium	107	97.1	100			2.16
	Potassium	105	96.2	97.7			1.24
	Sodium	104	95.1				0.889
	Strontium	101	94.0	94.5			0.518
	Tin	103	95.0	98.1			3.26
	Titanium	102	94.8	96.5			1.80
	Vanadium	95.4	88.6	90.1			1.69
	Zinc	102	94.8	95.8			1.08
EPA 200.8 Rev. 5.4	Aluminum	101	99.5	101			1.05
	Antimony	100	101	102			0.973
	Arsenic	102	103	103			0.284
	Barium	103	102	103			0.575
	Beryllium	99.6	98.6	101			2.17
	Boron	104	104	104			0.389
	Cadmium	98.4	99.4	99.2			0.238
	Chromium	97.0	98.8	98.8			0.0216
	Cobalt	99.9	100	100			0.0420
	Copper	97.6	100	101			0.418
	Lead	98.8	99.6	100			0.407
	Manganese	97.8	98.7	98.4			0.291
	Molybdenum	98.4	101	102			0.642
	Nickel	99.2	99.7	100			0.539
	Selenium	101	100	102			1.75
	Silver	98.2	97.3	97.9			0.662
	Thallium	100	101	102			1.21
EPA 300.0 Rev. 2.1	Chloride	97.5	94.7	97.8		0.0020	
	Sulfate	97.2	96.0	97.4		0.521	
EPA 350.1 Rev. 2.0	Ammonia-N	96.0	98.0	98.4			0.311
	Ammonia-N	95.8	97.2	105			6.37
	Ammonia-N	99.0	98.8	98.2			0.474
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	106	107			0.892
	Kjeldahl Nitrogen	110	97.7	96.1			1.41
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	102			0.939
EPA 365.1 Rev. 2.0	Total-P	99.8	102	101			0.449
	Total-P	102	103	100			1.92
SM 2320 B-2011	Total Alkalinity	98.4				0.862	
SM 2540 C-2011	TDS					5.04	
	TDS					9.78	
SM 2540 D-2011	TSS					6.06	
SM 4500 F-C-2011	Fluoride	97.2	96.0	94.1			0.973
SM 5310 B-2011	Organic Carbon	96.0	95.3	98.3			2.51

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2313372, 2313373, 2313376
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2313372, 2313373, 2313376
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2313385, 2313386

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2313385, 2313386
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2313372, 2313373, 2313376
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2313372, 2313373, 2313376
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2313374, 2313375, 2313377
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2313374, 2313375, 2313377
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2313374, 2313375, 2313377
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2313374, 2313375, 2313377
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2313372, 2313373, 2313376
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2313385, 2313386
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2313372, 2313373, 2313376
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2313372, 2313373, 2313376
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2313372, 2313373, 2313376
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2313374, 2313375, 2313377

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	03/18/2022			03/18/2022 16:38	Samantha L Bates	2313372
	03/18/2022			03/18/2022 16:39	Samantha L Bates	2313373
	03/18/2022			03/18/2022 16:40	Samantha L Bates	2313376
EPA 180.1 Rev. 2.0	03/18/2022			03/18/2022 16:05	Khloe J Berg	2313373
	03/18/2022			03/18/2022 16:08	Khloe J Berg	2313372
	03/18/2022			03/18/2022 16:09	Khloe J Berg	2313376
EPA 200.7 Rev. 4.4	03/18/2022	03/22/2022 10:52	Megan Whitefoot	03/23/2022 22:33	Josef B Mick	2313385
	03/18/2022	03/22/2022 10:52	Megan Whitefoot	03/23/2022 23:05	Josef B Mick	2313386
EPA 200.8 Rev. 5.4	03/18/2022	03/22/2022 10:52	Megan Whitefoot	03/22/2022 21:06	Emily M Philpot	2313385
	03/18/2022	03/22/2022 10:52	Megan Whitefoot	03/22/2022 22:42	Emily M Philpot	2313386
EPA 300.0 Rev. 2.1	03/18/2022			03/24/2022 12:27	James L Waggeberby	2313372
	03/18/2022			03/24/2022 12:39	James L Waggeberby	2313373
	03/18/2022			03/24/2022 12:51	James L Waggeberby	2313376
EPA 350.1 Rev. 2.0	03/18/2022			03/24/2022 12:48	Judith K. Clark	2313377
	03/18/2022			03/24/2022 13:01	Judith K. Clark	2313374
	03/18/2022			03/29/2022 11:04	Ping Hua	2313375
EPA 351.2 Rev. 2.0	03/18/2022	03/31/2022 11:24	Samantha L Bates	04/04/2022 12:34	Alexandra J Mattheus	2313374
	03/18/2022	03/31/2022 11:24	Samantha L Bates	04/04/2022 12:36	Alexandra J Mattheus	2313377
	03/18/2022	03/31/2022 11:24	Samantha L Bates	04/07/2022 11:48	Samantha L Bates	2313375
EPA 353.2 Rev. 2.0	03/18/2022			03/22/2022 09:50	Beverly Y. Sanders	2313374
	03/18/2022			03/22/2022 09:57	Beverly Y. Sanders	2313375
	03/18/2022			03/22/2022 09:58	Beverly Y. Sanders	2313377
EPA 365.1 Rev. 2.0	03/18/2022	03/23/2022 17:20	Simonne.V. Calhoun	03/25/2022 15:11	James L Waggeberby	2313374
	03/18/2022	03/23/2022 17:20	Simonne.V. Calhoun	03/25/2022 15:12	James L Waggeberby	2313375
	03/18/2022	03/23/2022 17:20	Simonne.V. Calhoun	03/25/2022 15:15	James L Waggeberby	2313377
SM 2320 B-2011	03/18/2022			03/25/2022 00:22	Dale L. Simmons	2313372
	03/18/2022			03/25/2022 00:31	Dale L. Simmons	2313373
	03/18/2022			03/25/2022 00:39	Dale L. Simmons	2313376
SM 2340B	03/18/2022			03/23/2022 22:33	Josef B Mick	2313385
	03/18/2022			03/23/2022 23:05	Josef B Mick	2313386
SM 2540 C-2011	03/18/2022			03/23/2022 14:22	Yijie Li	2313372, 2313373, 2313376
SM 2540 D-2011	03/18/2022			03/23/2022 14:22	Yijie Li	2313372, 2313373, 2313376
SM 4500 F-C-2011	03/18/2022			03/25/2022 00:22	Dale L. Simmons	2313372
	03/18/2022			03/25/2022 00:31	Dale L. Simmons	2313373
	03/18/2022			03/25/2022 00:39	Dale L. Simmons	2313376
SM 5310 B-2011	03/18/2022			03/22/2022 22:56	Khloe J Berg	2313377
	03/18/2022			03/22/2022 23:11	Khloe J Berg	2313374
	03/18/2022			03/23/2022 00:11	Khloe J Berg	2313375