

Chemical Analysis Report

NE-DIST-2019-07-10-01

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

Event Description: **Lake LVI's NE**
Request ID: **RQ-2019-05-20-12**
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: Liang Lin, Environmental Administrator

Date Certified: 24-JUL-2019 16:52

A handwritten signature in black ink, appearing to read "Liang Lin", 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: LAKE BROOKLYN CENTER

Collection Date/Time: 07/08/2019 11:30

Field ID: G2NE1197

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2101033	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P366976	
	EPA 300.0 Rev. 2.1	Chloride	7.6		mg Cl/L	P367147	
		Sulfate	11		mg SO4/L	P367150	
	SM 2120 B	Color (true)	10		PCU	P366935	
	SM 2320 B-97	Total Alkalinity	3.4		mg CaCO3/L	P367445	
	SM 2540 C-97	TDS	35		mg/L	P367312	
	SM 2540 D-97	TSS	2	U	mg/L	P367319	
	SM 4500 F-C-97	Fluoride	0.041	I	mg F/L	P367449	
2101034	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P367338	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30		mg N/L	P367048	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367041	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P367054	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P367358	
2101035	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	UQ	mg P/L	P366937	
2101041	EPA 200.7 Rev. 4.4	Barium	4.8		ug/L	P367077	
		Calcium	1.59		mg/L	P367077	
		Iron	30	U	ug/L	P367077	
		Magnesium	0.73		mg/L	P367077	
		Potassium	0.30	U	mg/L	P367077	
		Sodium	3.8		mg/L	P367077	
		Zinc	5.0	U	ug/L	P367077	
	EPA 200.8 Rev. 5.4	Aluminum	21		ug/L	P367077	
		Antimony	0.050	U	ug/L	P367077	
		Arsenic	0.21		ug/L	P367077	
		Boron**	13.1		ug/L	P367077	
		Cadmium	0.020	U	ug/L	P367077	
		Chromium	0.40	U	ug/L	P367077	
		Copper	0.40	U	ug/L	P367077	
		Lead	0.20	U	ug/L	P367077	
		Nickel	0.50	U	ug/L	P367077	
		Selenium	0.20	U	ug/L	P367077	
		Silver	0.010	U	ug/L	P367077	
		Thallium	0.10	U	ug/L	P367077	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366976

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P367077

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367077

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367147

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367150

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367338

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: P367048

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367041

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367054

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366937

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

Reference Method: SM 2120 B
Batch ID: P366935

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P367445

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

Reference Method: SM 2540 C-97
Batch ID: P367312

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P367319

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P367449

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P367358

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: P367077

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	109		P	85 - 115
Iron	105		P	85 - 115
Magnesium	111		P	85 - 115
Potassium	110		P	85 - 115
Sodium	107		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367077

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	106		P	85 - 115
Boron	104		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	101		P	85 - 115
Copper	104		P	85 - 115
Lead	104		P	85 - 115
Nickel	105		P	85 - 115
Selenium	104		P	85 - 115
Silver	104		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367147

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367150

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367338

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367048

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367041

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: P367054

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366937

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P366935

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.0		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P367445

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P367449

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P367358

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P367077

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101041	Barium	99.3	100	P/P	80 - 120
2101041	Calcium	107	104	P/P	80 - 120
2101041	Iron	104	102	P/P	80 - 120
2101041	Magnesium	108	107	P/P	80 - 120
2101041	Potassium	114	113	P/P	80 - 120
2101041	Sodium	100	103	P/P	80 - 120
2101041	Zinc	99.9	101	P/P	80 - 120
2101279	Barium	101		P	80 - 120
2101279	Calcium	102		P	80 - 120
2101279	Iron	103		P	80 - 120
2101279	Magnesium	106		P	80 - 120
2101279	Potassium	108		P	80 - 120
2101279	Sodium	109		P	80 - 120
2101279	Zinc	100		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367077

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101041	Aluminum	102	102	P/P	80 - 120
2101041	Antimony	102	102	P/P	80 - 120
2101041	Arsenic	104	104	P/P	80 - 120
2101041	Boron	105	105	P/P	80 - 120
2101041	Cadmium	105	105	P/P	80 - 120
2101041	Chromium	104	104	P/P	80 - 120
2101041	Copper	104	106	P/P	80 - 120
2101041	Lead	106	105	P/P	80 - 120
2101041	Nickel	104	104	P/P	80 - 120
2101041	Selenium	102	101	P/P	80 - 120
2101041	Silver	105	105	P/P	80 - 120
2101041	Thallium	105	107	P/P	80 - 120
2101279	Aluminum	102		P	80 - 120
2101279	Antimony	102		P	80 - 120
2101279	Arsenic	105		P	80 - 120
2101279	Boron	107		P	80 - 120
2101279	Cadmium	104		P	80 - 120
2101279	Chromium	103		P	80 - 120
2101279	Copper	102		P	80 - 120
2101279	Lead	105		P	80 - 120
2101279	Nickel	102		P	80 - 120
2101279	Selenium	103		P	80 - 120
2101279	Silver	106		P	80 - 120
2101279	Thallium	105		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367147

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100961	Chloride	95.6		P	90 - 110
2101044	Chloride	98.1		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100961	Sulfate	96.5		P	90 - 110
2101044	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367338

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100963	Ammonia-N	104	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367048

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100963	Kjeldahl Nitrogen	96.3	95.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100963	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367054

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100963	Total-P	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366937

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101035	O-Phosphate-P	96.4	97.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P367449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101790	Fluoride	97.3	98.1	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P367358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100964	Organic Carbon	91.0	90.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100961	Turbidity	13.3	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P367077

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101041	Barium	0.701	Spike	P	0 - 20
2101041	Calcium	1.79	Spike	P	0 - 20
2101041	Iron	1.25	Spike	P	0 - 20
2101041	Magnesium	1.28	Spike	P	0 - 20
2101041	Potassium	0.977	Spike	P	0 - 20
2101041	Sodium	1.22	Spike	P	0 - 20
2101041	Zinc	0.642	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367077

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101041	Aluminum	0.390	Spike	P	0 - 20
2101041	Antimony	0.132	Spike	P	0 - 20
2101041	Arsenic	0.0823	Spike	P	0 - 20
2101041	Boron	0.466	Spike	P	0 - 20
2101041	Cadmium	0.723	Spike	P	0 - 20
2101041	Chromium	0.100	Spike	P	0 - 20
2101041	Copper	1.24	Spike	P	0 - 20
2101041	Lead	0.344	Spike	P	0 - 20
2101041	Nickel	0.151	Spike	P	0 - 20
2101041	Selenium	0.721	Spike	P	0 - 20
2101041	Silver	0.141	Spike	P	0 - 20
2101041	Thallium	1.62	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367147

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100961	Chloride	0.212	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100961	Sulfate	0.156	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367338

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100963	Ammonia-N	0.805	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100963	Kjeldahl Nitrogen	0.257	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100963	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367054

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100963	Total-P	1.68	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366937

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101035	O-Phosphate-P	0.724	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P366935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100961	Color (true)	2.43	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P367445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101790	Total Alkalinity	0.0833	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P367312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100955	TDS	5.59	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P367449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101790	Fluoride	0.509	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P367358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100964	Organic Carbon	0.713	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A92640

Included Lab Sample IDs: 2101033

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.9	101	P/P	90 - 110
Sulfate	99.8	101	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A92674

Included Lab Sample IDs: 2101033

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.8	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A92676

Included Lab Sample IDs: 2101035

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	99.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A92685

Included Lab Sample IDs: 2101033

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A92703

Included Lab Sample IDs: 2101034

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92729

Included Lab Sample IDs: 2101034

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.7	92.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92731

Included Lab Sample IDs: 2101034

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A92807

Included Lab Sample IDs: 2101034

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A92819

Included Lab Sample IDs: 2101041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	102	P/P	90 - 110
Calcium	98.8	99.2	P/P	90 - 110
Iron	98.8	101	P/P	90 - 110
Magnesium	99.5	102	P/P	90 - 110
Potassium	98.9	102	P/P	90 - 110
Sodium	100	102	P/P	90 - 110
Zinc	102	103	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A92821

Included Lab Sample IDs: 2101034

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	90.4	90.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A92846

Included Lab Sample IDs: 2101033

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A92846

Included Lab Sample IDs: 2101033

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.2	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92868

Included Lab Sample IDs: 2101041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	101	P/P	90 - 110
Antimony	101	101	P/P	90 - 110
Arsenic	104	103	P/P	90 - 110
Boron	101	104	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	100	103	P/P	90 - 110
Copper	104	102	P/P	90 - 110
Lead	103	104	P/P	90 - 110
Nickel	104	103	P/P	90 - 110
Selenium	103	104	P/P	90 - 110
Silver	102	102	P/P	90 - 110
Thallium	97.4	98.3	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			LCS	Precision	MS
							SMP	
EPA 180.1 Rev. 2.0	Turbidity						13.3	
EPA 200.7 Rev. 4.4	Barium	102	99.3	100	101			0.701
	Calcium	109	107	104	102			1.79
	Iron	105	104	102	103			1.25
	Magnesium	111	108	107	106			1.28
	Potassium	110	114	113	108			0.977
	Sodium	107	100	103	109			1.22
	Zinc	101	99.9	101	100			0.642
EPA 200.8 Rev. 5.4	Aluminum	102	102	102	102			0.390
	Antimony	101	102	102	102			0.132
	Arsenic	106	104	104	105			0.0823
	Boron	104	105	105	107			0.466
	Cadmium	102	105	105	104			0.723
	Chromium	101	104	104	103			0.100
	Copper	104	104	106	102			1.24
	Lead	104	106	105	105			0.344
	Nickel	105	104	104	102			0.151
	Selenium	104	102	101	103			0.721
	Silver	104	105	105	106			0.141
	Thallium	104	105	107	105			1.62
EPA 300.0 Rev. 2.1	Chloride	97.1	95.6	98.1			0.212	
	Sulfate	96.5	96.5	98.2			0.156	
EPA 350.1 Rev. 2.0	Ammonia-N	105	104	105				0.805
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	96.3	95.9				0.257
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	103	103				0.0
EPA 365.1 Rev. 2.0	Total-P	102	104	103				1.68
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	96.4	97.1				0.724
SM 2120 B	Color (true)	98.0					2.43	
SM 2320 B-97	Total Alkalinity	103					0.0833	
SM 2540 C-97	TDS						5.59	
SM 4500 F-C-97	Fluoride	97.1	97.3	98.1				0.509
SM 5310 B-00	Organic Carbon	95.1	91.0	90.0				0.713

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2101033
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2101041
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2101041
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2101033
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2101033
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2101034
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2101034
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2101034
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2101034

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2101035
SM 2120 B / E31780	True Color measured at 450 nm	2101033
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2101033
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2101033
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2101033
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2101033
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2101034

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	07/10/2019			07/10/2019 11:10	Adrian Shelby	2101033
EPA 200.7 Rev. 4.4	07/10/2019	07/11/2019 15:55	Elliott D. Healy	07/16/2019 11:47	Betina Topolski	2101041
EPA 200.8 Rev. 5.4	07/10/2019	07/11/2019 15:55	Elliott D. Healy	07/17/2019 15:23	Robert K Palmer	2101041
EPA 300.0 Rev. 2.1	07/10/2019			07/11/2019 15:40	Jhamieka S. Greenwood	2101033
EPA 350.1 Rev. 2.0	07/10/2019			07/16/2019 15:31	Virginia P. Brown	2101034
EPA 351.2 Rev. 2.0	07/10/2019	07/11/2019 12:15	Sima Feizi	07/12/2019 10:22	Joseph Suarez	2101034
EPA 353.2 Rev. 2.0	07/10/2019			07/11/2019 10:19	Beverly Y. Sanders	2101034
EPA 365.1 Rev. 2.0	07/10/2019	07/11/2019 13:05	Sima Feizi	07/12/2019 12:43	Lipi Saha	2101034
EPA 365.1 Rev. 2.0 dissolved	07/10/2019			07/10/2019 11:41	Jhamieka S. Greenwood	2101035
SM 2120 B	07/10/2019			07/10/2019 11:19	Madeline Funaro	2101033
SM 2320 B-97	07/10/2019			07/16/2019 22:57	Dale L. Simmons	2101033
SM 2540 C-97	07/10/2019			07/11/2019 15:31	Yijie Li	2101033
SM 2540 D-97	07/10/2019			07/11/2019 15:31	Yijie Li	2101033
SM 4500 F-C-97	07/10/2019			07/16/2019 22:57	Dale L. Simmons	2101033
SM 5310 B-00	07/10/2019			07/16/2019 05:53	Madeline Funaro	2101034