

Chemical Analysis Report

SO-DIST-2017-11-29-01

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

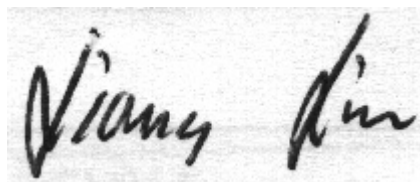
Event Description: **SMP: Highlands Canoe Lakes #5**
Request ID: **RQ-2017-11-06-08**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 18-DEC-2017 14:00

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 group are included in this report: 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 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 Rachard @ Center

Collection Date/Time: 11/28/2017 12:40

Field ID: G4SD112817-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949215	EPA 180.1 Rev. 2.0	Turbidity	3.0	A	NTU	P336081	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P336266	
		Sulfate	15		mg SO4/L	P336270	
	SM 2120 B	Color (true)	12	A	PCU	P336074	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P336465	
	SM 2540 C-97	TDS	71		mg/L	P336393	
	SM 2540 D-97	TSS	2	I	mg/L	P336367	
	SM 4500 F-C-97	Fluoride	0.057	I	mg F/L	P336469	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.081		mg N/L	P336541	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P336420	
1949219	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P336319	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P336373	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P336334	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P336057	
	dissolved						

Ref. Method and Comment:

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

Sample Location: Blue Lake @ Center

Collection Date/Time: 11/28/2017 12:00

Field ID: G4SD112817-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949216	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P336081	
	EPA 300.0 Rev. 2.1	Chloride	16	A	mg Cl/L	P336266	
		Sulfate	23	A	mg SO4/L	P336270	
	SM 2120 B	Color (true)	17		PCU	P336074	
	SM 2320 B-97	Total Alkalinity	18		mg CaCO3/L	P336465	
	SM 2540 C-97	TDS	109		mg/L	P336393	
	SM 2540 D-97	TSS	3	I	mg/L	P336367	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P336469	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P336541	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P336420	
1949220	EPA 353.2 Rev. 2.0	NO2NO3-N	0.051		mg N/L	P336319	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P336373	
	SM 5310 B-00	Organic Carbon	7.4		mg C/L	P336334	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P336057	
	dissolved						

Ref. Method and Comment:

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

Sample Location: Buck Lake @ Middle

Collection Date/Time: 11/28/2017 13:25

Field ID: G4SD112817-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949217	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P336081	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P336266	
		Sulfate	59		mg SO4/L	P336270	

Field ID: G4SD112817-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949217	SM 2120 B	Color (true)	10		PCU	P336074	
	SM 2320 B-97	Total Alkalinity	17	A	mg CaCO3/L	P336465	
	SM 2540 C-97	TDS	266	A	mg/L	P336393	
	SM 2540 D-97	TSS	3	IA	mg/L	P336367	
	SM 4500 F-C-97	Fluoride	0.080	I	mg F/L	P336469	
1949221	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P336626	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P336420	
	EPA 353.2 Rev. 2.0	NO2NO3-N	12		mg N/L	P336319	
	EPA 365.1 Rev. 2.0	Total-P	0.005		mg P/L	P336373	
	SM 5310 B-00	Organic Carbon	4.3		mg C/L	P336334	
1949225	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P336057	

Ref. Method and Comment:

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

Sample Location: Silver Lake @ Center

Collection Date/Time: 11/28/2017 10:45

Field ID: G4SD112817-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949218	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P336081	
	EPA 300.0 Rev. 2.1	Chloride	6.0		mg Cl/L	P336266	
		Sulfate	5.1		mg SO4/L	P336270	
	SM 2120 B	Color (true)	22		PCU	P336074	
	SM 2320 B-97	Total Alkalinity	0.91	I	mg CaCO3/L	P336465	
	SM 2540 C-97	TDS	45		mg/L	P336393	
	SM 2540 D-97	TSS	2	I	mg/L	P336367	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P336469	
1949222	EPA 350.1 Rev. 2.0	Ammonia-N	0.047		mg N/L	P336626	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P336420	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P336500	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P336373	
	SM 5310 B-00	Organic Carbon	6.4		mg C/L	P336334	
1949226	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P336057	

Ref. Method and Comment:

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P336081

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P336266

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336266

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336270

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336541

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336626

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336420

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336319

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336500

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336373

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336057

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P336074

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336465

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

Reference Method: SM 2540 C-97
Batch ID: P336393

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P336367

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P336469

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P336334

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336266

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336270

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336541

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336541

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336626

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: P336420

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336319

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336500

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336373

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336057

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

Reference Method: SM 2320 B-97
Batch ID: P336465

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P336469

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P336334

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 300.0 Rev. 2.1
Batch ID: P336266

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949216	Chloride	95.0		P	90 - 110
1949218	Chloride	95.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336270

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949216	Sulfate	96.2		P	90 - 110
1949218	Sulfate	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949102	Ammonia-N	101	98.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949221	Ammonia-N	105	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336420

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949161	Kjeldahl Nitrogen	98.0	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336319

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949213	NO2NO3-N	92.1	92.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336500

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950927	NO2NO3-N	101	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336373

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949221	Total-P	98.2	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336057

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949049	O-Phosphate-P	100	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P336469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949217	Fluoride	96.3	96.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P336334

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949161	Organic Carbon	94.8	95.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P336081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949215	Turbidity	0.678	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949216	Chloride	0.664	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949216	Sulfate	0.750	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949102	Ammonia-N	1.96	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949221	Ammonia-N	2.48	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949161	Kjeldahl Nitrogen	2.53	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949213	NO2NO3-N	0.439	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950927	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336373

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949221	Total-P	4.35	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336057

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949049	O-Phosphate-P	0.189	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P336074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949215	Color (true)	1.45	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P336465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949217	Total Alkalinity	1.90	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P336393

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949217	TDS	4.90	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P336469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949217	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336334

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949161	Organic Carbon	0.268	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 365.1 Rev. 2.0 dissolved
Run ID: A80577
Included Lab Sample IDs: 1949223, 1949224, 1949225, 1949226

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	99.9	100	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A80591
Included Lab Sample IDs: 1949215, 1949216, 1949217, 1949218

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A80593
Included Lab Sample IDs: 1949215, 1949216, 1949217, 1949218

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A80632
Included Lab Sample IDs: 1949215, 1949216, 1949217, 1949218

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A80632

Included Lab Sample IDs: 1949215, 1949216, 1949217, 1949218

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.6	101	P/P	90 - 110
Sulfate	99.2	99.9	P/P	90 - 110
Sulfate	99.3	99.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80683

Included Lab Sample IDs: 1949219, 1949220, 1949221

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A80692

Included Lab Sample IDs: 1949219, 1949220, 1949221, 1949222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	98.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A80732

Included Lab Sample IDs: 1949215, 1949216, 1949217, 1949218

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A80732

Included Lab Sample IDs: 1949215, 1949216, 1949217, 1949218

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.1	P/P	90 - 110
Fluoride	99.1	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80739

Included Lab Sample IDs: 1949222

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80749

Included Lab Sample IDs: 1949219, 1949220

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	99.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80765

Included Lab Sample IDs: 1949219, 1949220, 1949221, 1949222

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80773

Included Lab Sample IDs: 1949221, 1949222

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80787

Included Lab Sample IDs: 1949219, 1949220, 1949221, 1949222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	102	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 SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.678	
EPA 300.0 Rev. 2.1	Chloride	94.2	95.0 95.3		0.664	
	Sulfate	94.5	96.2 95.4		0.750	
EPA 350.1 Rev. 2.0	Ammonia-N	102	101 98.9			1.96
	Ammonia-N	105	105 102			2.48
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	98.0 94.6			2.53
EPA 353.2 Rev. 2.0	NO2NO3-N	104	92.1 92.6			0.439
	NO2NO3-N	105	101 101			0.0
EPA 365.1 Rev. 2.0	Total-P	99.0	98.2 103			4.35
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	100 100			0.189
SM 2120 B	Color (true)				1.45	
SM 2320 B-97	Total Alkalinity	103			1.90	
SM 2540 C-97	TDS				4.90	
SM 4500 F-C-97	Fluoride	96.8	96.3 96.3			0.0
SM 5310 B-00	Organic Carbon	97.0	94.8 95.2			0.268

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1949215, 1949216, 1949217, 1949218
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1949215, 1949216, 1949217, 1949218

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1949215, 1949216, 1949217, 1949218
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1949219, 1949220, 1949221, 1949222
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1949219, 1949220, 1949221, 1949222
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1949219, 1949220, 1949221, 1949222
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1949219, 1949220, 1949221, 1949222
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1949223, 1949224, 1949225, 1949226
SM 2120 B / E31780	True Color measured at 450 nm	1949215, 1949216, 1949217, 1949218
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1949215, 1949216, 1949217, 1949218
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1949215, 1949216, 1949217, 1949218
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1949215, 1949216, 1949217, 1949218
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1949215, 1949216, 1949217, 1949218
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1949219, 1949220, 1949221, 1949222

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	11/29/2017			11/29/2017 16:26	DeAsia Armster	1949215, 1949216, 1949217, 1949218
EPA 300.0 Rev. 2.1	11/29/2017			12/02/2017	Julia Storbeck	1949215, 1949216, 1949217, 1949218
EPA 350.1 Rev. 2.0	11/29/2017			12/06/2017	Sofia Elnemr	1949219, 1949220
	11/29/2017			12/07/2017	Sofia Elnemr	1949221, 1949222
EPA 351.2 Rev. 2.0	11/29/2017	12/06/2017	Adrian Shelby	12/07/2017	Joseph Suarez	1949219, 1949220, 1949221, 1949222
EPA 353.2 Rev. 2.0	11/29/2017			12/04/2017	Lauren Bottorf	1949219, 1949220, 1949221
	11/29/2017			12/06/2017	Lauren Bottorf	1949222
EPA 365.1 Rev. 2.0	11/29/2017	12/05/2017	Sima Feizi	12/08/2017	Beverly Y. Sanders	1949219, 1949220, 1949221, 1949222
EPA 365.1 Rev. 2.0 dissolved	11/29/2017			11/29/2017 12:40	Megan Treadwell	1949223
	11/29/2017			11/29/2017 12:41	Megan Treadwell	1949224
	11/29/2017			11/29/2017 12:42	Megan Treadwell	1949225
	11/29/2017			11/29/2017 12:47	Megan Treadwell	1949226
SM 2120 B	11/29/2017			11/29/2017 15:03	Tanya Welborn	1949215
	11/29/2017			11/29/2017 15:04	Tanya Welborn	1949216
	11/29/2017			11/29/2017 15:05	Tanya Welborn	1949217, 1949218
SM 2320 B-97	11/29/2017			12/06/2017	Dale L. Simmons	1949215, 1949216, 1949217, 1949218
SM 2540 C-97	11/29/2017			12/01/2017	Yijie Li	1949215, 1949216, 1949217, 1949218
SM 2540 D-97	11/29/2017			12/01/2017	Yijie Li	1949215, 1949216, 1949217, 1949218
SM 4500 F-C-97	11/29/2017			12/06/2017	Dale L. Simmons	1949215, 1949216, 1949217, 1949218
SM 5310 B-00	11/29/2017			12/04/2017	Ping Hua	1949219, 1949220, 1949221, 1949222