

Chemical Analysis Report

SO-DIST-2018-02-28-01

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

Event Description: **Lake Pythias, Huckleberry Lake, Pearl Lake, Lake Henry**
Request ID: **RQ-2018-02-05-53**
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: Maryann dugan

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 26-MAR-2018 15:10

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 Pythias @ Middle

Collection Date/Time: 02/27/2018 08:55

Field ID: G4SD0138

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970459	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P340746	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P340798	
		Sulfate	32		mg SO4/L	P340802	
	SM 2120 B	Color (true)	14		PCU	P340738	
	SM 2320 B-97	Total Alkalinity	2.9		mg CaCO3/L	P341120	
	SM 2540 C-97	TDS	92		mg/L	P341148	
	SM 2540 D-97	TSS	2	I	mg/L	P340932	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P341340	
1970463	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P341255	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P340758	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P340774	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P340789	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P340837	
1970467	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.010		mg P/L	P340750	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: HUCKLEBERRY-2 MIDDLE

Collection Date/Time: 02/27/2018 10:05

Field ID: G4SD0166

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970460	EPA 180.1 Rev. 2.0	Turbidity	16		NTU	P340746	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P340798	
		Sulfate	3.4		mg SO4/L	P340802	
	SM 2120 B	Color (true)	100	A	PCU	P340741	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P341120	
	SM 2540 C-97	TDS	89		mg/L	P341148	
	SM 2540 D-97	TSS	10		mg/L	P340932	
	SM 4500 F-C-97	Fluoride	0.083	I	mg F/L	P341340	
1970464	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P341255	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P340758	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P340774	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P340789	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P340837	
1970468	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.045		mg P/L	P340750	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Lake Henry @ Middle

Collection Date/Time: 02/27/2018 11:25

Field ID: G4SD0167

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970461	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P340746	

Field ID: G4SD0167

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970461	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P340798	
		Sulfate	19		mg SO4/L	P340802	
	SM 2120 B	Color (true)	22		PCU	P340738	
	SM 2320 B-97	Total Alkalinity	18		mg CaCO3/L	P341120	
	SM 2540 C-97	TDS	91		mg/L	P341148	
	SM 2540 D-97	TSS	2	I	mg/L	P340932	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P341340	
1970465	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P341255	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P340758	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P340774	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P340789	
	SM 5310 B-00	Organic Carbon	8.3		mg C/L	P340837	
1970469	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340750	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Pearl Lake @ Center

Collection Date/Time: 02/27/2018 12:10

Field ID: G4SD0137

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970462	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P340746	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P340798	
		Sulfate	15		mg SO4/L	P340802	
	SM 2120 B	Color (true)	11		PCU	P340738	
	SM 2320 B-97	Total Alkalinity	4.0		mg CaCO3/L	P341336	
	SM 2540 C-97	TDS	60		mg/L	P341148	
	SM 2540 D-97	TSS	2	U	mg/L	P340932	
1970466	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P341527	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P341255	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P340758	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P340774	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P340789	
1970470	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P340837	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340750	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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: P340746

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340798

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340802

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341255

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340758

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340774

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340789

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340750

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

Reference Method: SM 2120 B
Batch ID: P340738

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P340741

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P341120

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

Reference Method: SM 2320 B-97
Batch ID: P341336

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

Reference Method: SM 2540 C-97
Batch ID: P341148

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P340932

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P341340

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P341527

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P340837

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: P340798

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340802

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340802

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341255

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340758

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: P340774

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: P340789

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340750

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.4		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P341120

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.2		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P341336

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.0		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P341340

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P341527

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P340837

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340798

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970224	Chloride	94.1		P	90 - 110
1970240	Chloride	96.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970224	Sulfate	95.4		P	90 - 110
1970240	Sulfate	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970464	Ammonia-N	97.7	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340758

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970443	Kjeldahl Nitrogen	98.7	96.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340774

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970435	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970446	Total-P	92.7	91.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340750

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970444	O-Phosphate-P	99.0	98.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P341340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970494	Fluoride	97.2	100	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P341527

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971311	Fluoride	96.0	96.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P340837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970428	Organic Carbon	97.2	98.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P340746

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970442	Turbidity	1.47	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340798

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970224	Chloride	4.78	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970464	Ammonia-N	0.927	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340758

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970443	Kjeldahl Nitrogen	1.93	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340774

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970435	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970446	Total-P	0.888	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970444	O-Phosphate-P	0.303	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P340738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970442	Color (true)	2.82	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P340741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970460	Color (true)	0.978	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P341120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970494	Total Alkalinity	0.600	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P341336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971311	Total Alkalinity	0.476	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P341148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970639	TDS	0.362	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P341340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970494	Fluoride	2.42	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P341527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971311	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P340837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970428	Organic Carbon	1.43	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: A82322
Included Lab Sample IDs: 1970459, 1970460, 1970461, 1970462

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.2	99.1	P/P	90 - 110
Chloride	99.1	98.4	P/P	90 - 110
Sulfate	98.1	98.7	P/P	90 - 110
Sulfate	98.7	97.6	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A82342
Included Lab Sample IDs: 1970459, 1970460, 1970461, 1970462

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	98.9	P/P	85 - 115
Color (true)	99.9	99.1	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82344
Included Lab Sample IDs: 1970459, 1970460, 1970461, 1970462

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A82346

Included Lab Sample IDs: 1970467, 1970468, 1970469, 1970470

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82353

Included Lab Sample IDs: 1970463, 1970464, 1970465, 1970466

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

Reference Method: SM 5310 B-00

Run ID: A82376

Included Lab Sample IDs: 1970463, 1970464, 1970465, 1970466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.4	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82393

Included Lab Sample IDs: 1970464

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82396

Included Lab Sample IDs: 1970463, 1970466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82402

Included Lab Sample IDs: 1970465

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82413

Included Lab Sample IDs: 1970463, 1970464, 1970465, 1970466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.9	104	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82484

Included Lab Sample IDs: 1970459, 1970460, 1970461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.8	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82515

Included Lab Sample IDs: 1970463, 1970464, 1970465, 1970466

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

Reference Method: SM 2320 B-97

Run ID: A82543

Included Lab Sample IDs: 1970462

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.4	96.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82543

Included Lab Sample IDs: 1970459, 1970460, 1970461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	106	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82604

Included Lab Sample IDs: 1970462

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	99.0	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				1.47	
EPA 300.0 Rev. 2.1	Chloride	99.3	94.1 96.5		4.78	
	Sulfate	99.9	95.4 97.8			
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	97.7 96.6			0.927
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	98.7 96.4			1.93
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	104 104			0.482
EPA 365.1 Rev. 2.0	Total-P	105	92.7 91.8			0.888
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	99.0 98.7			0.303
SM 2120 B	Color (true)				2.82	
	Color (true)				0.978	
SM 2320 B-97	Total Alkalinity	99.2			0.600	
	Total Alkalinity	99.0			0.476	
SM 2540 C-97	TDS				0.362	
SM 4500 F-C-97	Fluoride	97.1	97.2 100			2.42
	Fluoride	97.6	96.0 96.0			0.0
SM 5310 B-00	Organic Carbon	93.4	97.2 98.6			1.43

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1970459, 1970460, 1970461, 1970462
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1970459, 1970460, 1970461, 1970462
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1970459, 1970460, 1970461, 1970462
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1970463, 1970464, 1970465, 1970466
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1970463, 1970464, 1970465, 1970466
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1970463, 1970464, 1970465, 1970466
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1970463, 1970464, 1970465, 1970466
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1970467, 1970468, 1970469, 1970470
SM 2120 B / E31780	True Color measured at 450 nm	1970459, 1970460, 1970461, 1970462
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1970459, 1970460, 1970461, 1970462
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1970459, 1970460, 1970461, 1970462
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1970459, 1970460, 1970461, 1970462
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1970459, 1970460, 1970461, 1970462
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1970463, 1970464, 1970465, 1970466

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	02/28/2018			02/28/2018 14:59	DeAsia Armster	1970459, 1970460, 1970461, 1970462
EPA 300.0 Rev. 2.1	02/28/2018			03/01/2018	Julia Storbeck	1970459, 1970460, 1970461, 1970462
EPA 350.1 Rev. 2.0	02/28/2018			03/08/2018	Ping Hua	1970463, 1970464, 1970465, 1970466
EPA 351.2 Rev. 2.0	02/28/2018	03/01/2018	Adrian Shelby	03/02/2018	Joseph Suarez	1970463, 1970464, 1970465, 1970466
EPA 353.2 Rev. 2.0	02/28/2018			03/01/2018	Beverly Y. Sanders	1970463, 1970464, 1970465, 1970466
EPA 365.1 Rev. 2.0	02/28/2018	03/01/2018	Sima Feizi	03/02/2018	Lipi Saha	1970463, 1970464, 1970465, 1970466
EPA 365.1 Rev. 2.0 dissolved	02/28/2018			02/28/2018 15:06	Megan Treadwell	1970467
	02/28/2018			02/28/2018 15:07	Megan Treadwell	1970468
	02/28/2018			02/28/2018 15:08	Megan Treadwell	1970469
	02/28/2018			02/28/2018 15:09	Megan Treadwell	1970470
	02/28/2018			02/28/2018 15:50	Tanya Welborn	1970459
SM 2120 B	02/28/2018			02/28/2018 15:52	Tanya Welborn	1970461
	02/28/2018			02/28/2018 15:53	Tanya Welborn	1970462
	02/28/2018			02/28/2018 16:13	Tanya Welborn	1970460
SM 2320 B-97	02/28/2018			03/07/2018	Dale L. Simmons	1970459, 1970460, 1970461
	02/28/2018			03/09/2018	Lauren Bottorf	1970462
SM 2540 C-97	02/28/2018			03/02/2018	DeAsia Armster	1970459, 1970460, 1970461, 1970462
SM 2540 D-97	02/28/2018			03/02/2018	DeAsia Armster	1970459, 1970460, 1970461, 1970462
SM 4500 F-C-97	02/28/2018			03/10/2018	Lauren Bottorf	1970459, 1970460, 1970461
	02/28/2018			03/14/2018	Dale L. Simmons	1970462
SM 5310 B-00	02/28/2018			03/01/2018	Megan Treadwell	1970463, 1970464, 1970465, 1970466