

Chemical Analysis Report

NW-DIST-2018-06-06-01

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

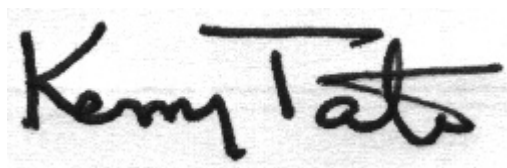
Event Description: **Dune Lakes Run**
Request ID: **RQ-2018-06-04-41**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 26-JUN-2018 13:16

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

NON-CONFORMANCE REPORT INCLUDED

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: FULLER LAKE (MIDDLE)

Collection Date/Time: 06/05/2018 11:10

Field ID: G3NW0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1997915	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P346498	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P346640	
		Sulfate	3.7		mg SO4/L	P346642	
	SM 2120 B	Color (true)	240		PCU	P346496	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P346670	
	SM 2540 C-97	TDS	55		mg/L	P347013	
	SM 2540 D-97	TSS	2	I	mg/L	P347020	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P346673	
1997917	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P347051	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P346941	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P346683	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P346806	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P346788	
1997919	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346522	

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: MORRIS LAKE

Collection Date/Time: 06/05/2018 11:45

Field ID: G3NW0126

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1997927	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P346498	
	SM 2320 B-97	Total Alkalinity	0.78	I	mg CaCO3/L	P346670	
	SM 2540 D-97	TSS	2	I	mg/L	P347024	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P346673	
1997928	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P347051	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P346941	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P346683	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P346806	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P346788	
1997929	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346522	

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: Stallworth Lake (Center)

Collection Date/Time: 06/05/2018 12:30

Field ID: G3NW0083

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1997921	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P346498	
	SM 2320 B-97	Total Alkalinity	24		mg CaCO3/L	P346670	
	SM 2540 D-97	TSS	4	I	mg/L	P347024	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P346673	
1997923	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	IY	mg N/L	P347050	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70	Y	mg N/L	P347046	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	UY	mg N/L	P346568	
	EPA 365.1 Rev. 2.0	Total-P	0.018	Y	mg P/L	P346816	
	SM 5310 B-00	Organic Carbon	6.4	Y	mg C/L	P346788	
1997925	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346525	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 351.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 353.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 365.1 Rev. 2.0: Total-P: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

SM 5310 B-00: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

Sample Location: ALLEN LAKE (MIDDLE)

Collection Date/Time: 06/05/2018 13:10

Field ID: G3NW0085

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1997916	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P346498	
	EPA 300.0 Rev. 2.1	Chloride	20	A	mg Cl/L	P346641	
		Sulfate	4.6	A	mg SO4/L	P346643	
	SM 2120 B	Color (true)	180		PCU	P346496	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P346670	
	SM 2540 C-97	TDS	50		mg/L	P347013	
	SM 2540 D-97	TSS	2	I	mg/L	P347020	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P346673	
1997918	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P347051	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P347094	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346683	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P346806	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P346788	
1997920	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346522	

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: OYSTER LAKE CENTER

Collection Date/Time: 06/05/2018 13:40

Field ID: G3NW0165

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1997922	EPA 180.1 Rev. 2.0	Turbidity	8.0		NTU	P346498	
	SM 2320 B-97	Total Alkalinity	60		mg CaCO3/L	P346670	
	SM 2540 D-97	TSS	8	IA	mg/L	P347024	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P346673	
1997924	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P347050	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P347046	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346568	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P346816	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P346788	
1997926	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346525	

Ref. Method and Comment:

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

Non-Conformance Report

NCR ID: 7060

Event(s)

NW-DIST-2018-06-06-01

Job(s)

TLH-2018-06-06-52

Sample(s)

1997923

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Preservation Not Intact

Observation: Sample not preserved to pH < 2.

Resolution: Sample preserved in the laboratory with sulfuric acid.
H2SO4 Lot# SA8085170 | Expiration Date: 03/26/2019

Authorized by/Date: Joshua Ayres 6/6/2018

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346498

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346640

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346641

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346642

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346643

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347050

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347051

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346941

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347046

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347094

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346568

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346683

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346806

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346816

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346522

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346525

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

Reference Method: SM 2120 B
Batch ID: P346496

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P346670

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P347013

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347020

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347024

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P346673

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P346788

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: P346640

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346641

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346642

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346643

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347050

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347051

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346941

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347046

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: P347094

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346568

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346683

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346806

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346816

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346525

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

Reference Method: SM 2320 B-97
Batch ID: P346670

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P346673

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346788

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: P346640

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997493	Chloride	97.2		P	90 - 110
1997716	Chloride	96.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997916	Chloride	95.5		P	90 - 110
1998030	Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346642

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997493	Sulfate	99.0		P	90 - 110
1997716	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997916	Sulfate	100		P	90 - 110
1998030	Sulfate	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347050

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997728	Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347051

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997811	Ammonia-N	105	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346941

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997949	Kjeldahl Nitrogen	98.8	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347046

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998208	Kjeldahl Nitrogen	99.8	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347094

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347094

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998116	Kjeldahl Nitrogen	92.9	94.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346568

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997923	NO2NO3-N	95.8	96.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346683

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997917	NO2NO3-N	98.6	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997947	Total-P	97.5	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998208	Total-P	93.7	91.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346522

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997919	O-Phosphate-P	98.8	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997836	O-Phosphate-P	96.8	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P346673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997945	Fluoride	98.5	97.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346788

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997811	Organic Carbon	99.2	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346498

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997808	Turbidity	0.248	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997493	Chloride	1.25	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997916	Chloride	3.26	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997493	Sulfate	0.919	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997916	Sulfate	4.09	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997728	Ammonia-N	0.600	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347051

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997811	Ammonia-N	0.457	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997949	Kjeldahl Nitrogen	4.25	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998208	Kjeldahl Nitrogen	3.25	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998116	Kjeldahl Nitrogen	1.49	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346568

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997923	NO2NO3-N	0.521	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346683

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997917	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997947	Total-P	0.358	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998208	Total-P	2.36	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997919	O-Phosphate-P	0.404	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997836	O-Phosphate-P	1.98	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P346496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997809	Color (true)	1.19	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P346670

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997945	Total Alkalinity	0.723	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P347013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997717	TDS	5.19	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P346673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997945	Fluoride	0.513	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P346788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997811	Organic Carbon	0.927	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: SM 2120 B

Run ID: A84395

Included Lab Sample IDs: 1997915, 1997916

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	96.4	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A84396

Included Lab Sample IDs: 1997915, 1997916, 1997921, 1997922, 1997927

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A84413

Included Lab Sample IDs: 1997919, 1997920, 1997925, 1997926, 1997929

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.8	P/P	90 - 110
O-Phosphate-P	98.8	98.7	P/P	90 - 110
O-Phosphate-P	99.4	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A84434

Included Lab Sample IDs: 1997923, 1997924

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A84476

Included Lab Sample IDs: 1997915, 1997916

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.1	99.3	P/P	90 - 110
Chloride	99.3	101	P/P	90 - 110
Sulfate	97.9	99.8	P/P	90 - 110
Sulfate	99.8	99.3	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A84489

Included Lab Sample IDs: 1997915, 1997916, 1997921, 1997922, 1997927

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.6	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A84489

Included Lab Sample IDs: 1997915, 1997916, 1997921, 1997922, 1997927

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A84493

Included Lab Sample IDs: 1997917, 1997918, 1997928

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

Reference Method: SM 5310 B-00

Run ID: A84530

Included Lab Sample IDs: 1997917, 1997918, 1997923, 1997924, 1997928

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	96.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A84650

Included Lab Sample IDs: 1997917, 1997918, 1997923, 1997924, 1997928

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	103	P/P	90 - 110
Ammonia-N	103	104	P/P	90 - 110
Ammonia-N	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84663

Included Lab Sample IDs: 1997917, 1997918, 1997923, 1997924, 1997928

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.0	P/P	90 - 110
Total-P	99.0	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84701

Included Lab Sample IDs: 1997917, 1997928

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84737

Included Lab Sample IDs: 1997918

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84748

Included Lab Sample IDs: 1997923, 1997924

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

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				0.248	
EPA 300.0 Rev. 2.1	Chloride	103	97.2	96.9	1.25	
	Chloride	98.7	95.5	97.2	3.26	
	Sulfate	106	99.0	101	0.919	
	Sulfate	100	100	97.0	4.09	
	Ammonia-N	104	103	102		0.600
EPA 351.2 Rev. 2.0	Ammonia-N	104	105	106		0.457
	Kjeldahl Nitrogen	108	98.8	107		4.25
	Kjeldahl Nitrogen	104	99.8	104		3.25
EPA 353.2 Rev. 2.0	Kjeldahl Nitrogen	102	92.9	94.7		1.49
	NO2NO3-N	102	95.8	96.3		0.521
	NO2NO3-N	100	98.6	98.6		0.0
EPA 365.1 Rev. 2.0	Total-P	97.8	97.5	97.8		0.358
	Total-P	101	93.7	91.5		2.36
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	98.8	99.2		0.404
	O-Phosphate-P	100	96.8	99.3		1.98
SM 2120 B	Color (true)				1.19	
SM 2320 B-97	Total Alkalinity	104			0.723	
SM 2540 C-97	TDS				5.19	
SM 4500 F-C-97	Fluoride	95.9	98.5	97.7		0.513
SM 5310 B-00	Organic Carbon	97.0	99.2	101		0.927

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1997915, 1997916, 1997921, 1997922, 1997927
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1997915, 1997916
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1997915, 1997916
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1997917, 1997918, 1997923, 1997924, 1997928
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1997917, 1997918, 1997923, 1997924, 1997928
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1997917, 1997918, 1997923, 1997924, 1997928
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1997917, 1997918, 1997923, 1997924, 1997928
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1997919, 1997920, 1997925, 1997926, 1997929
SM 2120 B / E31780	True Color measured at 450 nm	1997915, 1997916
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1997915, 1997916, 1997921, 1997922, 1997927
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1997915, 1997916
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1997915, 1997916, 1997921, 1997922, 1997927
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1997915, 1997916, 1997921, 1997922, 1997927
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1997917, 1997918, 1997923, 1997924, 1997928

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	06/06/2018			06/06/2018 17:13	William L. Brown IV	1997915, 1997916, 1997921, 1997922, 1997927
EPA 300.0 Rev. 2.1	06/06/2018			06/08/2018 20:10	Lipi Saha	1997915
	06/06/2018			06/08/2018 22:00	Lipi Saha	1997916
EPA 350.1 Rev. 2.0	06/06/2018			06/15/2018 10:12	Ping Hua	1997923
	06/06/2018			06/15/2018 10:25	Ping Hua	1997924
	06/06/2018			06/15/2018 10:45	Ping Hua	1997917
	06/06/2018			06/15/2018 10:46	Ping Hua	1997918
	06/06/2018			06/15/2018 10:48	Ping Hua	1997928
EPA 351.2 Rev. 2.0	06/06/2018	06/14/2018 16:00	Adrian Shelby	06/19/2018 15:05	Joseph Suarez	1997917
	06/06/2018	06/14/2018 16:00	Adrian Shelby	06/19/2018 15:07	Joseph Suarez	1997928
	06/06/2018	06/18/2018 15:30	Adrian Shelby	06/21/2018 12:25	Joseph Suarez	1997923
	06/06/2018	06/18/2018 15:30	Adrian Shelby	06/21/2018 12:27	Joseph Suarez	1997924
	06/06/2018	06/19/2018 11:10	Adrian Shelby	06/20/2018 15:15	Joseph Suarez	1997918
EPA 353.2 Rev. 2.0	06/06/2018			06/07/2018 14:18	Lauren Bottorf	1997923
	06/06/2018			06/07/2018 14:33	Lauren Bottorf	1997924
	06/06/2018			06/11/2018 12:02	Lauren Bottorf	1997917
	06/06/2018			06/11/2018 12:08	Lauren Bottorf	1997918
	06/06/2018			06/11/2018 12:09	Lauren Bottorf	1997928
EPA 365.1 Rev. 2.0	06/06/2018	06/13/2018 11:22	Sima Feizi	06/18/2018 10:51	Beverly Y. Sanders	1997917
	06/06/2018	06/13/2018 11:22	Sima Feizi	06/18/2018 10:52	Beverly Y. Sanders	1997918
	06/06/2018	06/13/2018 11:22	Sima Feizi	06/18/2018 10:53	Beverly Y. Sanders	1997928
	06/06/2018	06/13/2018 11:22	Sima Feizi	06/18/2018 11:28	Beverly Y. Sanders	1997923
	06/06/2018	06/13/2018 11:22	Sima Feizi	06/18/2018 11:29	Beverly Y. Sanders	1997924
EPA 365.1 Rev. 2.0 dissolved	06/06/2018			06/06/2018 15:48	Megan Treadwell	1997919
	06/06/2018			06/06/2018 16:18	Megan Treadwell	1997920
	06/06/2018			06/06/2018 16:19	Megan Treadwell	1997925
	06/06/2018			06/06/2018 16:24	Megan Treadwell	1997926
	06/06/2018			06/06/2018 16:25	Megan Treadwell	1997929
SM 2120 B	06/06/2018			06/06/2018 16:44	Julia Storbeck	1997915
	06/06/2018			06/06/2018 16:45	Julia Storbeck	1997916
SM 2320 B-97	06/06/2018			06/08/2018 03:07	Dale L. Simmons	1997915
	06/06/2018			06/08/2018 03:17	Dale L. Simmons	1997916
	06/06/2018			06/08/2018 03:27	Dale L. Simmons	1997927
	06/06/2018			06/08/2018 03:58	Dale L. Simmons	1997921
	06/06/2018			06/08/2018 04:08	Dale L. Simmons	1997922
SM 2540 C-97	06/06/2018			06/07/2018 17:38	Yijie Li	1997915, 1997916
SM 2540 D-97	06/06/2018			06/07/2018 17:38	Yijie Li	1997915, 1997916, 1997921, 1997922, 1997927
SM 4500 F-C-97	06/06/2018			06/08/2018 03:07	Dale L. Simmons	1997915

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	06/06/2018			06/08/2018 03:17	Dale L. Simmons	1997916
	06/06/2018			06/08/2018 03:27	Dale L. Simmons	1997927
	06/06/2018			06/08/2018 03:58	Dale L. Simmons	1997921
	06/06/2018			06/08/2018 04:08	Dale L. Simmons	1997922
SM 5310 B-00	06/06/2018			06/12/2018 01:17	Megan Treadwell	1997917
	06/06/2018			06/12/2018 01:32	Megan Treadwell	1997918
	06/06/2018			06/12/2018 01:46	Megan Treadwell	1997923
	06/06/2018			06/12/2018 02:01	Megan Treadwell	1997924
	06/06/2018			06/12/2018 02:18	Megan Treadwell	1997928