

Chemical Analysis Report

NW-DIST-2018-03-22-03

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-2018-03-19-24**
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
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 12-APR-2018 16:59

A handwritten signature in black ink, appearing to read "Liang Lin", is shown 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: MORRIS LAKE

Collection Date/Time: 03/21/2018 10:35

Field ID: G3NW0126

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976795	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P342049	
	SM 2320 B-97	Total Alkalinity	0.81	I	mg CaCO3/L	P342474	
	SM 2540 D-97	TSS	2	U	mg/L	P342223	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P342537	
1976796	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P342676	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P342168	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.036		mg N/L	P342164	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P342188	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P342761	
1976797	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342085	

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) (also 32040086)

Collection Date/Time: 03/21/2018 11:10

Field ID: G3NW0083

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976786	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P342049	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P342532	
	SM 2540 D-97	TSS	5	IA	mg/L	P342222	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P342477	
1976789	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P342676	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P342072	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342164	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P342188	
	SM 5310 B-00	Organic Carbon	7.8		mg C/L	P342761	
1976792	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342085	

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: 03/21/2018 12:05

Field ID: G3NW0165

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976787	EPA 180.1 Rev. 2.0	Turbidity	7.5		NTU	P342049	
	SM 2320 B-97	Total Alkalinity	47		mg CaCO3/L	P342532	
	SM 2540 D-97	TSS	9	I	mg/L	P342223	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P342477	
1976790	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P342680	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P342069	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342190	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P342112	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P342761	
1976793	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342086	

Field ID: G3NW0165

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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: ALLEN LAKE (MIDDLE)

Collection Date/Time: 03/21/2018 11:40

Field ID: G3NW0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976783	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P342049	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P342311	
		Sulfate	5.0		mg SO4/L	P342313	
	SM 2120 B	Color (true)	210		PCU	P342054	
	SM 2320 B-97	Total Alkalinity	5.8		mg CaCO3/L	P342474	
	SM 2540 C-97	TDS	83		mg/L	P342381	
	SM 2540 D-97	TSS	2	U	mg/L	P342222	
1976784	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P342537	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P342676	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P342072	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342164	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P342184	
1976785	SM 5310 B-00	Organic Carbon	16		mg C/L	P342761	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342085	

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: Eastern Lake off at Center Avenue

Collection Date/Time: 03/21/2018 13:00

Field ID: G3NW0124

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1976788	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P342049	
	SM 2320 B-97	Total Alkalinity	46		mg CaCO3/L	P342530	
	SM 2540 D-97	TSS	2	I	mg/L	P342223	
	SM 4500 F-C-97	Fluoride	0.32		mg F/L	P342988	
1976791	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P342680	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P342069	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P342191	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P342112	
	SM 5310 B-00	Organic Carbon	7.6		mg C/L	P342761	
1976794	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P342086	

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: P342049

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342049

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342311

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342313

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342676

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342680

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342069

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342072

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342168

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342164

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342190

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342191

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: P342112

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342184

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342188

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342085

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342086

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

Reference Method: SM 2120 B
Batch ID: P342054

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P342474

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P342530

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

Reference Method: SM 2320 B-97
Batch ID: P342532

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

Reference Method: SM 2540 C-97
Batch ID: P342381

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P342222

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P342223

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P342477

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P342537

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P342988

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P342761

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: P342311

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342313

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342676

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342680

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342069

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342072

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342168

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	102		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342190

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	104		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342191

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342112

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342184

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342188

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342085

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: P342086

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

Reference Method: SM 2320 B-97
Batch ID: P342474

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.5		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P342530

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.4		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P342532

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P342477

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.2		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P342537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P342988

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.2		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342761

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976685	Chloride	101	98.4	P/P	90 - 110
1976751	Chloride	95.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342313

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976685	Sulfate	101	97.9	P/P	90 - 110
1976751	Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342676

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976756	Ammonia-N	98.6	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976613	Ammonia-N	97.3	96.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342069

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976611	Kjeldahl Nitrogen	103	97.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342072

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976696	Kjeldahl Nitrogen	95.9	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976979	Kjeldahl Nitrogen	103	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976756	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342190

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976607	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342191

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976791	NO2NO3-N	99.3	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976608	Total-P	95.2	95.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342184

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976696	Total-P	96.8	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342188

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976979	Total-P	96.4	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976792	O-Phosphate-P	97.4	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976642	O-Phosphate-P	97.0	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P342477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1977074	Fluoride	95.4	97.3	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P342537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976973	Fluoride	95.2	94.7	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P342988

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979416	Fluoride	95.2	94.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P342761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1976534	Organic Carbon	102	103	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342049

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976687	Turbidity	0.494	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976685	Chloride	2.16	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342313

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976685	Sulfate	3.39	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976756	Ammonia-N	1.25	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P342680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976613	Ammonia-N	0.428	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976611	Kjeldahl Nitrogen	4.98	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342072

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976696	Kjeldahl Nitrogen	0.235	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976979	Kjeldahl Nitrogen	3.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976756	NO2NO3-N	0.396	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976607	NO2NO3-N	1.31	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P342191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976791	NO2NO3-N	0.502	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P342112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976608	Total-P	0.680	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P342184

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976696	Total-P	1.68	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P342188

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976979	Total-P	3.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P342085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976792	O-Phosphate-P	0.920	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P342086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976642	O-Phosphate-P	0.972	Spike	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P342054

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976842	Color (true)	1.64	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P342474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976973	Total Alkalinity	0.0630	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P342530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977257	Total Alkalinity	0.330	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P342532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977074	Total Alkalinity	0.336	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P342381

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976842	TDS	0.468	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P342477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1977074	Fluoride	1.39	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P342537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976973	Fluoride	0.467	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P342988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979416	Fluoride	0.477	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P342761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1976534	Organic Carbon	0.655	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A82792

Included Lab Sample IDs: 1976783, 1976786, 1976787, 1976788, 1976795

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A82793

Included Lab Sample IDs: 1976783

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	103	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A82801

Included Lab Sample IDs: 1976785, 1976792, 1976793, 1976794, 1976797

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	101	101	P/P	90 - 110
O-Phosphate-P	99.2	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82832

Included Lab Sample IDs: 1976784, 1976789, 1976796

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82837

Included Lab Sample IDs: 1976790, 1976791

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82845

Included Lab Sample IDs: 1976790, 1976791

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82880

Included Lab Sample IDs: 1976784, 1976789, 1976790, 1976791, 1976796

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.1	97.6	P/P	90 - 110
Kjeldahl Nitrogen	97.6	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A82892

Included Lab Sample IDs: 1976783

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.2	101	P/P	90 - 110
Sulfate	99.1	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82945

Included Lab Sample IDs: 1976784, 1976789, 1976796

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82950

Included Lab Sample IDs: 1976783, 1976795

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.6	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82950

Included Lab Sample IDs: 1976786, 1976787

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.1	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82967

Included Lab Sample IDs: 1976786, 1976787, 1976788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.4	P/P	90 - 110
Total Alkalinity	98.3	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82967

Included Lab Sample IDs: 1976783, 1976795

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83017

Included Lab Sample IDs: 1976784, 1976789, 1976790, 1976791, 1976796

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	101	P/P	90 - 110
Ammonia-N	104	104	P/P	90 - 110
Ammonia-N	98.0	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A83038

Included Lab Sample IDs: 1976784, 1976789, 1976790, 1976791, 1976796

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83098

Included Lab Sample IDs: 1976788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	98.1	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						0.494	
EPA 300.0 Rev. 2.1	Chloride	95.8	101	98.4	95.4			2.16
	Sulfate	97.0	101	97.9	97.9			3.39
EPA 350.1 Rev. 2.0	Ammonia-N	95.3	98.6	100				1.25
	Ammonia-N	97.2	97.3	96.8				0.428
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	103	97.3				4.98
	Kjeldahl Nitrogen	97.3	95.9	96.2				0.235
	Kjeldahl Nitrogen	103	103	98.2				3.36
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102				0.396
	NO2NO3-N	104	104	105				1.31
	NO2NO3-N	104	99.3	99.8				0.502
EPA 365.1 Rev. 2.0	Total-P	103	95.2	95.9				0.680
	Total-P	101	96.8	98.6				1.68
	Total-P	97.0	96.4	101				3.05
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	97.4	98.3				0.920
	O-Phosphate-P	99.0	97.0	98.4				0.972
SM 2120 B	Color (true)						1.64	
SM 2320 B-97	Total Alkalinity	99.5					0.0630	
	Total Alkalinity	99.4					0.330	
	Total Alkalinity	100					0.336	
SM 2540 C-97	TDS						0.468	
SM 4500 F-C-97	Fluoride	95.2	95.4	97.3				1.39
	Fluoride	97.9	95.2	94.7				0.467
	Fluoride	94.2	95.2	94.5				0.477
SM 5310 B-00	Organic Carbon	98.9	102	103				0.655

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1976783, 1976786, 1976787, 1976788, 1976795

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1976783
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1976783
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1976784, 1976789, 1976790, 1976791, 1976796
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1976784, 1976789, 1976790, 1976791, 1976796
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1976784, 1976789, 1976790, 1976791, 1976796
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1976784, 1976789, 1976790, 1976791, 1976796
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1976785, 1976792, 1976793, 1976794, 1976797
SM 2120 B / E31780	True Color measured at 450 nm	1976783
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1976783, 1976786, 1976787, 1976788, 1976795
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1976783
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1976783, 1976786, 1976787, 1976788, 1976795
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1976783, 1976786, 1976787, 1976788, 1976795
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1976784, 1976789, 1976790, 1976791, 1976796

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	03/22/2018			03/22/2018 16:28	DeAsia Armster	1976783, 1976786, 1976787, 1976788, 1976795
EPA 300.0 Rev. 2.1	03/22/2018			03/26/2018 21:55	Lipi Saha	1976783
EPA 350.1 Rev. 2.0	03/22/2018			04/03/2018 11:44	Ping Hua	1976784
	03/22/2018			04/03/2018 11:53	Ping Hua	1976789
	03/22/2018			04/03/2018 11:55	Ping Hua	1976796
	03/22/2018			04/03/2018 13:15	Ping Hua	1976790
	03/22/2018			04/03/2018 13:16	Ping Hua	1976791
EPA 351.2 Rev. 2.0	03/22/2018	03/23/2018 11:30	Adrian Shelby	03/27/2018 13:15	Joseph Suarez	1976790
	03/22/2018	03/23/2018 11:30	Adrian Shelby	03/27/2018 13:16	Joseph Suarez	1976791
	03/22/2018	03/23/2018 11:30	Adrian Shelby	03/27/2018 14:09	Joseph Suarez	1976784
	03/22/2018	03/23/2018 11:30	Adrian Shelby	03/27/2018 14:11	Joseph Suarez	1976789
	03/22/2018	03/26/2018 11:30	Adrian Shelby	03/27/2018 14:20	Joseph Suarez	1976796
EPA 353.2 Rev. 2.0	03/22/2018			03/23/2018 12:28	Beverly Y. Sanders	1976784
	03/22/2018			03/23/2018 12:30	Beverly Y. Sanders	1976789
	03/22/2018			03/23/2018 12:31	Beverly Y. Sanders	1976796
	03/22/2018			03/26/2018 11:47	Lauren Bottorf	1976790
	03/22/2018			03/26/2018 11:55	Lauren Bottorf	1976791
EPA 365.1 Rev. 2.0	03/22/2018	03/23/2018 11:55	Sima Feizi	03/26/2018 12:57	Beverly Y. Sanders	1976790
	03/22/2018	03/23/2018 11:55	Sima Feizi	03/26/2018 12:58	Beverly Y. Sanders	1976791
	03/22/2018	03/26/2018 11:40	Sima Feizi	03/29/2018 11:36	Beverly Y. Sanders	1976784
	03/22/2018	03/26/2018 11:40	Sima Feizi	03/29/2018 11:38	Beverly Y. Sanders	1976789
	03/22/2018	03/26/2018 11:40	Sima Feizi	03/29/2018 11:39	Beverly Y. Sanders	1976796
EPA 365.1 Rev. 2.0 dissolved	03/22/2018			03/22/2018 14:56	Megan Treadwell	1976792
	03/22/2018			03/22/2018 15:21	Megan Treadwell	1976785
	03/22/2018			03/22/2018 15:22	Megan Treadwell	1976793
	03/22/2018			03/22/2018 15:23	Megan Treadwell	1976794
	03/22/2018			03/22/2018 15:30	Megan Treadwell	1976797
SM 2120 B	03/22/2018			03/22/2018 17:42	Tanya Welborn	1976783
SM 2320 B-97	03/22/2018			03/29/2018 19:35	Dale L. Simmons	1976783
	03/22/2018			03/29/2018 19:46	Dale L. Simmons	1976795
	03/22/2018			03/30/2018 22:53	Lauren Bottorf	1976788
	03/22/2018			03/31/2018 07:35	Lauren Bottorf	1976786
	03/22/2018			03/31/2018 07:43	Lauren Bottorf	1976787
SM 2540 C-97	03/22/2018			03/23/2018 15:30	DeAsia Armster	1976783
SM 2540 D-97	03/22/2018			03/23/2018 15:30	DeAsia Armster	1976783, 1976786, 1976787, 1976788, 1976795
SM 4500 F-C-97	03/22/2018			03/29/2018 16:36	Dale L. Simmons	1976786
	03/22/2018			03/29/2018 16:46	Dale L. Simmons	1976787
	03/22/2018			03/31/2018 08:38	Lauren Bottorf	1976783

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	03/22/2018			03/31/2018 08:42	Lauren Bottorf	1976795
	03/22/2018			04/06/2018 04:35	Dale L. Simmons	1976788
SM 5310 B-00	03/22/2018			04/03/2018 19:44	Megan Treadwell	1976784
	03/22/2018			04/03/2018 19:58	Megan Treadwell	1976789
	03/22/2018			04/03/2018 20:14	Megan Treadwell	1976790
	03/22/2018			04/03/2018 20:29	Megan Treadwell	1976791
	03/22/2018			04/03/2018 20:45	Megan Treadwell	1976796