

Chemical Analysis Report

NW-DIST-2018-03-01-01

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

Event Description: **Eglin Run East**
Request ID: **RQ-2018-02-26-17**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

For additional information please contact
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 16-MAR-2018 14:44

A handwritten signature in black ink, appearing to read "Liang Lin", is written on a light-colored, textured 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: Little Alaqua Creek Below 282 Bridge

Collection Date/Time: 02/28/2018 10:20

Field ID: G3NW0065

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970783	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P340808	
	EPA 300.0 Rev. 2.1	Chloride	2.2		mg Cl/L	P340950	
		Sulfate	0.70		mg SO4/L	P340951	
	SM 2120 B	Color (true)	35		PCU	P340813	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P341244	
	SM 2540 C-97	TDS	15	U	mg/L	P341151	
	SM 2540 D-97	TSS	2	U	mg/L	P340934	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P341247	
1970789	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P341236	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P340827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P340885	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P340866	
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P340978	
1970795	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340820	

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: Alaqua Creek at Park Boat Ramp

Collection Date/Time: 02/28/2018 10:40

Field ID: G3NW0163

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970784	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P340808	
	EPA 300.0 Rev. 2.1	Chloride	66		mg Cl/L	P340950	
		Sulfate	9.9		mg SO4/L	P340951	
	SM 2120 B	Color (true)	49		PCU	P340813	
	SM 2320 B-97	Total Alkalinity	1.9	I	mg CaCO3/L	P341244	
	SM 2540 C-97	TDS	135		mg/L	P341151	
	SM 2540 D-97	TSS	2	U	mg/L	P340934	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P341247	
1970790	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P340975	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P340827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P340885	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P340866	
	SM 5310 B-00	Organic Carbon	4.2		mg C/L	P340978	
1970796	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340820	

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: Little Rocky Creek abv Eglin Rd 515

Collection Date/Time: 02/28/2018 11:40

Field ID: G3NW0103

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970785	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P340809	
	EPA 300.0 Rev. 2.1	Chloride	2.3		mg Cl/L	P340950	
		Sulfate	0.87		mg SO4/L	P340951	

Field ID: G3NW0103

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970785	SM 2120 B	Color (true)	22		PCU	P340813	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P341244	
	SM 2540 C-97	TDS	15	U	mg/L	P341151	
	SM 2540 D-97	TSS	2	U	mg/L	P340934	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P341247	
1970791	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P340975	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P340827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.072		mg N/L	P340886	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P340866	
	SM 5310 B-00	Organic Carbon	1.6		mg C/L	P340978	
1970797	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340821	

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: Titi Creek above SR 285

Collection Date/Time: 02/28/2018 12:10

Field ID: G4NW0365

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970786	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P340808	
	EPA 300.0 Rev. 2.1	Chloride	2.1		mg Cl/L	P340950	
		Sulfate	0.85		mg SO4/L	P340951	
	SM 2120 B	Color (true)	70	A	PCU	P340814	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P341244	
	SM 2540 C-97	TDS	16	I	mg/L	P341151	
	SM 2540 D-97	TSS	2	U	mg/L	P340934	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P341247	
1970792	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P340976	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P340827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.048		mg N/L	P340886	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P340866	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P340978	
1970798	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340820	

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: Titi Creek above SR 285

Collection Date/Time: 02/28/2018 12:20

Field ID: G4NW0365DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970787	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P340809	
	EPA 300.0 Rev. 2.1	Chloride	2.1		mg Cl/L	P340950	
		Sulfate	0.85		mg SO4/L	P340951	
	SM 2120 B	Color (true)	69		PCU	P340814	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P341244	
	SM 2540 C-97	TDS	15	U	mg/L	P341151	
	SM 2540 D-97	TSS	2	U	mg/L	P340934	

Field ID: G4NW0365DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970787	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P341247	
1970793	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P340971	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20		mg N/L	P340827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.047		mg N/L	P340886	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P340866	
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P340978	
1970799	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340821	

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: PENSACOLA ICE ROOM

Collection Date/Time: 02/28/2018 12:30

Field ID: BLANK_02282018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1970788	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P340809	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P340950	
		Sulfate	0.20	U	mg SO4/L	P340951	
	SM 2120 B	Color (true)	2.5	U	PCU	P340814	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P341245	
	SM 2540 C-97	TDS	15	U	mg/L	P341151	
	SM 2540 D-97	TSS	2	U	mg/L	P340934	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P341248	
1970794	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P341404	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P340827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P340886	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P340866	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P340978	
1970800	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P340821	

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: P340808

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P340809

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: P340950

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340951

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340971

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340975

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340976

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341236

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341404

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340827

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340885

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340886

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340866

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340820

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340821

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

Reference Method: SM 2120 B
Batch ID: P340813

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P340814

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P341244

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

Reference Method: SM 2320 B-97
Batch ID: P341245

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

Reference Method: SM 2540 C-97
Batch ID: P341151

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P340934

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P341247

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P341248

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P340978

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: P340950

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340951

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340971

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340975

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340976

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

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340976

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341236

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341404

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340827

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340885

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340886

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: P340866

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: P340820

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340821

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P341244

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P341245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P341247

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.6		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P341248

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P340978

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340950

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970708	Chloride	93.5		P	90 - 110
1970709	Chloride	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970708	Sulfate	95.6		P	90 - 110
1970709	Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340971

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970793	Ammonia-N	99.7	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340975

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970244	Ammonia-N	91.9	90.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970955	Ammonia-N	94.0	96.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341236

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970789	Ammonia-N	100	96.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971599	Ammonia-N	99.2	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340827

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970793	Kjeldahl Nitrogen	93.4	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340885

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970711	NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340886

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970791	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340866

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970790	Total-P	96.0	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970715	O-Phosphate-P	96.7	98.2	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970797	O-Phosphate-P	97.2	97.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P341247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971272	Fluoride	95.1	96.0	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P341248

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970876	Fluoride	96.9	95.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P340978

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970711	Organic Carbon	98.6	98.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P340808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970707	Turbidity	2.74	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P340809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970876	Turbidity	1.54	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970708	Chloride	2.04	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P340951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970708	Sulfate	0.914	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340971

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970793	Ammonia-N	0.482	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340975

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970244	Ammonia-N	0.839	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970955	Ammonia-N	2.47	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970789	Ammonia-N	3.12	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971599	Ammonia-N	1.40	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340827

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970793	Kjeldahl Nitrogen	1.08	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340885

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970711	NO2NO3-N	0.647	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970791	NO2NO3-N	0.358	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340866

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970790	Total-P	0.585	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970715	O-Phosphate-P	0.763	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970797	O-Phosphate-P	0.718	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P340813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970707	Color (true)	2.18	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P340814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970786	Color (true)	1.13	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P341244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971272	Total Alkalinity	0.0945	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P341245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970876	Total Alkalinity	0.128	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P341151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970832	TDS	1.42	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P341247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971272	Fluoride	0.480	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P341248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970876	Fluoride	0.960	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P340978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970711	Organic Carbon	0.224	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: 1970783, 1970784, 1970785, 1970786, 1970787, 1970788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.4	97.6	P/P	90 - 110
Sulfate	101	98.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82369
Included Lab Sample IDs: 1970783, 1970784, 1970785, 1970786, 1970787, 1970788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A82370
Included Lab Sample IDs: 1970783, 1970784, 1970785, 1970786, 1970787, 1970788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	99.6	P/P	85 - 115
Color (true)	99.6	98.9	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A82372

Included Lab Sample IDs: 1970795, 1970796, 1970797, 1970798, 1970799, 1970800

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	101	P/P	90 - 110
O-Phosphate-P	99.3	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82408

Included Lab Sample IDs: 1970789, 1970790, 1970791, 1970792, 1970793, 1970794

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82422

Included Lab Sample IDs: 1970789, 1970790, 1970791, 1970792, 1970793, 1970794

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82430

Included Lab Sample IDs: 1970793

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82431

Included Lab Sample IDs: 1970790, 1970791, 1970792

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	99.1	P/P	90 - 110
Ammonia-N	99.1	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A82435

Included Lab Sample IDs: 1970789, 1970790, 1970791, 1970792, 1970793, 1970794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	95.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82456

Included Lab Sample IDs: 1970789, 1970790, 1970791, 1970792, 1970793, 1970794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	101	P/P	90 - 110
Kjeldahl Nitrogen	98.4	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82510

Included Lab Sample IDs: 1970789

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

Reference Method: SM 2320 B-97

Run ID: A82513

Included Lab Sample IDs: 1970783, 1970784, 1970785, 1970786, 1970787, 1970788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.6	P/P	90 - 110
Total Alkalinity	98.2	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82513

Included Lab Sample IDs: 1970783, 1970784, 1970785, 1970786, 1970787, 1970788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	109	104	P/P	90 - 110
Fluoride	97.1	109	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82558

Included Lab Sample IDs: 1970794

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	104	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				2.74	
	Turbidity				1.54	
EPA 300.0 Rev. 2.1	Chloride	95.7	93.5 97.8		2.04	
	Sulfate	97.1	95.6 98.0		0.914	
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	99.7 100			0.482
	Ammonia-N	94.3	91.9 90.5			0.839
	Ammonia-N	97.0	94.0 96.5			2.47
	Ammonia-N	101	100 96.9			3.12
	Ammonia-N	101	99.2 101			1.40
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	93.4 94.6			1.08
EPA 353.2 Rev. 2.0	NO2NO3-N	103	103 104			0.647
	NO2NO3-N	104	104 104			0.358
EPA 365.1 Rev. 2.0	Total-P	101	96.0 95.4			0.585
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.3	96.7 98.2			0.763
	O-Phosphate-P	102	97.2 97.9			0.718
SM 2120 B	Color (true)				2.18	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 2120 B	Color (true)				1.13	
SM 2320 B-97	Total Alkalinity	102			0.0945	
	Total Alkalinity	102			0.128	
SM 2540 C-97	TDS				1.42	
SM 4500 F-C-97	Fluoride	93.6	95.1 96.0			0.480
	Fluoride	94.9	96.9 95.4			0.960
SM 5310 B-00	Organic Carbon	94.9	98.6 98.4			0.224

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1970789, 1970790, 1970791, 1970792, 1970793, 1970794
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1970789, 1970790, 1970791, 1970792, 1970793, 1970794
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1970789, 1970790, 1970791, 1970792, 1970793, 1970794
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1970789, 1970790, 1970791, 1970792, 1970793, 1970794
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1970795, 1970796, 1970797, 1970798, 1970799, 1970800
SM 2120 B / E31780	True Color measured at 450 nm	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1970789, 1970790, 1970791, 1970792, 1970793, 1970794

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	03/01/2018			03/01/2018 15:23	DeAsia Armster	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
EPA 300.0 Rev. 2.1	03/01/2018			03/02/2018	Julia Storbeck	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
EPA 350.1 Rev. 2.0	03/01/2018			03/05/2018	Ping Hua	1970790, 1970791, 1970792, 1970793
	03/01/2018			03/08/2018	Ping Hua	1970789
	03/01/2018			03/09/2018	Ping Hua	1970794
EPA 351.2 Rev. 2.0	03/01/2018	03/02/2018	Adrian Shelby	03/06/2018	Joseph Suarez	1970789, 1970790, 1970791, 1970792, 1970793, 1970794
EPA 353.2 Rev. 2.0	03/01/2018			03/02/2018	Lauren Bottorf	1970789, 1970790, 1970791, 1970792, 1970793, 1970794
EPA 365.1 Rev. 2.0	03/01/2018	03/02/2018	Sima Feizi	03/05/2018	Beverly Y. Sanders	1970789, 1970790, 1970791, 1970792, 1970793, 1970794
EPA 365.1 Rev. 2.0 dissolved	03/01/2018			03/01/2018 15:23	Megan Treadwell	1970797
	03/01/2018			03/01/2018 15:57	Megan Treadwell	1970795
	03/01/2018			03/01/2018 15:58	Megan Treadwell	1970796
	03/01/2018			03/01/2018 15:59	Megan Treadwell	1970798
	03/01/2018			03/01/2018 16:00	Megan Treadwell	1970799
	03/01/2018			03/01/2018 16:01	Megan Treadwell	1970800
SM 2120 B	03/01/2018			03/01/2018 14:55	Tanya Welborn	1970783
	03/01/2018			03/01/2018 14:56	Tanya Welborn	1970784
	03/01/2018			03/01/2018 14:57	Tanya Welborn	1970785
	03/01/2018			03/01/2018 15:01	Tanya Welborn	1970786, 1970787
	03/01/2018			03/01/2018 15:02	Tanya Welborn	1970788
SM 2320 B-97	03/01/2018			03/09/2018	Dale L. Simmons	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
SM 2540 C-97	03/01/2018			03/02/2018	DeAsia Armster	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
SM 2540 D-97	03/01/2018			03/02/2018	DeAsia Armster	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
SM 4500 F-C-97	03/01/2018			03/09/2018	Dale L. Simmons	1970783, 1970784, 1970785, 1970786, 1970787, 1970788
SM 5310 B-00	03/01/2018			03/05/2018	Megan Treadwell	1970789, 1970790, 1970791, 1970792, 1970793, 1970794