

Chemical Analysis Report

NE-DIST-2017-11-16-02

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

Event Description: **Suwannee North 2**
Request ID: **RQ-2017-11-06-17**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
Attn: Jeremy Parrish

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 08-DEC-2017 11:37



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: CLEARWATER LAKE

Collection Date/Time: 11/15/2017 10:10

Field ID: G1NE113111152017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1947053	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P335462	
	EPA 300.0 Rev. 2.1	Chloride	8.2		mg Cl/L	P335683	
		Sulfate	5.4		mg SO4/L	P335685	
	SM 2120 B	Color (true)	270		PCU	P335484	
	SM 2320 B-97	Total Alkalinity	0.96	I	mg CaCO3/L	P336013	
	SM 2540 C-97	TDS	52		mg/L	P335956	
	SM 2540 D-97	TSS	3	I	mg/L	P335784	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P335923	
1947058	EPA 350.1 Rev. 2.0	Ammonia-N	0.068		mg N/L	P336250	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P336050	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P335899	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P335879	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P335968	
1947063	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P335481	

Ref. Method and Comment:

SM 2540 C-97: The precision data is unavailable due to analytical difficulties.

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: HARDESTY LAKE

Collection Date/Time: 11/15/2017 13:10

Field ID: G1NE086911152017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1947054	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P335462	
	EPA 300.0 Rev. 2.1	Chloride	6.7		mg Cl/L	P335683	
		Sulfate	1.0		mg SO4/L	P335685	
	SM 2120 B	Color (true)	490		PCU	P335484	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P336013	
	SM 2540 C-97	TDS	72		mg/L	P335956	
	SM 2540 D-97	TSS	2	I	mg/L	P335784	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335923	
1947059	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P336252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P336283	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.044		mg N/L	P335900	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P335879	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P335968	
1947064	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.021		mg P/L	P335481	

Ref. Method and Comment:

SM 2540 C-97: The precision data is unavailable due to analytical difficulties.

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LAKE IDA

Collection Date/Time: 11/15/2017 12:00

Field ID: G1NE0090011152017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G1NE0090011152017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1947055	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P335462	
	EPA 300.0 Rev. 2.1	Chloride	7.6		mg Cl/L	P335683	
		Sulfate	1.9		mg SO4/L	P335685	
	SM 2120 B	Color (true)	460		PCU	P335484	
	SM 2320 B-97	Total Alkalinity	1.8	I	mg CaCO3/L	P336013	
	SM 2540 C-97	TDS	47		mg/L	P335956	
	SM 2540 D-97	TSS	2	U	mg/L	P335784	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335923	
1947060	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P336252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P336051	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.065		mg N/L	P335900	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P335881	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P335968	
1947065	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.043		mg P/L	P335481	

Ref. Method and Comment:

SM 2540 C-97: The precision data is unavailable due to analytical difficulties.

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

Sample Location: MARINER LAKE

Collection Date/Time: 11/15/2017 10:50

Field ID: G1NE085911152017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1947056	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P335462	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P335683	
		Sulfate	2.3		mg SO4/L	P335685	
	SM 2120 B	Color (true)	14		PCU	P335472	
	SM 2320 B-97	Total Alkalinity	0.89	I	mg CaCO3/L	P336013	
	SM 2540 C-97	TDS	25		mg/L	P335956	
	SM 2540 D-97	TSS	2	UA	mg/L	P335785	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335923	
1947061	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P336252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25		mg N/L	P336051	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P335900	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P335881	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P336098	
1947066	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P335481	

Ref. Method and Comment:

SM 2540 C-97: The precision data is unavailable due to analytical difficulties.

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

Sample Location: CHURCH LAKE

Collection Date/Time: 11/15/2017 12:30

Field ID: G1NE086711152017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1947057	EPA 180.1 Rev. 2.0	Turbidity	1.8	A	NTU	P335463	
	EPA 300.0 Rev. 2.1	Chloride	5.5		mg Cl/L	P335683	

Field ID: G1NE086711152017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1947057	EPA 300.0 Rev. 2.1	Sulfate	4.0		mg SO4/L	P335685	
	SM 2120 B	Color (true)	34		PCU	P335472	
	SM 2320 B-97	Total Alkalinity	3.9		mg CaCO3/L	P336013	
	SM 2540 C-97	TDS	33		mg/L	P335956	
	SM 2540 D-97	TSS	2	U	mg/L	P335785	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335923	
1947062	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P336252	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P336051	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P335900	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P335881	
	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P336098	
1947067	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P335483	

Ref. Method and Comment:

SM 2540 C-97: The precision data is unavailable due to analytical difficulties.

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: P335462

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P335463

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P335683

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P335685

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P336250

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336252

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336050

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336051

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336283

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335899

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335900

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335879

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335881

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335481

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335483

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

Reference Method: SM 2120 B
Batch ID: P335472

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P335484

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336013

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

Reference Method: SM 2540 C-97
Batch ID: P335956

Component	Result	Code	Units
TDS	15		mg/L
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P335784

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P335785

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P335923

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P335968

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P336098

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: P335683

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335685

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336250

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336252

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: P336050

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: P336051

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336283

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335899

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335899

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335900

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: P335879

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: P335881

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335481

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335483

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

Reference Method: SM 2320 B-97
Batch ID: P336013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P335923

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P335968

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P336098

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335683

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947007	Chloride	93.6		P	90 - 110
1947053	Chloride	94.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335685

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947007	Sulfate	97.5		P	90 - 110
1947053	Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1946807	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336252

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947059	Ammonia-N	94.7	95.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336050

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947011	Kjeldahl Nitrogen	98.0	92.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336051

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947155	Kjeldahl Nitrogen	97.5	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336283

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947768	Kjeldahl Nitrogen	90.4	97.2	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335899

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1946920	NO2NO3-N	98.8	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335900

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947059	NO2NO3-N	97.2	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947162	Total-P	96.5	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335481

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1946923	O-Phosphate-P	99.0	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335483

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947014	O-Phosphate-P	95.6	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P335923

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947248	Fluoride	97.5	97.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P335968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1946807	Organic Carbon	95.3	96.1	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P336098

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947061	Organic Carbon	95.8	95.4	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P335462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1946927	Turbidity	2.92	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P335463

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947057	Turbidity	1.12	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335683

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947007	Chloride	0.278	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947007	Sulfate	0.126	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1946807	Ammonia-N	0.259	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336252

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947059	Ammonia-N	0.474	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947011	Kjeldahl Nitrogen	4.09	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336051

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947155	Kjeldahl Nitrogen	0.234	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336283

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947768	Kjeldahl Nitrogen	6.11	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1946920	NO2NO3-N	0.445	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947059	NO2NO3-N	0.419	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1946928	Total-P	1.75	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947162	Total-P	2.07	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1946923	O-Phosphate-P	1.83	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335483

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947014	O-Phosphate-P	2.96	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P335472

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947008	Color (true)	0.285	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P335484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1946671	Color (true)	1.30	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P336013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947248	Total Alkalinity	0.128	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P335923

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947248	Fluoride	0.487	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P335968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1946807	Organic Carbon	0.504	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P336098

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947061	Organic Carbon	0.362	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: A80230
Included Lab Sample IDs: 1947053, 1947054, 1947055, 1947056, 1947057

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	103	P/P	90 - 110
Chloride	102	101	P/P	90 - 110
Sulfate	101	103	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A80322

Included Lab Sample IDs: 1947053, 1947054, 1947055, 1947056, 1947057

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

Reference Method: SM 2120 B

Run ID: A80323

Included Lab Sample IDs: 1947056, 1947057

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	108	107	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A80325

Included Lab Sample IDs: 1947063, 1947064, 1947065, 1947066, 1947067

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	103	104	P/P	90 - 110
O-Phosphate-P	104	105	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A80326

Included Lab Sample IDs: 1947053, 1947054, 1947055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	105	107	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80516

Included Lab Sample IDs: 1947058, 1947059, 1947060, 1947061, 1947062

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

Reference Method: SM 4500 F-C-97

Run ID: A80534

Included Lab Sample IDs: 1947053, 1947054, 1947055, 1947056, 1947057

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80538

Included Lab Sample IDs: 1947060

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

Reference Method: SM 5310 B-00

Run ID: A80544

Included Lab Sample IDs: 1947058, 1947059, 1947060

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80548

Included Lab Sample IDs: 1947058, 1947059, 1947061, 1947062

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

Reference Method: SM 2320 B-97

Run ID: A80565

Included Lab Sample IDs: 1947053, 1947054, 1947055, 1947056, 1947057

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A80598

Included Lab Sample IDs: 1947061, 1947062

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.9	96.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80655

Included Lab Sample IDs: 1947058, 1947059, 1947060, 1947061, 1947062

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	102	P/P	90 - 110
Ammonia-N	102	101	P/P	90 - 110
Ammonia-N	103	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80668

Included Lab Sample IDs: 1947060, 1947061, 1947062

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80675

Included Lab Sample IDs: 1947058

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	90.2	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80724

Included Lab Sample IDs: 1947059

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	98.9	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				2.92	
	Turbidity				1.12	
EPA 300.0 Rev. 2.1	Chloride	94.1	93.6	94.1	0.278	
	Sulfate	95.3	97.5	96.5	0.126	
EPA 350.1 Rev. 2.0	Ammonia-N	103	103	103		0.259
	Ammonia-N	104	94.7	95.2		0.474
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	98.0	92.5		4.09
	Kjeldahl Nitrogen	96.8	97.5	97.8		0.234
	Kjeldahl Nitrogen	109	90.4	97.2		6.11
EPA 353.2 Rev. 2.0	NO2NO3-N	104	98.8	98.3		0.445
	NO2NO3-N	104	97.2	97.6		0.419
EPA 365.1 Rev. 2.0	Total-P	101				1.75
	Total-P	103	96.5	98.7		2.07
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.0	97.2		1.83
	O-Phosphate-P	108	95.6	98.6		2.96
SM 2120 B	Color (true)				0.285	
	Color (true)				1.30	
SM 2320 B-97	Total Alkalinity	101			0.128	
SM 4500 F-C-97	Fluoride	94.3	97.5	97.0		0.487
SM 5310 B-00	Organic Carbon	97.0	95.3	96.1		0.504
	Organic Carbon	95.2	95.8	95.4		0.362

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1947053, 1947054, 1947055, 1947056, 1947057
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1947053, 1947054, 1947055, 1947056, 1947057
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1947053, 1947054, 1947055, 1947056, 1947057
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1947058, 1947059, 1947060, 1947061, 1947062
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1947058, 1947059, 1947060, 1947061, 1947062
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1947058, 1947059, 1947060, 1947061, 1947062
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1947058, 1947059, 1947060, 1947061, 1947062
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1947063, 1947064, 1947065, 1947066, 1947067
SM 2120 B / E31780	True Color measured at 450 nm	1947053, 1947054, 1947055, 1947056, 1947057
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1947053, 1947054, 1947055, 1947056, 1947057
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1947053, 1947054, 1947055, 1947056, 1947057
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1947053, 1947054, 1947055, 1947056, 1947057
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1947053, 1947054, 1947055, 1947056, 1947057
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1947058, 1947059, 1947060, 1947061, 1947062

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	11/16/2017			11/16/2017 16:18	DeAsia Armster	1947053, 1947054, 1947055, 1947056, 1947057
EPA 300.0 Rev. 2.1	11/16/2017			11/17/2017	Irina Carbone	1947053, 1947054, 1947055, 1947056, 1947057
EPA 350.1 Rev. 2.0	11/16/2017			12/01/2017	Sofia Elnemr	1947058, 1947059, 1947060, 1947061, 1947062
EPA 351.2 Rev. 2.0	11/16/2017	11/29/2017	Adrian Shelby	12/01/2017	Tanya Welborn	1947060, 1947061, 1947062
	11/16/2017	11/29/2017	Adrian Shelby	12/04/2017	Tanya Welborn	1947058
	11/16/2017	12/04/2017	Adrian Shelby	12/05/2017	Joseph Suarez	1947059
EPA 353.2 Rev. 2.0	11/16/2017			11/27/2017	Beverly Y. Sanders	1947058, 1947059, 1947060, 1947061, 1947062
EPA 365.1 Rev. 2.0	11/16/2017	11/27/2017	Sima Feizi	11/28/2017	Lipi Saha	1947058, 1947059, 1947060, 1947061, 1947062
EPA 365.1 Rev. 2.0 dissolved	11/16/2017			11/16/2017 15:20	Megan Treadwell	1947063
	11/16/2017			11/16/2017 15:25	Megan Treadwell	1947064
	11/16/2017			11/16/2017 15:26	Megan Treadwell	1947065
	11/16/2017			11/16/2017 15:27	Megan Treadwell	1947066, 1947067
SM 2120 B	11/16/2017			11/16/2017 16:11	Tanya Welborn	1947056, 1947057
	11/16/2017			11/16/2017 17:09	Tanya Welborn	1947053
	11/16/2017			11/16/2017 17:10	Tanya Welborn	1947054
	11/16/2017			11/16/2017 17:11	Tanya Welborn	1947055
SM 2320 B-97	11/16/2017			11/28/2017	Dale L. Simmons	1947053, 1947054, 1947055, 1947056, 1947057
SM 2540 C-97	11/16/2017			11/17/2017	DeAsia Armster	1947053, 1947054, 1947055, 1947056, 1947057
SM 2540 D-97	11/16/2017			11/17/2017	DeAsia Armster	1947053, 1947054, 1947055, 1947056, 1947057
SM 4500 F-C-97	11/16/2017			11/28/2017	Dale L. Simmons	1947053, 1947054, 1947055, 1947056, 1947057
SM 5310 B-00	11/16/2017			11/28/2017	Ping Hua	1947058, 1947059, 1947060, 1947061, 1947062