

Chemical Analysis Report

NE-DIST-2016-09-14-01

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

Event Description: **High Springs**
Request ID: **RQ-2016-09-12-25**
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

For additional information please contact
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 06-OCT-2016 11:48

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: SANTA FE RISE

Collection Date/Time: 09/13/2016 10:40

Field ID: G1NE0015 09132016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831374	EPA 180.1 Rev. 2.0	Turbidity	2.1	A	NTU	P311138	
	EPA 300.0 Rev. 2.1	Chloride	9.0		mg Cl/L	P311704	
		Sulfate	11		mg SO4/L	P311706	
	SM 2120 B	Color (true)	590		PCU	P311154	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P311384	
	SM 2540 C-97	TDS	128		mg/L	P311818	
	SM 2540 D-97	TSS	4	I	mg/L	P311784	
	SM 4500 F-C-97	Fluoride	0.088	I	mg F/L	P311388	
1831379	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P311312	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P311474	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.026		mg N/L	P311593	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P311852	
	SM 5310 B-00	Organic Carbon	49		mg C/L	P311512	
1831384	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P311149	

Ref. Method and Comment:

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

SM 2120 B: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

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: SANTA FE RISE DUPLICATE

Collection Date/Time: 09/13/2016 10:45

Field ID: G1NE0015 09132016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831375	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P311138	
	EPA 300.0 Rev. 2.1	Chloride	9.0		mg Cl/L	P311704	
		Sulfate	11		mg SO4/L	P311706	
	SM 2120 B	Color (true)	600		PCU	P311154	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P311385	
	SM 2540 C-97	TDS	133		mg/L	P311818	
	SM 2540 D-97	TSS	4	I	mg/L	P311784	
	SM 4500 F-C-97	Fluoride	0.088	I	mg F/L	P311389	
1831380	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P311312	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P311474	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P311646	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P311852	
	SM 5310 B-00	Organic Carbon	48		mg C/L	P311512	
1831385	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P311149	

Ref. Method and Comment:

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

SM 2120 B: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

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: TREE HOUSE SPRING

Collection Date/Time: 09/13/2016 09:45

Field ID: G1NE0016 09132016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831376	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P311138	
	EPA 300.0 Rev. 2.1	Chloride	9.4		mg Cl/L	P311704	
		Sulfate	15		mg SO4/L	P311706	
	SM 2120 B	Color (true)	530		PCU	P311154	
	SM 2320 B-97	Total Alkalinity	37		mg CaCO3/L	P311385	
	SM 2540 C-97	TDS	152	A	mg/L	P311819	
	SM 2540 D-97	TSS	4	I	mg/L	P311785	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P311389	
1831381	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P311312	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P311474	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.075		mg N/L	P311646	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P311852	
	SM 5310 B-00	Organic Carbon	44		mg C/L	P311512	
1831386	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P311149	

Ref. Method and Comment:

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

SM 2120 B: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

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: HORNSBY SPRING

Collection Date/Time: 09/13/2016 11:20

Field ID: G1NE0017 09132016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831377	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P311138	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P311704	
		Sulfate	54		mg SO4/L	P311706	
	SM 2120 B	Color (true)	8.8		PCU	P311155	
	SM 2320 B-97	Total Alkalinity	169		mg CaCO3/L	P311385	
	SM 2540 C-97	TDS	268		mg/L	P311819	
	SM 2540 D-97	TSS	2	I	mg/L	P311785	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P311389	
1831382	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P311312	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	J	mg N/L	P311474	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.47		mg N/L	P311647	
	EPA 365.1 Rev. 2.0	Total-P	0.073		mg P/L	P311853	
	SM 5310 B-00	Organic Carbon	1.9		mg C/L	P311512	
1831387	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.075		mg P/L	P311150	

Ref. Method and Comment:

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

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

EPA 351.2 Rev. 2.0: Refer to the narrative for an explanation of QC Codes.

Sample Location: GILCHRIST BLUE SPRING VENT

Collection Date/Time: 09/13/2016 12:15

Field ID: G1NE0014 09132016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G1NE0014 09132016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1831378	EPA 180.1 Rev. 2.0	Turbidity	0.30		NTU	P311138	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P311704	
		Sulfate	12		mg SO4/L	P311706	
	SM 2120 B	Color (true)	2.5	U	PCU	P311155	
	SM 2320 B-97	Total Alkalinity	175	A	mg CaCO3/L	P311385	
	SM 2540 C-97	TDS	195		mg/L	P311819	
	SM 2540 D-97	TSS	2	I	mg/L	P311785	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P311389	
1831383	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P311312	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.089	I	mg N/L	P311475	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.4		mg N/L	P311593	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P311853	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P311512	
1831388	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P311150	

Ref. Method and Comment:

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

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P311138

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P311704

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P311706

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P311312

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P311474

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311475

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311593

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311646

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311647

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311852

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311853

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311149

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311150

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

Reference Method: SM 2120 B
Batch ID: P311154

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P311155

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P311384

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

Reference Method: SM 2320 B-97
Batch ID: P311385

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

Reference Method: SM 2540 C-97
Batch ID: P311818

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P311819

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P311784

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P311785

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P311388

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P311389

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P311512

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: P311704

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311312

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: P311474

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311593

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311646

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311647

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: P311647

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311852

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311853

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311149

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: P311150

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

Reference Method: SM 2320 B-97
Batch ID: P311384

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

Reference Method: SM 2320 B-97
Batch ID: P311385

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P311388

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P311389

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P311512

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	111		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831091	Chloride	99.3		P	90 - 110
1831374	Chloride	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831091	Sulfate	95.4		P	90 - 110
1831374	Sulfate	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831297	Ammonia-N	98.8	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311474

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831382	Kjeldahl Nitrogen	89.9	95.2	F/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831466	Kjeldahl Nitrogen	97.4	95.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311593

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831415	NO2NO3-N	103	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1830876	NO2NO3-N	99.2		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311647

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831416	NO2NO3-N	97.3	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311853

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831382	Total-P	96.1	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831307	O-Phosphate-P	98.7	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831388	O-Phosphate-P	98.6	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P311388

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831288	Fluoride	98.7	99.8	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P311389

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831378	Fluoride	102	102	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P311512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1831310	Organic Carbon	111		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831374	Turbidity	2.83	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831091	Chloride	0.000447	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831297	Ammonia-N	1.85	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311474

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831382	Kjeldahl Nitrogen	4.85	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831466	Kjeldahl Nitrogen	1.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831415	NO2NO3-N	1.33	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1830876	NO2NO3-N	0.522	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311647

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831416	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311852

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831315	Total-P	4.38	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P311853

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831382	Total-P	2.85	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P311149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831307	O-Phosphate-P	1.06	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P311150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831388	O-Phosphate-P	0.840	Spike	P	0 - 20

Reference Method: SM 2120 B

Batch ID: P311155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831413	Color (true)	1.45	Sample	P	0 - 20

Reference Method: SM 2320 B-97

Batch ID: P311384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831288	Total Alkalinity	0.218	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97

Batch ID: P311385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831378	Total Alkalinity	0.410	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97

Batch ID: P311818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831293	TDS	1.89	Sample	P	0 - 10

Reference Method: SM 2540 C-97

Batch ID: P311819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831376	TDS	4.62	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P311388

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831288	Fluoride	0.974	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P311389

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831378	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P311512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1831310	Organic Carbon	0.624	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 180.1 Rev. 2.0
Run ID: A71618
Included Lab Sample IDs: 1831374, 1831375, 1831376, 1831377, 1831378

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71621
Included Lab Sample IDs: 1831384, 1831385, 1831386, 1831387, 1831388

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	97.9	P/P	90 - 110
O-Phosphate-P	98.4	98.3	P/P	90 - 110
O-Phosphate-P	99.4	98.9	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71622
Included Lab Sample IDs: 1831374, 1831375, 1831376, 1831377, 1831378

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	94.5	95.8	P/P	85 - 115
Color (true)	95.4	95.9	P/P	85 - 115
Color (true)	95.9	95.6	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71673

Included Lab Sample IDs: 1831379, 1831380, 1831381, 1831382, 1831383

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.9	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A71696

Included Lab Sample IDs: 1831374, 1831375, 1831376, 1831377, 1831378

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71696

Included Lab Sample IDs: 1831374, 1831375, 1831376, 1831377, 1831378

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

Reference Method: SM 5310 B-00

Run ID: A71732

Included Lab Sample IDs: 1831379, 1831380, 1831381, 1831382, 1831383

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	107	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71734

Included Lab Sample IDs: 1831379, 1831383

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110
NO2NO3-N	106	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71762

Included Lab Sample IDs: 1831379, 1831380, 1831381, 1831382, 1831383

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.6	97.7	P/P	90 - 110
Kjeldahl Nitrogen	95.9	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71771

Included Lab Sample IDs: 1831380, 1831381, 1831382

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	95.5	P/P	90 - 110
NO2NO3-N	98.5	96.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71789

Included Lab Sample IDs: 1831374, 1831375, 1831376, 1831377, 1831378

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.2	98.1	P/P	90 - 110
Chloride	97.4	98.0	P/P	90 - 110
Chloride	98.0	97.2	P/P	90 - 110
Sulfate	98.8	99.0	P/P	90 - 110
Sulfate	99.0	98.4	P/P	90 - 110
Sulfate	99.3	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71847

Included Lab Sample IDs: 1831379, 1831380, 1831381, 1831382

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71852

Included Lab Sample IDs: 1831383

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	100	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					2.83	
EPA 300.0 Rev. 2.1	Chloride	98.0	99.3	99.8		0.0004	
	Sulfate	94.0	95.4	94.3			
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.8	101			1.85
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.3	89.9	95.2			4.85
	Kjeldahl Nitrogen	94.2	97.4	95.8			1.48
EPA 353.2 Rev. 2.0	NO2NO3-N	108	103	105			1.33
	NO2NO3-N	102	99.2				0.522
	NO2NO3-N	99.5	97.3	97.3			0.0
EPA 365.1 Rev. 2.0	Total-P	94.8					4.38
	Total-P	95.8	96.1	99.4			2.85
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.7	100			1.06
	O-Phosphate-P	101	98.6	99.7			0.840
SM 2120 B	Color (true)					1.45	
SM 2320 B-97	Total Alkalinity	102				0.218	
	Total Alkalinity	104				0.410	
SM 2540 C-97	TDS					1.89	
	TDS					4.62	
SM 4500 F-C-97	Fluoride	99.0	98.7	99.8			0.974

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 4500 F-C-97	Fluoride	100	102	102		0.0
SM 5310 B-00	Organic Carbon	111	111			0.624

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1831374, 1831375, 1831376, 1831377, 1831378
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1831374, 1831375, 1831376, 1831377, 1831378
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1831374, 1831375, 1831376, 1831377, 1831378
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1831379, 1831380, 1831381, 1831382, 1831383
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1831379, 1831380, 1831381, 1831382, 1831383
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1831379, 1831380, 1831381, 1831382, 1831383
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1831379, 1831380, 1831381, 1831382, 1831383
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1831384, 1831385, 1831386, 1831387, 1831388
SM 2120 B / E31780	True Color measured at 450 nm	1831374, 1831375, 1831376, 1831377, 1831378
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1831374, 1831375, 1831376, 1831377, 1831378
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1831374, 1831375, 1831376, 1831377, 1831378
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1831374, 1831375, 1831376, 1831377, 1831378
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1831374, 1831375, 1831376, 1831377, 1831378
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1831379, 1831380, 1831381, 1831382, 1831383

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	09/14/2016			09/14/2016 15:33	Sima Feizi	1831374, 1831375, 1831376, 1831377, 1831378
EPA 300.0 Rev. 2.1	09/14/2016			09/22/2016	Ping Hua	1831374, 1831375, 1831376, 1831377, 1831378
EPA 350.1 Rev. 2.0	09/14/2016			09/15/2016	Joseph Suarez	1831379, 1831380, 1831381, 1831382, 1831383
EPA 351.2 Rev. 2.0	09/14/2016	09/20/2016	Adrian Shelby	09/21/2016	Christopher Armour	1831379, 1831380, 1831381, 1831382, 1831383
EPA 353.2 Rev. 2.0	09/14/2016			09/20/2016	Beverly Y. Sanders	1831379, 1831383
	09/14/2016			09/22/2016	Peter D. Kaus	1831380, 1831381, 1831382
EPA 365.1 Rev. 2.0	09/14/2016	09/26/2016	Vijayalakshmi Reddy	09/27/2016	Lipi Saha	1831379, 1831380, 1831381, 1831382, 1831383
EPA 365.1 Rev. 2.0 dissolved	09/14/2016			09/14/2016 15:46	Julia Storbeck	1831388
	09/14/2016			09/14/2016 16:11	Julia Storbeck	1831384
	09/14/2016			09/14/2016 16:12	Julia Storbeck	1831385
	09/14/2016			09/14/2016 16:25	Julia Storbeck	1831386
	09/14/2016			09/14/2016 16:26	Julia Storbeck	1831387
SM 2120 B	09/14/2016			09/14/2016 20:24	Julie Michelle Frank	1831377
	09/14/2016			09/14/2016 20:25	Julie Michelle Frank	1831378
	09/14/2016			09/14/2016 20:45	Julie Michelle Frank	1831374
	09/14/2016			09/14/2016 20:47	Julie Michelle Frank	1831375
	09/14/2016			09/14/2016 20:48	Julie Michelle Frank	1831376
SM 2320 B-97	09/14/2016			09/17/2016	Dale L. Simmons	1831374, 1831375, 1831376, 1831377, 1831378
SM 2540 C-97	09/14/2016			09/19/2016	Yijie Li	1831374, 1831375, 1831376, 1831377, 1831378
SM 2540 D-97	09/14/2016			09/19/2016	Yijie Li	1831374, 1831375, 1831376, 1831377, 1831378
SM 4500 F-C-97	09/14/2016			09/17/2016	Dale L. Simmons	1831374, 1831375, 1831376, 1831377, 1831378
SM 5310 B-00	09/14/2016			09/20/2016	Sofia Elnemr	1831379, 1831380, 1831381, 1831382, 1831383