

Chemical Analysis Report

NE-DIST-2016-12-07-01

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

Event Description: **Nassau**
Request ID: **RQ-2016-12-05-27**
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: Liang Lin, Environmental Administrator

Date Certified: 29-DEC-2016 13:51

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: THOMAS CR. @ LEM TURNER

Collection Date/Time: 12/07/2016 10:15

Field ID: G4NE0249

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855957	EPA 180.1 Rev. 2.0	Turbidity	1.1	A	NTU	P316442	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P316975	
		Sulfate	6.8		mg SO4/L	P316978	
	SM 2120 B	Color (true)	440		PCU	P316449	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P316895	
	SM 2540 C-97	TDS	142		mg/L	P316922	
	SM 2540 D-97	TSS	4	I	mg/L	P316840	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P316899	
1855961	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P316785	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P317016	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316939	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P316588	
	SM 5310 B-00	Organic Carbon	49		mg C/L	P316489	
1855965	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P316519	

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: UN TRIB TO LIL MILLS @ US 1

Collection Date/Time: 12/07/2016 11:15

Field ID: 19020069

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855958	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P316442	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P316975	
		Sulfate	66		mg SO4/L	P316978	
	SM 2120 B	Color (true)	270		PCU	P316449	
	SM 2320 B-97	Total Alkalinity	168		mg CaCO3/L	P316895	
	SM 2540 C-97	TDS	389		mg/L	P316922	
	SM 2540 D-97	TSS	14		mg/L	P316840	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P316899	
1855962	EPA 350.1 Rev. 2.0	Ammonia-N	0.087		mg N/L	P316785	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.4		mg N/L	P316620	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P316939	
	EPA 365.1 Rev. 2.0	Total-P	0.81		mg P/L	P316588	
	SM 5310 B-00	Organic Carbon	39		mg C/L	P316489	
1855966	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.54		mg P/L	P316520	

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: CALKINS CREEK TRIB @ HAMP REGISTER RD.

Collection Date/Time: 12/07/2016 12:50

Field ID: G4NE0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855959	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P316442	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P316975	

Field ID: G4NE0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855959	EPA 300.0 Rev. 2.1	Sulfate	2.1		mg SO4/L	P316978	
	SM 2120 B	Color (true)	200		PCU	P316449	
	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P316895	
	SM 2540 C-97	TDS	109		mg/L	P316922	
	SM 2540 D-97	TSS	2	I	mg/L	P316840	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P316899	
1855963	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P316785	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P316620	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316939	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P316588	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P316489	
1855967	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P316520	

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: FIELD BLANK

Collection Date/Time: 12/07/2016 12:40

Field ID: FIELD BLANK

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1855960	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P316442	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P316975	
		Sulfate	0.20	U	mg SO4/L	P316978	
		Color (true)	2.5	U	PCU	P316449	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P316895	
	SM 2540 C-97	TDS	15	U	mg/L	P316919	
	SM 2540 D-97	TSS	2	U	mg/L	P316837	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P316899	
1855964	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P316787	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P316620	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P316939	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P316589	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P316489	
1855968	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316520	

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: P316442

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: P316975

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316978

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316785

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316787

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316620

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317016

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316939

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316588

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316589

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316519

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316520

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

Reference Method: SM 2120 B
Batch ID: P316449

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P316895

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

Reference Method: SM 2540 C-97
Batch ID: P316919

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P316922

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P316837

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P316840

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P316899

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: P316489

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: P316975

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316978

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316785

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: P316787

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: P316620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317016

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316939

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: P316588

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316588

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316589

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: P316519

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316520

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

Reference Method: SM 2320 B-97
Batch ID: P316895

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P316899

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P316489

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316975

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855959	Chloride	102		P	90 - 110
1856201	Chloride	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316978

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855959	Sulfate	93.9		P	90 - 110
1856201	Sulfate	94.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316785

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855961	Ammonia-N	101	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856119	Ammonia-N	97.5	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855906	Kjeldahl Nitrogen	99.4	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317016

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856766	Kjeldahl Nitrogen	104	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855963	NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316588

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855905	Total-P	98.8	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856066	Total-P	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316519

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855907	O-Phosphate-P	97.6	98.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855908	O-Phosphate-P	98.4	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P316899

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855890	Fluoride	99.2	99.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P316489

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855607	Organic Carbon	93.0	95.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855957	Turbidity	6.64	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316975

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856201	Chloride	0.447	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856201	Sulfate	0.219	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855961	Ammonia-N	2.46	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856119	Ammonia-N	0.382	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855906	Kjeldahl Nitrogen	2.08	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856766	Kjeldahl Nitrogen	0.844	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855963	NO2NO3-N	0.484	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316588

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855905	Total-P	1.93	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856066	Total-P	1.48	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316519

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855907	O-Phosphate-P	0.293	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855908	O-Phosphate-P	0.382	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P316449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855893	Color (true)	6.84	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P316895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855890	Total Alkalinity	0.0334	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P316919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855160	TDS	3.86	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P316922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855893	TDS	0.910	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P316899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855890	Fluoride	0.500	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P316489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855607	Organic Carbon	1.95	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: A73258
Included Lab Sample IDs: 1855957, 1855958, 1855959, 1855960

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

Reference Method: SM 2120 B
Run ID: A73259
Included Lab Sample IDs: 1855957, 1855958, 1855959, 1855960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	102	P/P	85 - 115
Color (true)	99.5	98.9	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A73268

Included Lab Sample IDs: 1855961, 1855962, 1855963, 1855964

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.5	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A73279

Included Lab Sample IDs: 1855965, 1855966, 1855967, 1855968

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	97.8	P/P	90 - 110
O-Phosphate-P	99.3	99.0	P/P	90 - 110
O-Phosphate-P	99.6	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73342

Included Lab Sample IDs: 1855961, 1855962

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73350

Included Lab Sample IDs: 1855963, 1855964

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	97.5	P/P	90 - 110
Total-P	98.5	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73369

Included Lab Sample IDs: 1855961, 1855962, 1855963, 1855964

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73371

Included Lab Sample IDs: 1855961, 1855962, 1855963, 1855964

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	99.6	99.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73375

Included Lab Sample IDs: 1855957, 1855958, 1855959, 1855960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	104	P/P	90 - 110
Chloride	105	103	P/P	90 - 110
Sulfate	102	99.3	P/P	90 - 110
Sulfate	98.1	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73395

Included Lab Sample IDs: 1855962, 1855963, 1855964

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

Reference Method: SM 2320 B-97

Run ID: A73415

Included Lab Sample IDs: 1855957, 1855958, 1855959, 1855960

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.3	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73415

Included Lab Sample IDs: 1855957, 1855958, 1855959, 1855960

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73487

Included Lab Sample IDs: 1855961

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	98.4	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 SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				6.64	
EPA 300.0 Rev. 2.1	Chloride	104	102	102	0.447	
	Sulfate	98.6	94.4	93.9	0.219	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	105		2.46
	Ammonia-N	101	97.5	97.1		0.382
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	99.4	102		2.08
	Kjeldahl Nitrogen	102	104	103		0.844
EPA 353.2 Rev. 2.0	NO2NO3-N	104	103	104		0.484
EPA 365.1 Rev. 2.0	Total-P	99.9	98.8	101		1.93
	Total-P	103	103	101		1.48
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	97.6	98.0		0.293
	O-Phosphate-P	101	98.4	98.9		0.382
SM 2120 B	Color (true)				6.84	
SM 2320 B-97	Total Alkalinity	98.4			0.0334	
SM 2540 C-97	TDS				3.86	
	TDS				0.910	
SM 4500 F-C-97	Fluoride	97.9	99.2	99.9		0.500

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
SM 5310 B-00	Organic Carbon	97.8	93.0 95.2			1.95

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1855957, 1855958, 1855959, 1855960
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1855957, 1855958, 1855959, 1855960
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1855957, 1855958, 1855959, 1855960
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1855961, 1855962, 1855963, 1855964
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1855961, 1855962, 1855963, 1855964
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1855961, 1855962, 1855963, 1855964
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1855961, 1855962, 1855963, 1855964
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1855965, 1855966, 1855967, 1855968
SM 2120 B / E31780	True Color measured at 450 nm	1855957, 1855958, 1855959, 1855960
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1855957, 1855958, 1855959, 1855960
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1855957, 1855958, 1855959, 1855960
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1855957, 1855958, 1855959, 1855960
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1855957, 1855958, 1855959, 1855960
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1855961, 1855962, 1855963, 1855964

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	12/07/2016			12/08/2016 16:30	Sima Feizi	1855957, 1855958, 1855959, 1855960
EPA 300.0 Rev. 2.1	12/07/2016			12/16/2016	Ping Hua	1855957, 1855958, 1855959, 1855960
EPA 350.1 Rev. 2.0	12/07/2016			12/13/2016	Sofia Elnemr	1855961, 1855962, 1855963, 1855964
EPA 351.2 Rev. 2.0	12/07/2016	12/13/2016	Adrian Shelby	12/15/2016	Joseph Suarez	1855962, 1855963, 1855964
	12/07/2016	12/19/2016	Adrian Shelby	12/20/2016	Joseph Suarez	1855961
EPA 353.2 Rev. 2.0	12/07/2016			12/14/2016	Beverly Y. Sanders	1855961, 1855962, 1855963, 1855964
EPA 365.1 Rev. 2.0	12/07/2016	12/12/2016	Vijayalakshmi Reddy	12/13/2016	Lipi Saha	1855961, 1855962, 1855963, 1855964
EPA 365.1 Rev. 2.0 dissolved	12/07/2016			12/08/2016 14:53	Julia Storbeck	1855968
	12/07/2016			12/08/2016 15:15	Julia Storbeck	1855965
	12/07/2016			12/08/2016 16:03	Julia Storbeck	1855966
	12/07/2016			12/08/2016 16:04	Julia Storbeck	1855967
SM 2120 B	12/07/2016			12/08/2016 15:59	Jared I. Manley	1855960
	12/07/2016			12/08/2016 16:39	Jared I. Manley	1855957
	12/07/2016			12/08/2016 16:40	Jared I. Manley	1855958
	12/07/2016			12/08/2016 16:41	Jared I. Manley	1855959
SM 2320 B-97	12/07/2016			12/15/2016	Dale L. Simmons	1855957, 1855958, 1855959, 1855960
SM 2540 C-97	12/07/2016			12/09/2016	Yijie Li	1855957, 1855958, 1855959, 1855960
SM 2540 D-97	12/07/2016			12/09/2016	Yijie Li	1855957, 1855958, 1855959, 1855960
SM 4500 F-C-97	12/07/2016			12/15/2016	Dale L. Simmons	1855957, 1855958, 1855959, 1855960
SM 5310 B-00	12/07/2016			12/08/2016	Julie Michelle Frank	1855961, 1855962, 1855963, 1855964