Chemical Analysis Report

NE-DIST-2016-12-16-01

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

Event Description: **Ocklawaha**
Request ID: **RQ-2016-12-12-21**
Customer: **NE-DIST**
Project ID: **SMP**

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8800 Baymeadows Way West
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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: Ocklawaha 0.75 N. Dam **Collection Date/Time: 12/15/2016 09:30**

Field ID: G1NE0125 12152016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1858715	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P316955	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P317357	
		Sulfate	42		mg SO4/L	P317363	
	SM 2120 B	Color (true)	28		PCU	P316958	
	SM 2320 B-97	Total Alkalinity	163		mg CaCO3/L	P317267	
	SM 2540 C-97	TDS	236		mg/L	P317445	
	SM 2540 D-97	TSS	3	I	mg/L	P317414	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P317272	
1858721	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P317457	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P317042	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P317299	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P317245	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P317020	
1858727	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316954	

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: Deep Creek @ 310 **Collection Date/Time: 12/15/2016 09:50**

Field ID: G1NE0134 12152016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1858716	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P316955	
	EPA 300.0 Rev. 2.1	Chloride	7.4		mg Cl/L	P317357	
		Sulfate	1.7		mg SO4/L	P317363	
	SM 2120 B	Color (true)	84	A	PCU	P316958	
	SM 2320 B-97	Total Alkalinity	65		mg CaCO3/L	P317267	
	SM 2540 C-97	TDS	103		mg/L	P317445	
	SM 2540 D-97	TSS	3	I	mg/L	P317414	
	SM 4500 F-C-97	Fluoride	0.080	I	mg F/L	P317272	
1858722	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P317457	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P317042	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P317299	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P317245	
	SM 5310 B-00	Organic Carbon	8.5		mg C/L	P317020	
1858728	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P316954	

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: Ockl. Cable Crossing **Collection Date/Time: 12/15/2016 10:10**

Field ID: G1NE009412152016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1858717	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P316955	
	EPA 300.0 Rev. 2.1	Chloride	48		mg Cl/L	P317357	
		Sulfate	49		mg SO4/L	P317363	

Field ID: G1NE009412152016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1858717	SM 2120 B	Color (true)	14		PCU	P316958	
	SM 2320 B-97	Total Alkalinity	165		mg CaCO3/L	P317267	
	SM 2540 C-97	TDS	303		mg/L	P317445	
	SM 2540 D-97	TSS	2	I	mg/L	P317414	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P317272	
1858723	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P317457	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35		mg N/L	P317043	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P317299	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P317245	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P317020	
1858729	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P316954	

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: Rodman 100 W CM 39 **Collection Date/Time: 12/15/2016 10:25**

Field ID: G1NE008412152016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1858718	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P316955	
	EPA 300.0 Rev. 2.1	Chloride	50		mg Cl/L	P317395	
		Sulfate	54		mg SO4/L	P317398	
	SM 2120 B	Color (true)	11		PCU	P316958	
	SM 2320 B-97	Total Alkalinity	172		mg CaCO3/L	P317267	
	SM 2540 C-97	TDS	330		mg/L	P317445	
	SM 2540 D-97	TSS	2	U	mg/L	P317414	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P317272	
1858724	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P317457	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P317043	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.40		mg N/L	P317299	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P317245	
	SM 5310 B-00	Organic Carbon	2.7		mg C/L	P317020	
1858730	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P316954	

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: Ockl. 100M NE CM100 **Collection Date/Time: 12/15/2016 10:45**

Field ID: G1NE0088 12152016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1858719	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P316956	
	EPA 300.0 Rev. 2.1	Chloride	33		mg Cl/L	P317395	
		Sulfate	51		mg SO4/L	P317398	
	SM 2120 B	Color (true)	7.7		PCU	P316959	
	SM 2320 B-97	Total Alkalinity	174		mg CaCO3/L	P317267	
	SM 2540 C-97	TDS	288		mg/L	P317445	
	SM 2540 D-97	TSS	2	I	mg/L	P317414	

Field ID: G1NE0088 12152016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1858719	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P317272	
1858725	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P317457	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P317043	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.81		mg N/L	P317299	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P317245	
	SM 5310 B-00	Organic Carbon	2.2		mg C/L	P317020	
1858731	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.033		mg P/L	P316954	

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: Orange Cr. @ SR315 **Collection Date/Time: 12/15/2016 11:35**

Field ID: G1NE0029 12152016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1858720	EPA 180.1 Rev. 2.0	Turbidity	0.86	A	NTU	P316956	
	EPA 300.0 Rev. 2.1	Chloride	9.1		mg Cl/L	P317395	
		Sulfate	6.4		mg SO4/L	P317398	
	SM 2120 B	Color (true)	97	A	PCU	P316959	
	SM 2320 B-97	Total Alkalinity	54		mg CaCO3/L	P317267	
	SM 2540 C-97	TDS	106	A	mg/L	P317446	
	SM 2540 D-97	TSS	3	I	mg/L	P317414	
	SM 4500 F-C-97	Fluoride	0.097	I	mg F/L	P317272	
1858726	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P317457	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P317043	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.38		mg N/L	P317299	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P317245	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P317020	
1858732	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.039		mg P/L	P316954	

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: P316955

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316956

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: P317357

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317363

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317395

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317398

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317457

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317042

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317043

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317299

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317245

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: P316954

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

Reference Method: SM 2120 B
Batch ID: P316958

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P316959

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P317267

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

Reference Method: SM 2540 C-97
Batch ID: P317445

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P317446

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P317414

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P317272

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P317020

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: P317357

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317363

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	92.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317395

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317398

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317457

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317042

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: P317043

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317299

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	109		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317245

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316954

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

Reference Method: SM 2320 B-97
Batch ID: P317267

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P317272

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P317020

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.7		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317357

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858673	Chloride	97.6		P	90 - 110
1858674	Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317363

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858673	Sulfate	91.7		P	90 - 110
1858674	Sulfate	91.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857477	Chloride	99.1		P	90 - 110
1859067	Chloride	98.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857477	Sulfate	95.8		P	90 - 110
1859067	Sulfate	95.8		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317457

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858721	Ammonia-N	96.8	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317042

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858721	Kjeldahl Nitrogen	98.2	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317043

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858863	Kjeldahl Nitrogen	101	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317299

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858678	NO2NO3-N	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858676	Total-P	100	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858681	O-Phosphate-P	98.5	98.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P317272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858661	Fluoride	96.8	99.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P317020

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858675	Organic Carbon	94.3	94.5	P/P	85 - 115

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858674	Turbidity	1.72	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858720	Turbidity	2.56	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317357

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858673	Chloride	0.246	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317363

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858673	Sulfate	0.170	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857477	Chloride	0.00303	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857477	Sulfate	0.0475	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858721	Ammonia-N	0.758	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317042

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858721	Kjeldahl Nitrogen	3.15	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317043

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858863	Kjeldahl Nitrogen	5.39	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858678	NO2NO3-N	0.787	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858676	Total-P	1.23	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858681	O-Phosphate-P	0.304	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P316958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858716	Color (true)	0.0454	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P316959

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858720	Color (true)	0.0792	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P317267

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858661	Total Alkalinity	0.382	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P317445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858227	TDS	2.58	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P317446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858720	TDS	5.66	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P317272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858661	Fluoride	2.57	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P317020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1858675	Organic Carbon	0.169	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 365.1 Rev. 2.0 dissolved
Run ID: A73435
Included Lab Sample IDs: 1858727, 1858728, 1858729, 1858730, 1858731, 1858732

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.6	95.7	P/P	90 - 110
O-Phosphate-P	98.5	96.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73436
Included Lab Sample IDs: 1858715, 1858716, 1858717, 1858718, 1858719, 1858720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	97.5	P/P	95 - 105
Turbidity	97.5	99.0	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A73437
Included Lab Sample IDs: 1858715, 1858716, 1858717, 1858718, 1858719, 1858720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	85 - 115
Color (true)	99.1	101	P/P	85 - 115

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A73466
Included Lab Sample IDs: 1858721, 1858722, 1858723, 1858724, 1858725, 1858726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73522
Included Lab Sample IDs: 1858721, 1858722, 1858723, 1858724, 1858725, 1858726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	99.6	P/P	90 - 110
Kjeldahl Nitrogen	95.2	100	P/P	90 - 110
Kjeldahl Nitrogen	96.8	94.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73524
Included Lab Sample IDs: 1858721, 1858722, 1858723, 1858724, 1858725, 1858726

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

Reference Method: SM 2320 B-97
Run ID: A73550
Included Lab Sample IDs: 1858715, 1858716, 1858717, 1858718, 1858719, 1858720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.2	97.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A73550
Included Lab Sample IDs: 1858715, 1858716, 1858717, 1858718, 1858719, 1858720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73569
Included Lab Sample IDs: 1858726

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A73576
Included Lab Sample IDs: 1858715, 1858716, 1858717, 1858718, 1858719, 1858720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	99.4	P/P	90 - 110
Chloride	101	102	P/P	90 - 110
Chloride	102	101	P/P	90 - 110
Sulfate	96.4	97.7	P/P	90 - 110
Sulfate	96.7	92.9	P/P	90 - 110
Sulfate	98.6	96.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73595
Included Lab Sample IDs: 1858721, 1858722, 1858723, 1858724, 1858725

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73601
Included Lab Sample IDs: 1858721, 1858722, 1858723, 1858724, 1858725, 1858726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.1	97.5	P/P	90 - 110
Ammonia-N	97.2	97.1	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.72	
	Turbidity					2.56	
EPA 300.0 Rev. 2.1	Chloride	101	97.6	99.1		0.246	
	Chloride	99.6	99.1	98.8		0.0030	
	Sulfate	92.1	91.7	91.5		0.170	
	Sulfate	96.3	95.8	95.8		0.0475	
EPA 350.1 Rev. 2.0	Ammonia-N	97.5	96.8	96.0			0.758
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	98.2	102			3.15
	Kjeldahl Nitrogen	99.8	101	106			5.39
EPA 353.2 Rev. 2.0	NO2NO3-N	109	105	104			0.787
EPA 365.1 Rev. 2.0	Total-P	99.4	100	99.0			1.23
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.3	98.5	98.8			0.304
SM 2120 B	Color (true)					0.0454	
	Color (true)					0.0792	
SM 2320 B-97	Total Alkalinity	99.6				0.382	
SM 2540 C-97	TDS					2.58	
	TDS					5.66	
SM 4500 F-C-97	Fluoride	97.6	96.8	99.9			2.57
SM 5310 B-00	Organic Carbon	97.7	94.3	94.5			0.169

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1858721, 1858722, 1858723, 1858724, 1858725, 1858726

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1858721, 1858722, 1858723, 1858724, 1858725, 1858726
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1858721, 1858722, 1858723, 1858724, 1858725, 1858726
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1858721, 1858722, 1858723, 1858724, 1858725, 1858726
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1858727, 1858728, 1858729, 1858730, 1858731, 1858732
SM 2120 B / E31780	True Color measured at 450 nm	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1858721, 1858722, 1858723, 1858724, 1858725, 1858726

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	12/16/2016			12/16/2016 15:40	Julie Michelle Frank	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
EPA 300.0 Rev. 2.1	12/16/2016			12/23/2016	Ping Hua	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
EPA 350.1 Rev. 2.0	12/16/2016			12/27/2016	Julie Michelle Frank	1858721, 1858722, 1858723, 1858724, 1858725, 1858726
EPA 351.2 Rev. 2.0	12/16/2016	12/20/2016	Adrian Shelby	12/21/2016	Joseph Suarez	1858721, 1858722, 1858723, 1858724, 1858725, 1858726
EPA 353.2 Rev. 2.0	12/16/2016			12/21/2016	Beverly Y. Sanders	1858721, 1858722, 1858723, 1858724, 1858725, 1858726
EPA 365.1 Rev. 2.0	12/16/2016	12/22/2016	Vijayalakshmi Reddy	12/23/2016	Lipi Saha	1858726
	12/16/2016	12/22/2016	Vijayalakshmi Reddy	12/27/2016	Lipi Saha	1858721, 1858722, 1858723, 1858724, 1858725
EPA 365.1 Rev. 2.0 dissolved	12/16/2016			12/16/2016 16:36	Julia Storbeck	1858727
	12/16/2016			12/16/2016 16:37	Julia Storbeck	1858728
	12/16/2016			12/16/2016 16:42	Julia Storbeck	1858729
	12/16/2016			12/16/2016 16:43	Julia Storbeck	1858730
	12/16/2016			12/16/2016 16:44	Julia Storbeck	1858731
	12/16/2016			12/16/2016 16:45	Julia Storbeck	1858732
SM 2120 B	12/16/2016			12/16/2016 17:23	Jared I. Manley	1858716
	12/16/2016			12/16/2016 17:29	Jared I. Manley	1858715, 1858717
	12/16/2016			12/16/2016 17:30	Jared I. Manley	1858718
	12/16/2016			12/16/2016 17:34	Jared I. Manley	1858720
	12/16/2016			12/16/2016 17:35	Jared I. Manley	1858719
SM 2320 B-97	12/16/2016			12/22/2016	Dale L. Simmons	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
SM 2540 C-97	12/16/2016			12/16/2016	Yijie Li	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
SM 2540 D-97	12/16/2016			12/16/2016	Yijie Li	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
SM 4500 F-C-97	12/16/2016			12/22/2016	Dale L. Simmons	1858715, 1858716, 1858717, 1858718, 1858719, 1858720
SM 5310 B-00	12/16/2016			12/19/2016	Julie Michelle Frank	1858721, 1858722, 1858723, 1858724, 1858725, 1858726