

Chemical Analysis Report

NW-DIST-2017-07-11-03

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

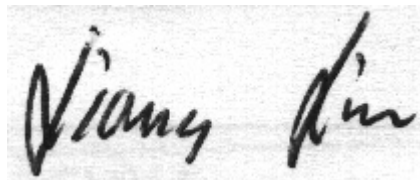
Event Description: **SW Lake Run WBID 179A 145 Blank/DUP**
Request ID: **RQ-2017-07-10-35**
Customer: **NW-DIST**
Project ID: **SMP**

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

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

Certified by: Liang Lin, Environmental Administrator

Date Certified: 26-JUL-2017 12:40

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: Bear Creek @ Forest Rd

Collection Date/Time: 07/10/2017 10:30

Field ID: G4NW0380

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912280	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P328425	
	EPA 300.0 Rev. 2.1	Chloride	2.2		mg Cl/L	P328454	
		Sulfate	0.53		mg SO4/L	P328457	
	SM 2120 B	Color (true)	93		PCU	P328274	
	SM 2320 B-97	Total Alkalinity	6.8		mg CaCO3/L	P328433	
	SM 2540 C-97	TDS	21	I	mg/L	P328639	
	SM 2540 D-97	TSS	3	I	mg/L	P328730	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328436	
1912286	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P328412	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24	J	mg N/L	P328506	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P328446	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P328594	
	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P328791	
1912292	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328305	

Ref. Method and Comment:

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

Sample Location: Bear Lake at Center

Collection Date/Time: 07/10/2017 11:00

Field ID: G4NW0361

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912281	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P328425	
	EPA 300.0 Rev. 2.1	Chloride	2.1		mg Cl/L	P328454	
		Sulfate	0.54		mg SO4/L	P328457	
	SM 2120 B	Color (true)	39		PCU	P328274	
	SM 2320 B-97	Total Alkalinity	3.2		mg CaCO3/L	P328433	
	SM 2540 C-97	TDS	18	I	mg/L	P328639	
	SM 2540 D-97	TSS	2	I	mg/L	P328730	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328436	
1912287	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P328412	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P328506	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P328446	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P328595	
	SM 5310 B-00	Organic Carbon	6.0		mg C/L	P328791	
1912293	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328305	

Sample Location: Hurricane Creek Below Hurricane Lake

Collection Date/Time: 07/10/2017 11:45

Field ID: G4NW0160

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912282	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P328426	
	EPA 300.0 Rev. 2.1	Chloride	2.3		mg Cl/L	P328454	
		Sulfate	0.67		mg SO4/L	P328457	
	SM 2120 B	Color (true)	55		PCU	P328274	

Field ID: G4NW0160

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912282	SM 2320 B-97	Total Alkalinity	2.6		mg CaCO3/L	P328433	
	SM 2540 C-97	TDS	22	I	mg/L	P328639	
	SM 2540 D-97	TSS	5	I	mg/L	P328730	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328436	
1912288	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P328412	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P328560	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P328446	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P328595	
	SM 5310 B-00	Organic Carbon	5.9		mg C/L	P328792	
1912294	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328305	

Sample Location: Hurricane Creek Below Hurrican Lake DUP

Collection Date/Time: 07/10/2017 11:50

Field ID: G4NW0160DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912283	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P328426	
	EPA 300.0 Rev. 2.1	Chloride	2.3		mg Cl/L	P328454	
		Sulfate	0.65		mg SO4/L	P328457	
	SM 2120 B	Color (true)	54		PCU	P328274	
	SM 2320 B-97	Total Alkalinity	2.8		mg CaCO3/L	P328433	
	SM 2540 C-97	TDS	19	I	mg/L	P328640	
	SM 2540 D-97	TSS	5	I	mg/L	P328731	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328436	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P328412	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P328560	
1912289	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P328446	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P328595	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P328792	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328305	

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: 07/10/2017 11:55

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912284	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P328426	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P328454	
		Sulfate	0.20	U	mg SO4/L	P328457	
	SM 2120 B	Color (true)	2.5	U	PCU	P328274	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P328433	
	SM 2540 C-97	TDS	15	U	mg/L	P328639	
	SM 2540 D-97	TSS	2	U	mg/L	P328730	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328436	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P328412	

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912290	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P328511	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P328446	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P328595	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P328792	
1912296	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328305	

Sample Location: Lake Karick at Center

Collection Date/Time: 07/10/2017 12:40

Field ID: G4NW0274

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1912285	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P328426	
	EPA 300.0 Rev. 2.1	Chloride	2.2		mg Cl/L	P328454	
		Sulfate	0.79		mg SO4/L	P328457	
	SM 2120 B	Color (true)	25	A	PCU	P328274	
	SM 2320 B-97	Total Alkalinity	5.1		mg CaCO3/L	P328433	
	SM 2540 C-97	TDS	16	I	mg/L	P328640	
	SM 2540 D-97	TSS	2	I	mg/L	P328731	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P328436	
1912291	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P328412	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30		mg N/L	P328511	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P328448	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P328595	
	SM 5310 B-00	Organic Carbon	4.4		mg C/L	P328792	
1912297	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P328305	

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: P328425

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P328426

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P328454

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328457

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328412

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328506

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328511

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328560

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328446

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328448

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328594

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328595

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: P328305

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

Reference Method: SM 2120 B
Batch ID: P328274

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P328433

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

Reference Method: SM 2540 C-97
Batch ID: P328639

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P328640

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P328730

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P328731

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P328436

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P328791

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P328792

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: P328454

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328457

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328412

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328506

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328511

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328560

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: P328446

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328448

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
-----------	---------	---------	-----------	----------------

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328448

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: P328594

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328595

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328305

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

Reference Method: SM 2320 B-97
Batch ID: P328433

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

Reference Method: SM 4500 F-C-97
Batch ID: P328436

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P328791

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P328792

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328454

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
---------------	-----------	---------	---------	-----------	----------------

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328454

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912280	Chloride	99.6		P	90 - 110
1912345	Chloride	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328457

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912280	Sulfate	97.2		P	90 - 110
1912345	Sulfate	94.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328412

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912276	Ammonia-N	104	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912286	Kjeldahl Nitrogen	113	110	F/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328511

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912291	Kjeldahl Nitrogen	99.2	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328560

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912385	Kjeldahl Nitrogen	98.8	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912275	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912313	NO2NO3-N	99.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328594

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912276	Total-P	99.7	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328595

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912314	Total-P	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328305

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911949	O-Phosphate-P	102	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P328436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912388	Fluoride	100	98.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P328791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1911705	Organic Carbon	100		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P328792

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1912288	Organic Carbon	97.2	96.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P328425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912266	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P328426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912311	Turbidity	1.72	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912345	Chloride	1.64	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912345	Sulfate	1.89	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P328412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912276	Ammonia-N	1.23	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912286	Kjeldahl Nitrogen	2.96	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328511

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912291	Kjeldahl Nitrogen	0.452	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912385	Kjeldahl Nitrogen	2.85	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912275	NO2NO3-N	0.515	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P328448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912313	NO2NO3-N	0.679	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912276	Total-P	5.38	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P328595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912314	Total-P	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P328305

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911949	O-Phosphate-P	1.29	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P328274

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912285	Color (true)	1.18	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P328433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912388	Total Alkalinity	0.0835	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P328639

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912311	TDS	2.76	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P328640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912312	TDS	3.97	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P328730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912311	TSS	8.22	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P328436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912388	Fluoride	1.42	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P328791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1911705	Organic Carbon	0.122	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P328792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1912288	Organic Carbon	0.553	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: SM 2120 B
Run ID: A77640
Included Lab Sample IDs: 1912280, 1912281, 1912282, 1912283, 1912284, 1912285

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.9	104	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A77649
Included Lab Sample IDs: 1912292, 1912293, 1912294, 1912295, 1912296, 1912297

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A77680
Included Lab Sample IDs: 1912286, 1912287, 1912288, 1912289, 1912290, 1912291

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

Reference Method: SM 2320 B-97
Run ID: A77688
Included Lab Sample IDs: 1912280, 1912281, 1912282, 1912283, 1912284, 1912285

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A77688
Included Lab Sample IDs: 1912280, 1912281, 1912282, 1912283, 1912284, 1912285

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	98.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A77690

Included Lab Sample IDs: 1912280, 1912281, 1912282, 1912283, 1912284, 1912285

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A77691

Included Lab Sample IDs: 1912286, 1912287, 1912288, 1912289, 1912290, 1912291

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77695

Included Lab Sample IDs: 1912280, 1912281, 1912282, 1912283, 1912284, 1912285

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	105	103	P/P	90 - 110
Chloride	109	105	P/P	90 - 110
Sulfate	104	103	P/P	90 - 110
Sulfate	109	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A77747

Included Lab Sample IDs: 1912286, 1912287

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A77767

Included Lab Sample IDs: 1912290, 1912291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.9	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A77779

Included Lab Sample IDs: 1912286, 1912287, 1912288, 1912289, 1912290, 1912291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A77780

Included Lab Sample IDs: 1912288, 1912289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.7	97.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A77819

Included Lab Sample IDs: 1912286, 1912287, 1912288, 1912289, 1912290, 1912291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	97.8	P/P	90 - 110
Organic Carbon	97.8	97.0	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.0	
	Turbidity				1.72	
EPA 300.0 Rev. 2.1	Chloride	100	96.6 99.6		1.64	
	Sulfate	98.0	94.9 97.2		1.89	
EPA 350.1 Rev. 2.0	Ammonia-N	102	104 102			1.23
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	113 110			2.96
	Kjeldahl Nitrogen	104	99.2 98.6			0.452
	Kjeldahl Nitrogen	102	98.8 103			2.85
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104 104			0.515
	NO2NO3-N	104	99.0 98.0			0.679
EPA 365.1 Rev. 2.0	Total-P	103	99.7 105			5.38
	Total-P	101	106 105			1.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	102 100			1.29
SM 2120 B	Color (true)				1.18	
SM 2320 B-97	Total Alkalinity	104			0.0835	
SM 2540 C-97	TDS				2.76	
	TDS				3.97	
SM 2540 D-97	TSS				8.22	
SM 4500 F-C-97	Fluoride	98.9	100 98.3			1.42
SM 5310 B-00	Organic Carbon	96.8	100			0.122
	Organic Carbon	98.8	97.2 96.5			0.553

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1912286, 1912287, 1912288, 1912289, 1912290, 1912291
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1912286, 1912287, 1912288, 1912289, 1912290, 1912291
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1912286, 1912287, 1912288, 1912289, 1912290, 1912291
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1912286, 1912287, 1912288, 1912289, 1912290, 1912291

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780 SM 2120 B / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L True Color measured at 450 nm	1912292, 1912293, 1912294, 1912295, 1912296, 1912297 1912280, 1912281, 1912282, 1912283, 1912284, 1912285
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1912286, 1912287, 1912288, 1912289, 1912290, 1912291

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	07/11/2017			07/11/2017 18:06	DeAsia Armster	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
EPA 300.0 Rev. 2.1	07/11/2017			07/12/2017	Julia Storbeck	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
EPA 350.1 Rev. 2.0	07/11/2017			07/12/2017	Sofia Elnemr	1912286, 1912287, 1912288, 1912289, 1912290, 1912291
EPA 351.2 Rev. 2.0	07/11/2017	07/14/2017	Adrian Shelby	07/17/2017	Joseph Suarez	1912286, 1912287
	07/11/2017	07/14/2017	Adrian Shelby	07/18/2017	Joseph Suarez	1912290, 1912291
	07/11/2017	07/17/2017	Adrian Shelby	07/18/2017	Joseph Suarez	1912288, 1912289
EPA 353.2 Rev. 2.0	07/11/2017			07/13/2017	Beverly Y. Sanders	1912286, 1912287, 1912288, 1912289, 1912290, 1912291
EPA 365.1 Rev. 2.0	07/11/2017	07/17/2017	Vijayalakshmi Reddy	07/18/2017	Lipi Saha	1912286, 1912287, 1912288, 1912289, 1912290, 1912291
EPA 365.1 Rev. 2.0 dissolved	07/11/2017			07/11/2017 15:57	Anthony C. Onicha	1912292
	07/11/2017			07/11/2017 15:58	Anthony C. Onicha	1912293
	07/11/2017			07/11/2017 15:59	Anthony C. Onicha	1912294
	07/11/2017			07/11/2017 16:00	Anthony C. Onicha	1912295
	07/11/2017			07/11/2017 16:01	Anthony C. Onicha	1912296
	07/11/2017			07/11/2017 16:02	Anthony C. Onicha	1912297
SM 2120 B	07/11/2017			07/11/2017 14:45	Julia Storbeck	1912280
	07/11/2017			07/11/2017 14:46	Julia Storbeck	1912281
	07/11/2017			07/11/2017 14:47	Julia Storbeck	1912282, 1912283
	07/11/2017			07/11/2017 14:48	Julia Storbeck	1912284
	07/11/2017			07/11/2017 14:50	Julia Storbeck	1912285
SM 2320 B-97	07/11/2017			07/13/2017	Dale L. Simmons	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
SM 2540 C-97	07/11/2017			07/13/2017	Yijie Li	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
SM 2540 D-97	07/11/2017			07/13/2017	Yijie Li	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
SM 4500 F-C-97	07/11/2017			07/13/2017	Dale L. Simmons	1912280, 1912281, 1912282, 1912283, 1912284, 1912285
SM 5310 B-00	07/11/2017			07/19/2017	Sofia Elnemr	1912286, 1912287, 1912288, 1912289, 1912290, 1912291