

Chemical Analysis Report

WQAP-2017-08-02-01

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

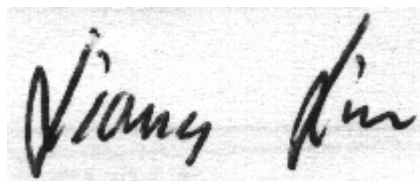
Event Description: **run 5**
Request ID: **RQ-2017-07-31-23**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Tampa, FL 33637
Attn: Judy Ashton

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: 25-AUG-2017 10:58

A handwritten signature in black ink, appearing to read "Liang Lin", 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: SKINNER LAKE

Collection Date/Time: 08/01/2017 10:00

Field ID: G5SW0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918185	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P329566	
	EPA 300.0 Rev. 2.1	Chloride	2.3		mg Cl/L	P329708	
		Sulfate	0.20	U	mg SO4/L	P329712	
	SM 2120 B	Color (true)	12		PCU	P329576	
	SM 2320 B-97	Total Alkalinity	53		mg CaCO3/L	P329762	
	SM 2540 C-97	TDS	72		mg/L	P329919	
	SM 2540 D-97	TSS	2	I	mg/L	P330148	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P329766	
1918191	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P329677	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P329626	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329695	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P329634	
	SM 5310 B-00	Organic Carbon	4.4		mg C/L	P329958	
1918197	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P329590	

Ref. Method and Comment:

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

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: TOOKE LAKE

Collection Date/Time: 08/01/2017 11:00

Field ID: G5SW0121

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918186	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P329566	
	EPA 300.0 Rev. 2.1	Chloride	8.1		mg Cl/L	P329708	
		Sulfate	6.9		mg SO4/L	P329712	
	SM 2120 B	Color (true)	13		PCU	P329576	
	SM 2320 B-97	Total Alkalinity	5.3		mg CaCO3/L	P329762	
	SM 2540 C-97	TDS	77		mg/L	P329919	
	SM 2540 D-97	TSS	6	I	mg/L	P330148	
	SM 4500 F-C-97	Fluoride	0.050	I	mg F/L	P329766	
1918192	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P329677	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P329626	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329695	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P329634	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P329828	
1918198	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329590	

Ref. Method and Comment:

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

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

Sample Location: NEFF LAKE

Collection Date/Time: 08/01/2017 12:15

Field ID: G5SW0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918187	EPA 180.1 Rev. 2.0	Turbidity	60	A	NTU	P329569	

Field ID: G5SW0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918187	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P329708	
		Sulfate	3.5		mg SO4/L	P329712	
	SM 2120 B	Color (true)	110	A	PCU	P329579	
	SM 2320 B-97	Total Alkalinity	9.3		mg CaCO3/L	P329762	
	SM 2540 C-97	TDS	116		mg/L	P329919	
	SM 2540 D-97	TSS	166		mg/L	P330148	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P329766	
1918193	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P329677	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.4		mg N/L	P329626	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329695	
	EPA 365.1 Rev. 2.0	Total-P	0.37		mg P/L	P329634	
	SM 5310 B-00	Organic Carbon	31		mg C/L	P329828	
1918199	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P329590	

Ref. Method and Comment:

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

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

Sample Location: LOLA WEST

Collection Date/Time: 08/01/2017 12:55

Field ID: G5SW0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918188	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P329566	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P329708	
		Sulfate	6.3		mg SO4/L	P329712	
	SM 2120 B	Color (true)	8.3		PCU	P329576	
	SM 2320 B-97	Total Alkalinity	35	A	mg CaCO3/L	P329762	
	SM 2540 C-97	TDS	107		mg/L	P329919	
	SM 2540 D-97	TSS	2	I	mg/L	P330148	
1918194	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P329766	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P329800	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P329626	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329695	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P329635	
1918200	SM 5310 B-00	Organic Carbon	5.9		mg C/L	P329828	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329590	

Ref. Method and Comment:

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

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

Sample Location: LOLA WEST-DUPLICATE

Collection Date/Time: 08/01/2017 13:00

Field ID: G5SW0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918189	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P329566	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P329708	
		Sulfate	6.2		mg SO4/L	P329712	

Field ID: G5SW0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918189	SM 2120 B	Color (true)	7.9		PCU	P329576	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P329762	
	SM 2540 C-97	TDS	114		mg/L	P329920	
	SM 2540 D-97	TSS	2	I	mg/L	P330149	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P329766	
1918195	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P329800	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P329626	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329695	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P329635	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P329828	
1918201	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P329590	

Ref. Method and Comment:

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

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

Sample Location: FIELD BLANK

Collection Date/Time: 08/01/2017 14:00

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1918190	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P329567	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P329709	
		Sulfate	0.20	U	mg SO4/L	P329713	
		Color (true)	2.5	U	PCU	P329576	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P329762	
	SM 2540 C-97	TDS	15	U	mg/L	P329915	
	SM 2540 D-97	TSS	2	U	mg/L	P330144	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P329766	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P329677	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P329626	
1918196	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P329695	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P329635	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P329828	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P329590	
	dissolved						

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: P329566

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329567

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329569

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329708

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329709

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329712

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329713

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329677

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329800

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329626

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329695

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329634

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329635

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329590

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

Reference Method: SM 2120 B
Batch ID: P329576

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P329579

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P329762

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

Reference Method: SM 2540 C-97
Batch ID: P329915

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P329919

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P329920

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330144

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330148

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P330149

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P329766

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P329828

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

Reference Method: SM 5310 B-00
Batch ID: P329958

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: P329708

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329709

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329709

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329712

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329713

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	105		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329677

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329626

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329695

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329634

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329635

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.9		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329590

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

Reference Method: SM 2320 B-97
Batch ID: P329762

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P329766

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P329828

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.6		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P329958

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918108	Chloride	101		P	90 - 110
1918163	Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918203	Chloride	97.9		P	90 - 110
1918249	Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918108	Sulfate	103		P	90 - 110
1918163	Sulfate	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329713

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918203	Sulfate	98.6		P	90 - 110
1918249	Sulfate	109		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329677

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918164	Ammonia-N	98.6	95.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918408	Ammonia-N	97.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918191	Kjeldahl Nitrogen	105	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918182	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918191	Total-P	102	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918210	Total-P	95.1	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329590

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918197	O-Phosphate-P	92.4	93.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P329766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918188	Fluoride	100	99.6	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P329828

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1918124	Organic Carbon	94.2	94.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918122	Turbidity	0.496	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918203	Turbidity	0.673	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329569

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918187	Turbidity	3.38	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918163	Chloride	2.65	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329709

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918249	Chloride	0.700	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329713

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918249	Sulfate	1.27	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918164	Ammonia-N	1.77	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918408	Ammonia-N	2.32	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918191	Kjeldahl Nitrogen	2.22	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918182	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918191	Total-P	3.95	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918210	Total-P	2.72	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918197	O-Phosphate-P	1.44	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P329576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918181	Color (true)	2.78	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P329579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918187	Color (true)	0.763	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P329762

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918188	Total Alkalinity	0.170	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P329915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1917711	TDS	1.74	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P329919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918123	TDS	2.25	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P329920

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918206	TDS	4.33	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P329766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918188	Fluoride	0.470	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P329828

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918124	Organic Carbon	0.285	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P329958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1918710	Organic Carbon	0.289	Spike	P	0 - 20

Quality Assurance Report Precision

* 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: A78128

Included Lab Sample IDs: 1918185, 1918186, 1918187, 1918188, 1918189, 1918190

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A78130

Included Lab Sample IDs: 1918185, 1918186, 1918187, 1918188, 1918189, 1918190

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A78141

Included Lab Sample IDs: 1918197, 1918198, 1918199, 1918200, 1918201, 1918202

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	98.5	P/P	90 - 110
O-Phosphate-P	98.5	97.2	P/P	90 - 110
O-Phosphate-P	99.4	98.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A78163

Included Lab Sample IDs: 1918185, 1918186, 1918187, 1918188, 1918189, 1918190

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	100	P/P	90 - 110
Chloride	96.7	103	P/P	90 - 110
Chloride	99.4	96.7	P/P	90 - 110
Sulfate	100	98.7	P/P	90 - 110
Sulfate	107	101	P/P	90 - 110
Sulfate	98.7	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78181

Included Lab Sample IDs: 1918191, 1918192, 1918193, 1918196

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78182

Included Lab Sample IDs: 1918193

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78182

Included Lab Sample IDs: 1918193

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78187

Included Lab Sample IDs: 1918191, 1918192, 1918193, 1918194, 1918195, 1918196

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78192

Included Lab Sample IDs: 1918191, 1918192, 1918194, 1918195, 1918196

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	98.2	P/P	90 - 110
Total-P	97.8	97.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A78219

Included Lab Sample IDs: 1918185, 1918186, 1918187, 1918188, 1918189, 1918190

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

Reference Method: SM 4500 F-C-97

Run ID: A78219

Included Lab Sample IDs: 1918185, 1918186, 1918187, 1918188, 1918189, 1918190

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78227

Included Lab Sample IDs: 1918191, 1918192, 1918193, 1918194, 1918195, 1918196

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.5	97.2	P/P	90 - 110
Kjeldahl Nitrogen	97.2	95.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78241

Included Lab Sample IDs: 1918194, 1918195

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

Reference Method: SM 5310 B-00

Run ID: A78252

Included Lab Sample IDs: 1918192, 1918193, 1918194, 1918195, 1918196

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A78252

Included Lab Sample IDs: 1918192, 1918193, 1918194, 1918195, 1918196

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	99.8	P/P	90 - 110
Organic Carbon	99.8	98.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A78301

Included Lab Sample IDs: 1918191

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	98.2	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					0.496	
	Turbidity					0.673	
	Turbidity					3.38	
EPA 300.0 Rev. 2.1	Chloride	101	106	101		2.65	
	Chloride	102	106	97.9		0.700	
	Sulfate	103	102	103			
	Sulfate	105	109	98.6		1.27	
EPA 350.1 Rev. 2.0	Ammonia-N	99.5	98.6	95.8			1.77
	Ammonia-N	95.5	97.7	101			2.32
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109	105	102			2.22
EPA 353.2 Rev. 2.0	NO2NO3-N	106	104	104			0.0
EPA 365.1 Rev. 2.0	Total-P	101	102	97.8			3.95
	Total-P	94.9	95.1	97.9			2.72
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	92.4	93.8			1.44
SM 2120 B	Color (true)					2.78	
	Color (true)					0.763	
SM 2320 B-97	Total Alkalinity	103				0.170	
SM 2540 C-97	TDS					1.74	
	TDS					2.25	
	TDS					4.33	
SM 4500 F-C-97	Fluoride	98.8	100	99.6			0.470
SM 5310 B-00	Organic Carbon	96.6	94.2	94.7			0.285
	Organic Carbon	96.8					0.289

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1918185, 1918186, 1918187, 1918188, 1918189, 1918190

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1918191, 1918192, 1918193, 1918194, 1918195, 1918196
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1918191, 1918192, 1918193, 1918194, 1918195, 1918196
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1918191, 1918192, 1918193, 1918194, 1918195, 1918196
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1918191, 1918192, 1918193, 1918194, 1918195, 1918196
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1918197, 1918198, 1918199, 1918200, 1918201, 1918202
SM 2120 B / E31780	True Color measured at 450 nm	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1918191, 1918192, 1918193, 1918194, 1918195, 1918196

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	08/02/2017			08/02/2017 16:29	DeAsia Armster	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
EPA 300.0 Rev. 2.1	08/02/2017			08/03/2017	Julia Storbeck	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
EPA 350.1 Rev. 2.0	08/02/2017			08/03/2017	Sofia Elnemr	1918191, 1918192, 1918193, 1918196
	08/02/2017			08/07/2017	Sofia Elnemr	1918194, 1918195
EPA 351.2 Rev. 2.0	08/02/2017	08/03/2017	Adrian Shelby	08/07/2017	Joseph Suarez	1918191, 1918192, 1918193, 1918194, 1918195, 1918196
EPA 353.2 Rev. 2.0	08/02/2017			08/04/2017	Beverly Y. Sanders	1918191, 1918192, 1918193, 1918194, 1918195, 1918196
EPA 365.1 Rev. 2.0	08/02/2017	08/03/2017	Sima Feizi	08/04/2017	Lipi Saha	1918191, 1918192, 1918193, 1918194, 1918195, 1918196
EPA 365.1 Rev. 2.0 dissolved	08/02/2017			08/02/2017 15:08	Ping Hua	1918197
	08/02/2017			08/02/2017 15:23	Ping Hua	1918198
	08/02/2017			08/02/2017 15:24	Ping Hua	1918199, 1918200
	08/02/2017			08/02/2017 15:30	Ping Hua	1918201, 1918202
SM 2120 B	08/02/2017			08/02/2017 15:35	Tanya Welborn	1918185
	08/02/2017			08/02/2017 15:36	Tanya Welborn	1918186
	08/02/2017			08/02/2017 15:37	Tanya Welborn	1918188
	08/02/2017			08/02/2017 15:38	Tanya Welborn	1918189
	08/02/2017			08/02/2017 15:39	Tanya Welborn	1918190
	08/02/2017			08/02/2017 16:05	Tanya Welborn	1918187
SM 2320 B-97	08/02/2017			08/05/2017	Dale L. Simmons	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
SM 2540 C-97	08/02/2017			08/04/2017	Yijie Li	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
SM 2540 D-97	08/02/2017			08/04/2017	Yijie Li	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
SM 4500 F-C-97	08/02/2017			08/05/2017	Dale L. Simmons	1918185, 1918186, 1918187, 1918188, 1918189, 1918190
SM 5310 B-00	08/02/2017			08/07/2017	Ping Hua	1918192, 1918193, 1918194, 1918195, 1918196
	08/02/2017			08/08/2017	Ping Hua	1918191