

Chemical Analysis Report

WQAP-2017-06-28-03

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

Event Description: **RUN 8**
Request ID: **RQ-2017-06-26-18**
Customer: **WQAP**
Project ID: **SMP**

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

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Certified by: Colin Wright, Program Administrator

Date Certified: 14-JUL-2017 15:51

A handwritten signature in black ink, appearing to read "Colin Wright", is positioned on a light gray rectangular 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: DEAD LADY

Collection Date/Time: 06/27/2017 09:30

Field ID: G1SW0021

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909620	EPA 180.1 Rev. 2.0	Turbidity	6.2		NTU	P327675	
	EPA 300.0 Rev. 2.1	Chloride	31		mg Cl/L	P328058	
		Sulfate	10		mg SO4/L	P327940	
	SM 2120 B	Color (true)	73		PCU	P327652	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P327908	
	SM 2540 C-97	TDS	134		mg/L	P328013	
	SM 2540 D-97	TSS	9	I	mg/L	P328283	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P327982	
1909626	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P327785	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P327842	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P327703	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P327795	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P327802	
1909632	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P327644	

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: DEAD LADY DUP

Collection Date/Time: 06/27/2017 09:33

Field ID: G1SW0021 DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909621	EPA 180.1 Rev. 2.0	Turbidity	6.0		NTU	P327675	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P328058	
		Sulfate	11		mg SO4/L	P327940	
	SM 2120 B	Color (true)	74	A	PCU	P327652	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P327908	
	SM 2540 C-97	TDS	140	A	mg/L	P328013	
	SM 2540 D-97	TSS	8	IA	mg/L	P328283	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P327982	
1909627	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P327786	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P327842	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P327703	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P327795	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P327802	
1909633	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P327644	

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: BLANK

Collection Date/Time: 06/27/2017 09:40

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909622	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P327675	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P328058	
		Sulfate	0.20	U	mg SO4/L	P327940	

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909622	SM 2120 B	Color (true)	2.5	U	PCU	P327652	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P327908	
	SM 2540 C-97	TDS	15	U	mg/L	P328009	
	SM 2540 D-97	TSS	2	U	mg/L	P328279	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P327982	
1909628	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P327786	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P328186	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P327703	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P327824	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P327802	
1909634	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P327644	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: JUANITA

Collection Date/Time: 06/27/2017 10:20

Field ID: G1SW0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909623	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P327675	
	EPA 300.0 Rev. 2.1	Chloride	28		mg Cl/L	P328058	
		Sulfate	4.4		mg SO4/L	P327940	
	SM 2120 B	Color (true)	42		PCU	P327652	
	SM 2320 B-97	Total Alkalinity	14	A	mg CaCO3/L	P327909	
	SM 2540 C-97	TDS	101		mg/L	P328014	
	SM 2540 D-97	TSS	2	I	mg/L	P328284	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P327983	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P327786	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P327842	
1909629	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P327704	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P327824	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P327802	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P327644	

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: LAKE ESTES

Collection Date/Time: 06/27/2017 11:30

Field ID: G1SW0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909624	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P327675	
	EPA 300.0 Rev. 2.1	Chloride	36		mg Cl/L	P328058	
		Sulfate	14		mg SO4/L	P327940	
	SM 2120 B	Color (true)	33		PCU	P327653	
	SM 2320 B-97	Total Alkalinity	48		mg CaCO3/L	P327909	
	SM 2540 C-97	TDS	166		mg/L	P328014	

Field ID: G1SW0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909624	SM 2540 D-97	TSS	8	I	mg/L	P328284	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P327983	
1909630	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P327786	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P327842	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P327704	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P327824	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P327802	
1909636	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P327644	

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: CHAPMAN

Collection Date/Time: 06/27/2017 12:00

Field ID: G1SW0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1909625	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P327675	
	EPA 300.0 Rev. 2.1	Chloride	58		mg Cl/L	P328058	
		Sulfate	25		mg SO4/L	P327940	
	SM 2120 B	Color (true)	41		PCU	P327653	
	SM 2320 B-97	Total Alkalinity	62		mg CaCO3/L	P327909	
	SM 2540 C-97	TDS	225	A	mg/L	P328014	
	SM 2540 D-97	TSS	6	IA	mg/L	P328284	
	SM 4500 F-C-97	Fluoride	0.093	I	mg F/L	P327983	
1909631	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P327786	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P327842	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P327704	
	EPA 365.1 Rev. 2.0	Total-P	0.045		mg P/L	P327824	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P327802	
1909637	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P327644	

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: P327675

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P327940

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328058

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327785

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327786

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327842

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328186

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327703

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327704

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327795

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327824

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: P327644

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

Reference Method: SM 2120 B
Batch ID: P327652

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P327653

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P327908

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

Reference Method: SM 2320 B-97
Batch ID: P327909

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

Reference Method: SM 2540 C-97
Batch ID: P328009

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P328013

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P328014

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P328279

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P328283

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P328284

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P327982

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P327983

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P327802

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: P327940

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328058

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327785

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327786

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327786

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327842

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328186

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327703

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327704

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: P327795

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327824

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327644

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

Reference Method: SM 2320 B-97
Batch ID: P327908

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P327909

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

Reference Method: SM 4500 F-C-97
Batch ID: P327982

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P327983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P327802

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909567	Sulfate	106		P	90 - 110
1909570	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909568	Chloride	100		P	90 - 110
1909569	Chloride	108		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327785

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909573	Ammonia-N	93.2	93.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909627	Ammonia-N	94.0	93.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327842

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909631	Kjeldahl Nitrogen	109	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909574	NO2NO3-N	99.6	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909629	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909575	Total-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327824

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909629	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909659	O-Phosphate-P	96.3	97.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P327982

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909452	Fluoride	102	103	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P327983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909623	Fluoride	99.9	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P327802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909522	Organic Carbon	103	102	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P327675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909570	Turbidity	6.13	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909567	Sulfate	1.31	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909568	Chloride	0.549	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909573	Ammonia-N	0.435	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909627	Ammonia-N	0.161	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P327842

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909631	Kjeldahl Nitrogen	0.185	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1910610	Kjeldahl Nitrogen	1.85	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909574	NO2NO3-N	0.746	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909629	NO2NO3-N	0.985	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909575	Total-P	0.764	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327824

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909629	Total-P	0.0241	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909659	O-Phosphate-P	0.500	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P327652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909621	Color (true)	0.530	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P327653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909688	Color (true)	1.14	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P327908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909394	Total Alkalinity	0.0689	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P327909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909623	Total Alkalinity	0.893	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
 Batch ID: P328009

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909256	TDS	2.65	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P328013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909621	TDS	3.58	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P328014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909625	TDS	3.56	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P327982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909452	Fluoride	0.953	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
 Batch ID: P327983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909623	Fluoride	0.542	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P327802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909522	Organic Carbon	0.395	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: A77396
 Included Lab Sample IDs: 1909632, 1909633, 1909634, 1909635, 1909636, 1909637

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	97.7	P/P	90 - 110
O-Phosphate-P	99.4	98.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A77400

Included Lab Sample IDs: 1909620, 1909621, 1909622, 1909623, 1909624, 1909625

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	103	P/P	85 - 115
Color (true)	103	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A77411

Included Lab Sample IDs: 1909620, 1909621, 1909622, 1909623, 1909624, 1909625

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A77418

Included Lab Sample IDs: 1909626, 1909627, 1909628, 1909629, 1909630, 1909631

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A77454

Included Lab Sample IDs: 1909626, 1909627, 1909628, 1909629, 1909630, 1909631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.0	98.7	P/P	90 - 110
Ammonia-N	99.2	99.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A77463

Included Lab Sample IDs: 1909626, 1909627, 1909628, 1909629, 1909630, 1909631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.3	97.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A77508

Included Lab Sample IDs: 1909620, 1909621, 1909622, 1909623, 1909624, 1909625

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110
Total Alkalinity	103	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77522

Included Lab Sample IDs: 1909620, 1909621, 1909622, 1909623, 1909624, 1909625

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	92.0	99.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A77523
Included Lab Sample IDs: 1909626, 1909627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A77532
Included Lab Sample IDs: 1909620, 1909621, 1909622, 1909623, 1909624, 1909625

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.5	P/P	90 - 110
Fluoride	99.5	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A77541
Included Lab Sample IDs: 1909630

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A77556
Included Lab Sample IDs: 1909620, 1909621, 1909622, 1909623, 1909624, 1909625

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A77565
Included Lab Sample IDs: 1909628, 1909629, 1909631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A77597
Included Lab Sample IDs: 1909626, 1909627, 1909629, 1909630, 1909631

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A77654
Included Lab Sample IDs: 1909628

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.7	98.3	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	MS
EPA 180.1 Rev. 2.0	Turbidity				6.13	
EPA 300.0 Rev. 2.1	Chloride	108	100	108	0.549	
	Sulfate	101	106	101	1.31	
EPA 350.1 Rev. 2.0	Ammonia-N	99.7	93.2	93.8		0.435
	Ammonia-N	98.6	94.0	93.9		0.161
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	109	109		0.185
	Kjeldahl Nitrogen	98.2				1.85
EPA 353.2 Rev. 2.0	NO2NO3-N	103	99.6	101		0.746
	NO2NO3-N	104	102	101		0.985
EPA 365.1 Rev. 2.0	Total-P	99.1	100	101		0.764
	Total-P	98.0	101	101		0.0241
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	96.3	97.2		0.500
SM 2120 B	Color (true)				0.530	
	Color (true)				1.14	
SM 2320 B-97	Total Alkalinity	103			0.0689	
	Total Alkalinity	103			0.893	
SM 2540 C-97	TDS				2.65	
	TDS				3.58	
	TDS				3.56	
SM 4500 F-C-97	Fluoride	102	102	103		0.953
	Fluoride	98.4	99.9	100		0.542
SM 5310 B-00	Organic Carbon	96.0	103	102		0.395

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1909626, 1909627, 1909628, 1909629, 1909630, 1909631
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1909626, 1909627, 1909628, 1909629, 1909630, 1909631
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1909626, 1909627, 1909628, 1909629, 1909630, 1909631
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1909626, 1909627, 1909628, 1909629, 1909630, 1909631
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1909632, 1909633, 1909634, 1909635, 1909636, 1909637
SM 2120 B / E31780	True Color measured at 450 nm	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1909626, 1909627, 1909628, 1909629, 1909630, 1909631

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	06/28/2017			06/28/2017 17:52	DeAsia Armster	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
EPA 300.0 Rev. 2.1	06/28/2017			07/01/2017	Julia Storbeck	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
	06/28/2017			07/06/2017	Julia Storbeck	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
EPA 350.1 Rev. 2.0	06/28/2017			06/29/2017	Sofia Elnemr	1909626, 1909627, 1909628, 1909629, 1909630, 1909631
EPA 351.2 Rev. 2.0	06/28/2017	07/03/2017	Adrian Shelby	07/07/2017	Joseph Suarez	1909626, 1909627, 1909629, 1909630, 1909631
	06/28/2017	07/10/2017	Adrian Shelby	07/12/2017	Joseph Suarez	1909628
EPA 353.2 Rev. 2.0	06/28/2017			06/29/2017	Beverly Y. Sanders	1909626, 1909627, 1909628, 1909629, 1909630, 1909631
EPA 365.1 Rev. 2.0	06/28/2017	06/30/2017	Vijayalakshmi Reddy	07/05/2017	Lipi Saha	1909626, 1909627
	06/28/2017	07/03/2017	Vijayalakshmi Reddy	07/06/2017	Lipi Saha	1909628, 1909629, 1909630, 1909631
EPA 365.1 Rev. 2.0 dissolved	06/28/2017			06/28/2017 13:42	Lipi Saha	1909632
	06/28/2017			06/28/2017 13:43	Lipi Saha	1909633
	06/28/2017			06/28/2017 13:48	Lipi Saha	1909634
	06/28/2017			06/28/2017 13:49	Lipi Saha	1909635
	06/28/2017			06/28/2017 13:50	Lipi Saha	1909636
	06/28/2017			06/28/2017 13:51	Lipi Saha	1909637
SM 2120 B	06/28/2017			06/28/2017 16:11	Tanya Welborn	1909620
	06/28/2017			06/28/2017 16:13	Tanya Welborn	1909621, 1909622
	06/28/2017			06/28/2017 16:14	Tanya Welborn	1909623
	06/28/2017			06/28/2017 16:17	Tanya Welborn	1909624
	06/28/2017			06/28/2017 16:18	Tanya Welborn	1909625
SM 2320 B-97	06/28/2017			07/01/2017	Dale L. Simmons	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
SM 2540 C-97	06/28/2017			06/30/2017	Yijie Li	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
SM 2540 D-97	06/28/2017			06/30/2017	Yijie Li	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
SM 4500 F-C-97	06/28/2017			07/05/2017	Dale L. Simmons	1909620, 1909621, 1909622, 1909623, 1909624, 1909625
SM 5310 B-00	06/28/2017			06/30/2017	Sofia Elnemr	1909626, 1909627, 1909628, 1909629, 1909630, 1909631