

Chemical Analysis Report

NW-DIST-2017-06-13-03

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

Event Description: **Eglin Run East WBID 351 361 432 445 476 712 Blank/DUP**
Request ID: **RQ-2017-06-12-37**
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: 06-JUL-2017 15:11

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

NON-CONFORMANCE REPORT INCLUDED

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: Open Branch above E.R. 214/374 C-72

Collection Date/Time: 06/12/2017 13:10

Field ID: G3NW0105

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905649	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P326753	
	EPA 300.0 Rev. 2.1	Chloride	1.5		mg Cl/L	P327034	
		Sulfate	0.51		mg SO4/L	P327083	
	SM 2120 B	Color (true)	14		PCU	P326735	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P326902	
	SM 2540 C-97	TDS	15	U	mg/L	P327122	
	SM 2540 D-97	TSS	4	I	mg/L	P327088	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P326909	
1905655	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P326813	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	J	mg N/L	P326726	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P326759	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P326804	
	SM 5310 B-00	Organic Carbon	1.7		mg C/L	P326872	
1905661	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326747	

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

Sample Location: Rocky Ck. @ Eglin Rd 200/201

Collection Date/Time: 06/12/2017 13:30

Field ID: G3NW0059

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905650	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P326753	
	EPA 300.0 Rev. 2.1	Chloride	2.1		mg Cl/L	P327034	
		Sulfate	0.60		mg SO4/L	P327083	
	SM 2120 B	Color (true)	14		PCU	P326736	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P326902	
	SM 2540 C-97	TDS	15	U	mg/L	P327122	
	SM 2540 D-97	TSS	6	I	mg/L	P327088	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P326909	
1905656	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P326813	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P326726	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.094		mg N/L	P326760	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P326804	
	SM 5310 B-00	Organic Carbon	1.4		mg C/L	P326872	
1905662	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326747	

Sample Location: Little Rocky Creek

Collection Date/Time: 06/12/2017 14:15

Field ID: G3NW0103

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905651	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P326753	
	EPA 300.0 Rev. 2.1	Chloride	2.5		mg Cl/L	P327034	
		Sulfate	0.82	A	mg SO4/L	P327083	
	SM 2120 B	Color (true)	22		PCU	P326736	

Field ID: G3NW0103

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905651	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P326902	
	SM 2540 C-97	TDS	15	U	mg/L	P327122	
	SM 2540 D-97	TSS	5	I	mg/L	P327088	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P326909	
1905657	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	IY	mg N/L	P326813	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.094	IY	mg N/L	P326726	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.077	Y	mg N/L	P326760	
	EPA 365.1 Rev. 2.0	Total-P	0.004	IY	mg P/L	P326804	
	SM 5310 B-00	Organic Carbon	2.0	Y	mg C/L	P326872	
1905663	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326747	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 351.2 Rev. 2.0: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 353.2 Rev. 2.0: NO2NO3-N: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

EPA 365.1 Rev. 2.0: Total-P: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

SM 5310 B-00: The sample was received unpreserved: pH > 2. Sample preserved in laboratory.

Sample Location: Little Alaqua Ck. below E.R. 205 Bridge

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

Field ID: G3NW0065

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905652	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P326753	
	EPA 300.0 Rev. 2.1	Chloride	2.0		mg Cl/L	P327034	
		Sulfate	0.58		mg SO4/L	P327083	
		Color (true)	27		PCU	P326736	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P326902	
	SM 2540 C-97	TDS	15	U	mg/L	P327122	
	SM 2540 D-97	TSS	3	I	mg/L	P327088	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P326909	
1905658	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P326811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P326726	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P326760	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P326804	
	SM 5310 B-00	Organic Carbon	1.9		mg C/L	P326872	
1905664	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326747	

Sample Location: Little Alaqua Ck. below E.R. 205 Bridge

Collection Date/Time: 06/12/2017 12:05

Field ID: G3NW0065DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905653	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P326753	
	EPA 300.0 Rev. 2.1	Chloride	1.9		mg Cl/L	P327034	
		Sulfate	0.55		mg SO4/L	P327083	
		Color (true)	27		PCU	P326736	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P326902	
	SM 2540 C-97	TDS	15	U	mg/L	P327122	
	SM 2540 D-97	TSS	2	I	mg/L	P327088	

Field ID: G3NW0065DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905653	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P326909	
1905659	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P326811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.11	I	mg N/L	P326726	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P326760	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P326804	
	SM 5310 B-00	Organic Carbon	2.0		mg C/L	P326872	
1905665	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326747	

Sample Location: Field Blank

Collection Date/Time: 06/12/2017 12:10

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905654	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P326753	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P327034	
		Sulfate	0.20	U	mg SO4/L	P327083	
	SM 2120 B	Color (true)	2.5	U	PCU	P326736	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P326902	
	SM 2540 C-97	TDS	15	U	mg/L	P327119	
	SM 2540 D-97	TSS	2	U	mg/L	P327085	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P326909	
1905660	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P326811	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P326728	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P326760	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P326804	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P326872	
1905666	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P326747	

Ref. Method and Comment:

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

Non-Conformance Report

NCR ID: 6499

Event(s)

NW-DIST-2017-06-13-03

Job(s)

TLH-2017-06-13-60

Sample(s)

1905657

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Preservation Not Intact

Observation:

Sample not preserved to pH < 2.

Resolution:

Sample preserved in the laboratory with sulfuric acid on 6/13/2017 at 11:04 AM.

Authorized by/Date: Ramsey K. White 6/20/2017

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.

Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P326753

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327034

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327083

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326811

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326813

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326726

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326728

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326759

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: P326760

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326804

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326747

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

Reference Method: SM 2120 B
Batch ID: P326735

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P326736

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P326902

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

Reference Method: SM 2540 C-97
Batch ID: P327119

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P327122

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P327085

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P327088

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
 Batch ID: P326909

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P326872

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: P327034

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P327083

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P326811

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P326813

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P326726

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P326728

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P326759

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326759

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326760

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: P326804

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326747

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.3		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P326902

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

Reference Method: SM 4500 F-C-97
Batch ID: P326909

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P326872

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905651	Chloride	106		P	90 - 110
1905675	Chloride	105		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327083

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905651	Sulfate	98.5		P	90 - 110
1905675	Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326811

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905447	Ammonia-N	97.4	97.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326813

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905655	Ammonia-N	98.8	96.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905655	Kjeldahl Nitrogen	89.0	92.1	F/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326728

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905759	Kjeldahl Nitrogen	107	110	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326759

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905595	NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326760

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905656	NO2NO3-N	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905609	Total-P	102	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905612	O-Phosphate-P	98.4	98.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P326909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905758	Fluoride	98.3	99.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P326872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905594	Organic Carbon	103		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P326753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905605	Turbidity	1.74	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905675	Chloride	4.82	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905651	Sulfate	0.955	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905447	Ammonia-N	0.256	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905655	Ammonia-N	1.98	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905655	Kjeldahl Nitrogen	2.70	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905759	Kjeldahl Nitrogen	2.73	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326759

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905595	NO2NO3-N	1.27	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905656	NO2NO3-N	0.327	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905609	Total-P	0.903	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905612	O-Phosphate-P	0.0561	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P326735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905606	Color (true)	0.818	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P326736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905683	Color (true)	6.97	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P326902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905758	Total Alkalinity	0.769	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
 Batch ID: P327119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1904793	TDS	1.76	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P327122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905674	TDS	8.00	Sample	P	0 - 10

Reference Method: SM 2540 D-97
 Batch ID: P327088

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905674	TSS	8.16	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P326909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905758	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P326872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905594	Organic Carbon	1.23	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: A77057
 Included Lab Sample IDs: 1905649, 1905650, 1905651, 1905652, 1905653, 1905654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.3	98.6	P/P	85 - 115
Color (true)	98.6	99.4	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A77060

Included Lab Sample IDs: 1905661, 1905662, 1905663, 1905664, 1905665, 1905666

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A77064

Included Lab Sample IDs: 1905649, 1905650, 1905651, 1905652, 1905653, 1905654

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A77069

Included Lab Sample IDs: 1905655, 1905656, 1905657, 1905658, 1905659, 1905660

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77076

Included Lab Sample IDs: 1905649, 1905650, 1905651, 1905652, 1905653, 1905654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	99.8	P/P	90 - 110
Chloride	98.7	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A77085

Included Lab Sample IDs: 1905655, 1905656, 1905657, 1905658, 1905659, 1905660

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

Reference Method: SM 5310 B-00

Run ID: A77100

Included Lab Sample IDs: 1905655, 1905656, 1905657, 1905658, 1905659, 1905660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	97.2	P/P	90 - 110
Organic Carbon	97.2	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A77106

Included Lab Sample IDs: 1905655, 1905656, 1905657, 1905658, 1905659, 1905660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.2	P/P	90 - 110
Total-P	99.2	98.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A77119

Included Lab Sample IDs: 1905649, 1905650, 1905651, 1905652, 1905653, 1905654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A77119

Included Lab Sample IDs: 1905649, 1905650, 1905651, 1905652, 1905653, 1905654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.3	99.0	P/P	90 - 110
Fluoride	99.0	96.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A77142

Included Lab Sample IDs: 1905655, 1905656, 1905657, 1905658, 1905659

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	103	P/P	90 - 110
Kjeldahl Nitrogen	103	101	P/P	90 - 110
Kjeldahl Nitrogen	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A77179

Included Lab Sample IDs: 1905660

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77183

Included Lab Sample IDs: 1905649, 1905650, 1905651, 1905652, 1905653, 1905654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	105	105	P/P	90 - 110
Sulfate	109	105	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				1.74	
EPA 300.0 Rev. 2.1	Chloride	104	105 106		4.82	
	Sulfate	98.2	98.5 97.3		0.955	
EPA 350.1 Rev. 2.0	Ammonia-N	101	97.4 97.1			0.256
	Ammonia-N	99.9	98.8 96.5			1.98
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.0	89.0 92.1			2.70

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	107	110		2.73
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	102	100		1.27
	NO ₂ NO ₃ -N	104	105	106		0.327
EPA 365.1 Rev. 2.0	Total-P	106	102	100		0.903
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.3	98.4	98.3		0.0561
SM 2120 B	Color (true)				0.818	
	Color (true)				6.97	
SM 2320 B-97	Total Alkalinity	103			0.769	
SM 2540 C-97	TDS				1.76	
	TDS				8.00	
SM 2540 D-97	TSS				8.16	
SM 4500 F-C-97	Fluoride	95.8	98.3	99.3		0.946
SM 5310 B-00	Organic Carbon	96.4	103			1.23

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1905655, 1905656, 1905657, 1905658, 1905659, 1905660
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1905655, 1905656, 1905657, 1905658, 1905659, 1905660
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1905655, 1905656, 1905657, 1905658, 1905659, 1905660
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1905655, 1905656, 1905657, 1905658, 1905659, 1905660
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1905661, 1905662, 1905663, 1905664, 1905665, 1905666
SM 2120 B / E31780	True Color measured at 450 nm	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1905655, 1905656, 1905657, 1905658, 1905659, 1905660

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	06/13/2017			06/13/2017 17:34	Blanca Fach	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
EPA 300.0 Rev. 2.1	06/13/2017			06/17/2017	Julia Storbeck	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
	06/13/2017			06/19/2017	Julia Storbeck	1905651
	06/13/2017			06/20/2017	Julia Storbeck	1905649, 1905650, 1905652, 1905653, 1905654
EPA 350.1 Rev. 2.0	06/13/2017			06/14/2017	Sofia Elnemr	1905655, 1905656, 1905657, 1905658, 1905659, 1905660
EPA 351.2 Rev. 2.0	06/13/2017	06/14/2017	Adrian Shelby	06/16/2017	Joseph Suarez	1905655, 1905656, 1905657, 1905658, 1905659
	06/13/2017	06/14/2017	Adrian Shelby	06/19/2017	Joseph Suarez	1905660
EPA 353.2 Rev. 2.0	06/13/2017			06/14/2017	Beverly Y. Sanders	1905655, 1905656, 1905657, 1905658, 1905659, 1905660
EPA 365.1 Rev. 2.0	06/13/2017	06/14/2017	Vijayalakshmi Reddy	06/15/2017	Lipi Saha	1905655, 1905656, 1905657, 1905658, 1905659, 1905660
EPA 365.1 Rev. 2.0 dissolved	06/13/2017			06/13/2017 15:41	Anthony C. Onicha	1905661
	06/13/2017			06/13/2017 15:42	Anthony C. Onicha	1905662
	06/13/2017			06/13/2017 15:43	Anthony C. Onicha	1905663
	06/13/2017			06/13/2017 15:44	Anthony C. Onicha	1905664
	06/13/2017			06/13/2017 15:45	Anthony C. Onicha	1905665, 1905666
SM 2120 B	06/13/2017			06/13/2017 16:04	Tanya Welborn	1905649
	06/13/2017			06/13/2017 16:07	Tanya Welborn	1905650
	06/13/2017			06/13/2017 16:08	Tanya Welborn	1905651, 1905652
	06/13/2017			06/13/2017 16:09	Tanya Welborn	1905653
	06/13/2017			06/13/2017 16:10	Tanya Welborn	1905654
SM 2320 B-97	06/13/2017			06/15/2017	Dale L. Simmons	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
SM 2540 C-97	06/13/2017			06/14/2017	Yijie Li	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
SM 2540 D-97	06/13/2017			06/14/2017	Yijie Li	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
SM 4500 F-C-97	06/13/2017			06/15/2017	Dale L. Simmons	1905649, 1905650, 1905651, 1905652, 1905653, 1905654
SM 5310 B-00	06/13/2017			06/15/2017	Christopher Armour	1905655, 1905656, 1905657, 1905658, 1905659, 1905660