

Chemical Analysis Report

NW-DIST-2017-01-31-02

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

Event Description: **Laurel Hill Run WBID 35A 101 196 76 144 100 167**

Request ID: **RQ-2017-01-23-34**

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

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 21-FEB-2017 12:27

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: Gum Creek Below SR 83

Collection Date/Time: 01/30/2017 11:25

Field ID: G4NW0322

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868263	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P319021	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P319326	
		Sulfate	0.23	I	mg SO4/L	P319329	
	SM 2120 B	Color (true)	190		PCU	P319001	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P319273	
	SM 2540 C-97	TDS	48		mg/L	P319426	
	SM 2540 D-97	TSS	2	I	mg/L	P319176	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P319276	
1868269	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P319346	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P319123	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P319259	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P319099	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P319074	
1868275	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P319015	

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: Caney Creek @ Hwy 2A

Collection Date/Time: 01/30/2017 12:00

Field ID: G4NW0397

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868264	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P319021	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P319326	
		Sulfate	0.55		mg SO4/L	P319329	
	SM 2120 B	Color (true)	41		PCU	P319001	
	SM 2320 B-97	Total Alkalinity	5.8		mg CaCO3/L	P319273	
	SM 2540 C-97	TDS	33		mg/L	P319426	
	SM 2540 D-97	TSS	2	U	mg/L	P319176	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P319276	
1868270	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P319346	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28		mg N/L	P319123	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P319259	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P319099	
	SM 5310 B-00	Organic Carbon	4.4		mg C/L	P319074	
1868276	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P319015	

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: Pine Log Creek upstream of Long Road

Collection Date/Time: 01/30/2017 12:50

Field ID: G4NW0315

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868265	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P319021	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P319326	
		Sulfate	1.3		mg SO4/L	P319329	

Field ID: G4NW0315

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868265	SM 2120 B	Color (true)	51	A	PCU	P319001	
	SM 2320 B-97	Total Alkalinity	3.9		mg CaCO3/L	P319275	
	SM 2540 C-97	TDS	32		mg/L	P319426	
	SM 2540 D-97	TSS	6	I	mg/L	P319176	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P319278	
1868271	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P319346	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P319123	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P319259	
	EPA 365.1 Rev. 2.0	Total-P	0.010		mg P/L	P319099	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P319074	
1868277	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P319015	

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: Beech Tree Creek above unnamed road

Collection Date/Time: 01/30/2017 13:15

Field ID: G4NW0330

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868266	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P319021	
	EPA 300.0 Rev. 2.1	Chloride	2.3		mg Cl/L	P319326	
		Sulfate	1.1		mg SO4/L	P319329	
	SM 2120 B	Color (true)	29		PCU	P319001	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P319275	
1868272	SM 2540 C-97	TDS	23	I	mg/L	P319426	
	SM 2540 D-97	TSS	23	A	mg/L	P319177	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P319278	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P319346	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P319123	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.044		mg N/L	P319259	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P319100	
	SM 5310 B-00	Organic Carbon	2.9		mg C/L	P319074	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319016	

Sample Location: Long Creek upstream of Long Road

Collection Date/Time: 01/30/2017 13:25

Field ID: G4NW0308

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868267	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P319021	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P319326	
		Sulfate	0.83		mg SO4/L	P319329	
	SM 2120 B	Color (true)	41		PCU	P319002	
	SM 2320 B-97	Total Alkalinity	2.0	I	mg CaCO3/L	P319275	
	SM 2540 C-97	TDS	28		mg/L	P319426	
	SM 2540 D-97	TSS	4	I	mg/L	P319177	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P319278	

Field ID: G4NW0308

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868273	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P319346	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P319123	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.30		mg N/L	P319259	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P319100	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P319074	
1868279	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P319016	

Sample Location: Juniper Cr FLA 393

Collection Date/Time: 01/30/2017 13:55

Field ID: G4NW0349

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1868268	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P319021	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P319326	
		Sulfate	1.7		mg SO4/L	P319329	
		Color (true)	43	A	PCU	P319002	
	SM 2320 B-97	Total Alkalinity	3.6		mg CaCO3/L	P319275	
	SM 2540 C-97	TDS	32		mg/L	P319426	
	SM 2540 D-97	TSS	7	I	mg/L	P319177	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P319278	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P319346	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P319123	
1868274	EPA 353.2 Rev. 2.0	NO2NO3-N	0.30		mg N/L	P319259	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P319100	
	SM 5310 B-00	Organic Carbon	4.3		mg C/L	P319074	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P319016	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P319021

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P319326

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P319329

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319346

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319123

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319259

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319099

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319100

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319015

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319016

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

Reference Method: SM 2120 B
Batch ID: P319001

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P319002

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P319273

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

Reference Method: SM 2320 B-97
Batch ID: P319275

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

Reference Method: SM 2540 C-97
Batch ID: P319426

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P319176

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P319177

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P319276

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P319278

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P319074

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: P319326

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319326

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319329

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319346

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319123

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319259

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319099

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319100

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319015

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319016

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P319273

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

Reference Method: SM 2320 B-97
Batch ID: P319275

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

Reference Method: SM 4500 F-C-97
Batch ID: P319276

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P319278

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

Reference Method: SM 5310 B-00
Batch ID: P319074

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: P319326

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868301	Chloride	105		P	90 - 110
1868315	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868301	Sulfate	97.7		P	90 - 110
1868315	Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319346

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868219	Ammonia-N	103	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868219	Kjeldahl Nitrogen	101	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868219	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868270	Total-P	92.2	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319100

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868274	Total-P	98.2	92.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319015

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868226	O-Phosphate-P	99.7	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319016

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868278	O-Phosphate-P	99.5	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P319276

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868301	Fluoride	96.6	98.3	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P319278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868315	Fluoride	98.9	98.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P319074

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1868166	Organic Carbon	96.1	96.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P319021

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868209	Turbidity	0.784	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319326

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868315	Chloride	0.329	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868315	Sulfate	0.0448	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319346

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868219	Ammonia-N	1.25	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868219	Kjeldahl Nitrogen	4.04	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868219	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868270	Total-P	2.96	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868274	Total-P	6.21	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868226	O-Phosphate-P	0.200	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868278	O-Phosphate-P	0.301	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P319001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868265	Color (true)	0.822	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P319002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868268	Color (true)	0.496	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P319273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868301	Total Alkalinity	0.234	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P319275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868315	Total Alkalinity	0.200	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P319426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868192	TDS	2.21	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P319177

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868266	TSS	1.74	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P319276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868301	Fluoride	1.50	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P319278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868315	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P319074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1868166	Organic Carbon	0.308	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: A74192
Included Lab Sample IDs: 1868263, 1868264, 1868265, 1868266, 1868267, 1868268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	85 - 115
Color (true)	101	99.8	P/P	85 - 115
Color (true)	99.8	101	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A74194
Included Lab Sample IDs: 1868275, 1868276, 1868277, 1868278, 1868279, 1868280

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	101	P/P	90 - 110
O-Phosphate-P	103	99.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A74195
Included Lab Sample IDs: 1868263, 1868264, 1868265, 1868266, 1868267, 1868268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	98.5	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A74206

Included Lab Sample IDs: 1868263, 1868264, 1868265, 1868266, 1868267, 1868268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Chloride	102	100	P/P	90 - 110
Sulfate	93.4	98.2	P/P	90 - 110
Sulfate	98.2	92.4	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A74208

Included Lab Sample IDs: 1868269, 1868270, 1868271, 1868272, 1868273, 1868274

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.7	98.0	P/P	90 - 110
Organic Carbon	98.0	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74243

Included Lab Sample IDs: 1868269, 1868270, 1868271, 1868272, 1868273, 1868274

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.8	97.2	P/P	90 - 110
Total-P	97.0	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74250

Included Lab Sample IDs: 1868269, 1868270, 1868271, 1868272, 1868273, 1868274

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	107	P/P	90 - 110
Kjeldahl Nitrogen	107	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74255

Included Lab Sample IDs: 1868269, 1868270, 1868271, 1868272, 1868273, 1868274

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

Reference Method: SM 2320 B-97

Run ID: A74269

Included Lab Sample IDs: 1868263, 1868264, 1868265, 1868266, 1868267, 1868268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	103	P/P	90 - 110
Total Alkalinity	103	103	P/P	90 - 110
Total Alkalinity	104	106	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A74269

Included Lab Sample IDs: 1868263, 1868264, 1868265, 1868266, 1868267, 1868268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A74269

Included Lab Sample IDs: 1868263, 1868264, 1868265, 1868266, 1868267, 1868268

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.0	P/P	90 - 110
Fluoride	99.0	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74290

Included Lab Sample IDs: 1868269, 1868270, 1868271, 1868272, 1868273, 1868274

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.0	99.9	P/P	90 - 110
Ammonia-N	99.9	101	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					0.784	
EPA 300.0 Rev. 2.1	Chloride	104	104	105		0.329	
	Sulfate	97.9	97.3	97.7		0.0448	
EPA 350.1 Rev. 2.0	Ammonia-N	104	103	102			1.25
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	101	94.6			4.04
EPA 353.2 Rev. 2.0	NO2NO3-N	103	104	104			0.0
EPA 365.1 Rev. 2.0	Total-P	97.4	92.2	95.1			2.96
	Total-P	94.7	98.2	92.1			6.21
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	99.7	99.9			0.200
	O-Phosphate-P	103	99.5	99.8			0.301
SM 2120 B	Color (true)					0.822	
	Color (true)					0.496	
SM 2320 B-97	Total Alkalinity	103				0.234	
	Total Alkalinity	103				0.200	
SM 2540 C-97	TDS					2.21	
SM 2540 D-97	TSS					1.74	
SM 4500 F-C-97	Fluoride	97.9	96.6	98.3			1.50
	Fluoride	98.4	98.9	98.9			0.0
SM 5310 B-00	Organic Carbon	96.4	96.1	96.6			0.308

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1868263, 1868264, 1868265, 1868266, 1868267, 1868268

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1868269, 1868270, 1868271, 1868272, 1868273, 1868274
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1868269, 1868270, 1868271, 1868272, 1868273, 1868274
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1868269, 1868270, 1868271, 1868272, 1868273, 1868274
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1868269, 1868270, 1868271, 1868272, 1868273, 1868274
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1868275, 1868276, 1868277, 1868278, 1868279, 1868280
SM 2120 B / E31780	True Color measured at 450 nm	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1868269, 1868270, 1868271, 1868272, 1868273, 1868274

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	01/31/2017			01/31/2017 16:45	Julie Michelle Frank	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
EPA 300.0 Rev. 2.1	01/31/2017			02/04/2017	Ping Hua	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
EPA 350.1 Rev. 2.0	01/31/2017			02/02/2017	Sofia Elnemr	1868269, 1868270, 1868271, 1868272, 1868273, 1868274
EPA 351.2 Rev. 2.0	01/31/2017	02/02/2017	Adrian Shelby	02/03/2017	Joseph Suarez	1868269, 1868270, 1868271, 1868272, 1868273, 1868274
EPA 353.2 Rev. 2.0	01/31/2017			02/03/2017	Beverly Y. Sanders	1868269, 1868270, 1868271, 1868272, 1868273, 1868274
EPA 365.1 Rev. 2.0	01/31/2017	02/01/2017	Vijayalakshmi Reddy	02/02/2017	Lipi Saha	1868269, 1868270, 1868271, 1868272, 1868273, 1868274
EPA 365.1 Rev. 2.0 dissolved	01/31/2017			01/31/2017 14:41	Julie Michelle Frank	1868278
	01/31/2017			01/31/2017 15:31	Julie Michelle Frank	1868275
	01/31/2017			01/31/2017 15:32	Julie Michelle Frank	1868276, 1868277
	01/31/2017			01/31/2017 15:33	Julie Michelle Frank	1868279
	01/31/2017			01/31/2017 15:34	Julie Michelle Frank	1868280
SM 2120 B	01/31/2017			01/31/2017 15:13	Jared I. Manley	1868265
	01/31/2017			01/31/2017 15:19	Jared I. Manley	1868264
	01/31/2017			01/31/2017 15:20	Jared I. Manley	1868266
	01/31/2017			01/31/2017 15:23	Jared I. Manley	1868268
	01/31/2017			01/31/2017 15:24	Jared I. Manley	1868267
SM 2320 B-97	01/31/2017			01/31/2017 15:33	Jared I. Manley	1868263
	01/31/2017			02/02/2017	Dale L. Simmons	1868263, 1868264
SM 2540 C-97	01/31/2017			02/03/2017	Dale L. Simmons	1868265, 1868266, 1868267, 1868268
	01/31/2017			02/03/2017	Blanca Fach	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
SM 2540 D-97	01/31/2017			02/01/2017	Christopher Armour	1868263, 1868264, 1868265, 1868266, 1868267, 1868268
SM 4500 F-C-97	01/31/2017			02/02/2017	Dale L. Simmons	1868263, 1868264
	01/31/2017			02/03/2017	Dale L. Simmons	1868265, 1868266, 1868267, 1868268
SM 5310 B-00	01/31/2017			01/31/2017	Julie Michelle Frank	1868269, 1868270, 1868271, 1868272
	01/31/2017			02/01/2017	Julie Michelle Frank	1868273, 1868274