

Chemical Analysis Report

NW-DIST-2016-12-22-01

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

Event Description: **Holmes WBID 49 49F**
Request ID: **RQ-2016-12-19-04**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 11-JAN-2017 17:16

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

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Choctawhatchee River @ Hwy 90

Collection Date/Time: 12/21/2016 12:35

Field ID: G3NW0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1859693	EPA 180.1 Rev. 2.0	Turbidity	27		NTU	P317254	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P317776	
		Sulfate	3.6		mg SO4/L	P317773	
	SM 2120 B	Color (true)	64	A	PCU	P317259	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P317402	
	SM 2540 C-97	TDS	53		mg/L	P317856	
	SM 2540 D-97	TSS	28		mg/L	P317686	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317411	
1859698	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P317681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P317301	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.34		mg N/L	P317436	
	EPA 365.1 Rev. 2.0	Total-P	0.066		mg P/L	P317464	
	SM 5310 B-00	Organic Carbon	6.4		mg C/L	P317307	
1859703	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P317292	

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: Choctawhatchee River @ Hwy 90

Collection Date/Time: 12/21/2016 12:40

Field ID: G3NW0052DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1859694	EPA 180.1 Rev. 2.0	Turbidity	27		NTU	P317254	
	EPA 300.0 Rev. 2.1	Chloride	5.4		mg Cl/L	P317776	
		Sulfate	3.6		mg SO4/L	P317773	
	SM 2120 B	Color (true)	63		PCU	P317259	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P317402	
	SM 2540 C-97	TDS	51		mg/L	P317856	
	SM 2540 D-97	TSS	28		mg/L	P317686	
	SM 4500 F-C-97	Fluoride	0.036	I	mg F/L	P317411	
1859699	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P317681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P317301	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.34		mg N/L	P317436	
	EPA 365.1 Rev. 2.0	Total-P	0.059		mg P/L	P317464	
	SM 5310 B-00	Organic Carbon	6.4		mg C/L	P317307	
1859704	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P317292	

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: Choctawhatchee River 100 YD Above PA

Collection Date/Time: 12/21/2016 14:05

Field ID: G3NW0124

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1859695	EPA 180.1 Rev. 2.0	Turbidity	24		NTU	P317254	
	EPA 300.0 Rev. 2.1	Chloride	5.2		mg Cl/L	P317776	
		Sulfate	3.9		mg SO4/L	P317773	

Field ID: G3NW0124

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1859695	SM 2120 B	Color (true)	55		PCU	P317259	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P317402	
	SM 2540 C-97	TDS	48		mg/L	P317856	
	SM 2540 D-97	TSS	29		mg/L	P317686	
	SM 4500 F-C-97	Fluoride	0.038	I	mg F/L	P317411	
1859700	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P317681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P317301	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P317436	
	EPA 365.1 Rev. 2.0	Total-P	0.060		mg P/L	P317464	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P317307	
1859705	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P317292	

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: Choctawhatchee River above Wights C

Collection Date/Time: 12/21/2016 13:00

Field ID: G3NW0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1859696	EPA 180.1 Rev. 2.0	Turbidity	29	A	NTU	P317254	
	EPA 300.0 Rev. 2.1	Chloride	5.1		mg Cl/L	P317776	
		Sulfate	3.7		mg SO4/L	P317773	
	SM 2120 B	Color (true)	59		PCU	P317259	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P317402	
	SM 2540 C-97	TDS	49		mg/L	P317856	
	SM 2540 D-97	TSS	30		mg/L	P317686	
	SM 4500 F-C-97	Fluoride	0.037	I	mg F/L	P317411	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P317681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P317301	
1859701	EPA 353.2 Rev. 2.0	NO2NO3-N	0.39		mg N/L	P317436	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P317464	
	SM 5310 B-00	Organic Carbon	6.0		mg C/L	P317307	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P317292	

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: Choctawhatchee River above Wights C

Collection Date/Time: 12/21/2016 13:05

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1859697	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P317254	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P317777	
		Sulfate	0.20	U	mg SO4/L	P317774	
	SM 2120 B	Color (true)	2.5	U	PCU	P317257	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P317402	
	SM 2540 C-97	TDS	15	U	mg/L	P317856	
	SM 2540 D-97	TSS	2	U	mg/L	P317686	

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1859697	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317411	
1859702	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P317681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P317301	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P317436	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P317464	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P317307	
1859707	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P317292	

Ref. Method and Comment:

SM 2120 B: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P317254

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P317773

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P317774

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P317776

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P317777

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P317681

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P317301

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317301

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317436

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: P317464

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317292

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

Reference Method: SM 2120 B
Batch ID: P317257

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P317259

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P317402

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

Reference Method: SM 2540 C-97
Batch ID: P317856

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P317686

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P317411

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P317307

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: P317773

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317774

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317776

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317777

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317681

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317301

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: P317436

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: P317436

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317464

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317292

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.6		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P317402

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.2		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P317411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P317307

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: P317773

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859695	Sulfate	98.8		P	90 - 110
1859752	Sulfate	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317774

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858994	Sulfate	97.1		P	90 - 110
1859371	Sulfate	95.3		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317776

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859695	Chloride	101		P	90 - 110
1859752	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317777

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1858994	Chloride	99.7		P	90 - 110
1859371	Chloride	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859635	Ammonia-N	98.4	91.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317301

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859637	Kjeldahl Nitrogen	98.7	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859701	NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317464

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859719	Total-P	96.7	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317292

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859703	O-Phosphate-P	96.1	96.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P317411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859755	Fluoride	97.2	99.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P317307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1859698	Organic Carbon	94.1	98.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P317254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859696	Turbidity	3.42	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859752	Sulfate	0.425	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317774

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859371	Sulfate	0.187	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859752	Chloride	0.357	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859371	Chloride	0.103	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859635	Ammonia-N	6.47	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859637	Kjeldahl Nitrogen	0.339	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859701	NO2NO3-N	0.840	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317464

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859719	Total-P	0.633	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859703	O-Phosphate-P	0.459	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P317259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859693	Color (true)	5.06	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P317402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859755	Total Alkalinity	0.0251	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P317856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859718	TDS	1.03	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P317411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859755	Fluoride	1.96	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P317307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1859698	Organic Carbon	3.19	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A73547

Included Lab Sample IDs: 1859693, 1859694, 1859695, 1859696, 1859697

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	96.5	97.5	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A73548

Included Lab Sample IDs: 1859693, 1859694, 1859695, 1859696, 1859697

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.1	97.2	P/P	85 - 115
Color (true)	98.2	101	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A73554

Included Lab Sample IDs: 1859703, 1859704, 1859705, 1859706, 1859707

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	97.5	P/P	90 - 110
O-Phosphate-P	98.4	98.2	P/P	90 - 110
O-Phosphate-P	98.5	97.8	P/P	90 - 110
O-Phosphate-P	99.1	98.4	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A73557

Included Lab Sample IDs: 1859698, 1859699, 1859700, 1859701, 1859702

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	96.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A73587

Included Lab Sample IDs: 1859693, 1859694, 1859695, 1859696, 1859697

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73587

Included Lab Sample IDs: 1859693, 1859694, 1859695, 1859696, 1859697

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.5	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73591

Included Lab Sample IDs: 1859698, 1859699, 1859700, 1859701, 1859702

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	99.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73594

Included Lab Sample IDs: 1859698, 1859699, 1859700, 1859701, 1859702

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73639

Included Lab Sample IDs: 1859698, 1859699, 1859700, 1859701

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	103	P/P	90 - 110
Total-P	103	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73714

Included Lab Sample IDs: 1859698, 1859699, 1859700, 1859701, 1859702

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	100	P/P	90 - 110
Ammonia-N	99.1	100	P/P	90 - 110
Ammonia-N	99.4	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73736

Included Lab Sample IDs: 1859702

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.2	96.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73754

Included Lab Sample IDs: 1859693, 1859694, 1859695, 1859696, 1859697

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	104	P/P	90 - 110
Chloride	103	102	P/P	90 - 110
Chloride	104	104	P/P	90 - 110
Sulfate	95.9	99.5	P/P	90 - 110
Sulfate	96.5	101	P/P	90 - 110
Sulfate	99.5	96.5	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 SMP	MS
			LCS			
EPA 180.1 Rev. 2.0	Turbidity				3.42	
EPA 300.0 Rev. 2.1	Chloride	101	101	101	0.357	
	Chloride	100	99.7	99.7	0.103	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 300.0 Rev. 2.1	Sulfate	98.4	98.5	98.8	0.425	
	Sulfate	97.5	95.3	97.1	0.187	
EPA 350.1 Rev. 2.0	Ammonia-N	99.5	98.4	91.6		6.47
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	98.7	99.2		0.339
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	99.0			0.840
EPA 365.1 Rev. 2.0	Total-P	97.8	96.7	96.0		0.633
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	96.1	96.6		0.459
SM 2120 B	Color (true)				5.06	
SM 2320 B-97	Total Alkalinity	99.2			0.0251	
SM 2540 C-97	TDS				1.03	
SM 4500 F-C-97	Fluoride	96.1	97.2	99.8		1.96
SM 5310 B-00	Organic Carbon	96.0	94.1	98.2		3.19

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1859693, 1859694, 1859695, 1859696, 1859697
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1859693, 1859694, 1859695, 1859696, 1859697
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1859693, 1859694, 1859695, 1859696, 1859697
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1859698, 1859699, 1859700, 1859701, 1859702
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1859698, 1859699, 1859700, 1859701, 1859702
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1859698, 1859699, 1859700, 1859701, 1859702
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1859698, 1859699, 1859700, 1859701, 1859702
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1859703, 1859704, 1859705, 1859706, 1859707
SM 2120 B / E31780	True Color measured at 450 nm	1859693, 1859694, 1859695, 1859696, 1859697
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1859693, 1859694, 1859695, 1859696, 1859697
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1859693, 1859694, 1859695, 1859696, 1859697
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1859693, 1859694, 1859695, 1859696, 1859697
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1859693, 1859694, 1859695, 1859696, 1859697
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1859698, 1859699, 1859700, 1859701, 1859702

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	12/22/2016			12/22/2016 14:52	Julie Michelle Frank	1859693, 1859694, 1859695, 1859696, 1859697
EPA 300.0 Rev. 2.1	12/22/2016			01/05/2017	Ping Hua	1859693, 1859694, 1859695, 1859696, 1859697
EPA 350.1 Rev. 2.0	12/22/2016			01/03/2017	Sofia Elnemr	1859698, 1859699, 1859700, 1859701, 1859702
EPA 351.2 Rev. 2.0	12/22/2016	12/23/2016	Adrian Shelby	12/27/2016	Joseph Suarez	1859698, 1859699, 1859700, 1859701, 1859702
EPA 353.2 Rev. 2.0	12/22/2016			12/27/2016	Beverly Y. Sanders	1859698, 1859699, 1859700, 1859701, 1859702
EPA 365.1 Rev. 2.0	12/22/2016	12/28/2016	Adrian Shelby	01/04/2017	Lipi Saha	1859702
	12/22/2016	12/28/2016	Adrian Shelby	12/29/2016	Beverly Y. Sanders	1859698, 1859699, 1859700, 1859701
EPA 365.1 Rev. 2.0 dissolved	12/22/2016			12/22/2016 17:26	Ping Hua	1859703
	12/22/2016			12/22/2016 17:53	Ping Hua	1859704
	12/22/2016			12/22/2016 17:54	Ping Hua	1859705
	12/22/2016			12/22/2016 18:00	Ping Hua	1859707
	12/22/2016			12/22/2016 18:28	Ping Hua	1859706
SM 2120 B	12/22/2016			12/22/2016 15:24	Jared I. Manley	1859697
	12/22/2016			12/22/2016 15:38	Jared I. Manley	1859693
	12/22/2016			12/22/2016 15:39	Jared I. Manley	1859694
	12/22/2016			12/22/2016 15:40	Jared I. Manley	1859695, 1859696
SM 2320 B-97	12/22/2016			12/23/2016	Dale L. Simmons	1859693, 1859694, 1859695, 1859696, 1859697
SM 2540 C-97	12/22/2016			12/27/2016	Sima Feizi	1859693, 1859694, 1859695, 1859696, 1859697
SM 2540 D-97	12/22/2016			12/27/2016	Sima Feizi	1859693, 1859694, 1859695, 1859696, 1859697
SM 4500 F-C-97	12/22/2016			12/23/2016	Dale L. Simmons	1859693, 1859694, 1859695, 1859696, 1859697
SM 5310 B-00	12/22/2016			12/22/2016	Julie Michelle Frank	1859698
	12/22/2016			12/23/2016	Julie Michelle Frank	1859699, 1859700, 1859701, 1859702