

Chemical Analysis Report

NW-DIST-2016-04-27-01

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

Event Description: **WBID 10D 10E**
Request ID: **RQ-2016-04-18-51**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Colin Wright, Environmental Administrator

Date Certified: 25-MAY-2016 08:53

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored rectangular background.

Case Narrative

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

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

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: ESCAMBIA R MOUTH WMS DITCH

Collection Date/Time: 04/26/2016 11:45

Field ID: G4NW0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793395	EPA 180.1 Rev. 2.0	Turbidity	18	A	NTU	P303120	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P303646	
		Sulfate	3.6		mg SO4/L	P303649	
	SM 2120 B	Color (true)	47	A	PCU	P303143	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P303464	
	SM 2540 C-97	TDS	77		mg/L	P303762	
	SM 2540 D-97	TSS	10		mg/L	P303753	
	SM 4500 F-C-97	Fluoride	0.043	I	mg F/L	P303280	
1793402	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P303789	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P304036	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P303832	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P303915	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P304636	
1793409	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P303104	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: ESCAMBIA RIVER HWY 184 BR

Collection Date/Time: 04/26/2016 12:00

Field ID: G4NW0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793396	EPA 180.1 Rev. 2.0	Turbidity	17		NTU	P303120	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P303646	
		Sulfate	3.6		mg SO4/L	P303649	
	SM 2120 B	Color (true)	49		PCU	P303143	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P303464	
	SM 2540 C-97	TDS	67		mg/L	P303762	
	SM 2540 D-97	TSS	12		mg/L	P303753	
	SM 4500 F-C-97	Fluoride	0.043	I	mg F/L	P303280	
1793403	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P303789	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P304036	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P303832	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P303915	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P304636	
1793410	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P303104	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: ESCAMBIA R AT BEAVER DAM L

Collection Date/Time: 04/26/2016 12:20

Field ID: G4NW0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793397	EPA 180.1 Rev. 2.0	Turbidity	18		NTU	P303120	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P303646	
		Sulfate	3.9		mg SO4/L	P303649	

Field ID: G4NW0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793397	SM 2120 B	Color (true)	47		PCU	P303143	
	SM 2320 B-97	Total Alkalinity	24		mg CaCO3/L	P303464	
	SM 2540 C-97	TDS	66		mg/L	P303762	
	SM 2540 D-97	TSS	11		mg/L	P303753	
	SM 4500 F-C-97	Fluoride	0.043	I	mg F/L	P303280	
1793404	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P303789	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P304036	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P303832	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P303915	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P304636	
1793411	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P303104	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: ESCAMBIA RIV ABOVE DELANEY R

Collection Date/Time: 04/26/2016 12:40

Field ID: G4NW0222

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793398	EPA 180.1 Rev. 2.0	Turbidity	18		NTU	P303120	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P303646	
		Sulfate	3.7		mg SO4/L	P303649	
	SM 2120 B	Color (true)	48		PCU	P303143	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P303464	
	SM 2540 C-97	TDS	61		mg/L	P303762	
	SM 2540 D-97	TSS	11		mg/L	P303753	
	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P303280	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P303792	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P304036	
1793405	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P303832	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P303915	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P304636	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P303104	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: UPPER ESCAMBIA RIVER @ POWER LINES

Collection Date/Time: 04/26/2016 13:50

Field ID: G4NW0185

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793399	EPA 180.1 Rev. 2.0	Turbidity	15		NTU	P303120	
	EPA 300.0 Rev. 2.1	Chloride	4.9	A	mg Cl/L	P303646	
		Sulfate	3.7	A	mg SO4/L	P303649	
	SM 2120 B	Color (true)	51		PCU	P303143	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P303814	
	SM 2540 C-97	TDS	64		mg/L	P303762	
	SM 2540 D-97	TSS	7	I	mg/L	P303753	

Field ID: G4NW0185

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793399	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P303818	
1793406	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P303792	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P304036	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P303832	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P303915	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P304636	
1793413	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.010		mg P/L	P303104	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: The result was confirmed on 05/18/2016.

Sample Location: UPPER ESCAMBIA RIVER @ POWER LINES

Collection Date/Time: 04/26/2016 13:55

Field ID: G4NW0185DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793400	EPA 180.1 Rev. 2.0	Turbidity	15		NTU	P303120	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P303646	
		Sulfate	3.8		mg SO4/L	P303649	
	SM 2120 B	Color (true)	51		PCU	P303143	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P303814	
	SM 2540 C-97	TDS	65		mg/L	P303763	
	SM 2540 D-97	TSS	6	I	mg/L	P303754	
	SM 4500 F-C-97	Fluoride	0.041	I	mg F/L	P303818	
1793407	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P303792	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P304040	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P303832	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P303915	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P304636	
1793414	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.010		mg P/L	P303104	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: The result was confirmed on 05/18/2016.

Sample Location: ESCAMBIA RIVER

Collection Date/Time: 04/26/2016 14:00

Field ID: FIELD BLANK

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793401	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P303201	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P303646	
		Sulfate	0.20	U	mg SO4/L	P303649	
	SM 2120 B	Color (true)	2.5	U	PCU	P303142	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P303814	
	SM 2540 C-97	TDS	15	U	mg/L	P303758	
	SM 2540 D-97	TSS	2	U	mg/L	P303749	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P303818	
1793408	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P303792	

Field ID: FIELD BLANK

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1793408	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P304040	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P303833	
	EPA 365.1 Rev. 2.0	Total-P	0.002	I	mg P/L	P304232	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P304636	
1793415	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P303104	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 05/16/2016.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P303120

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P303201

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P303646

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P303649

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P303789

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P303792

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P304036

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304040

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303832

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303833

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303915

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304232

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303104

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

Reference Method: SM 2120 B
Batch ID: P303142

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P303143

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P303464

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P303814

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

Reference Method: SM 2540 C-97
Batch ID: P303758

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P303762

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P303763

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303749

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303753

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303754

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P303280

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P303818

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P304636

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: P303646

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303649

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303789

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303792

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: P304036

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304040

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: P303832

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	99.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303833

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: P303833

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303915

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304232

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: P303104

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	107		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P303464

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P303814

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P303280

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

Reference Method: SM 4500 F-C-97
Batch ID: P303818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P304636

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793399	Chloride	99.5		P	90 - 110
1793555	Chloride	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303649

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793399	Sulfate	96.1		P	90 - 110
1793555	Sulfate	95.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793383	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303792

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793444	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304036

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793384	Kjeldahl Nitrogen	91.3	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304040

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793407	Kjeldahl Nitrogen	98.6	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303832

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793363	NO2NO3-N	96.5	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303833

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793442	NO2NO3-N	98.7	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303915

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793383	Total-P	103	98.7	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304232

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793442	Total-P	98.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303104

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793411	O-Phosphate-P	100	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P303280

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793320	Fluoride	98.2	98.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P303818

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793863	Fluoride	95.9	96.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P304636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793332	Organic Carbon	97.5	98.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303120

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793395	Turbidity	3.99	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303201

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793532	Turbidity	0.687	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793399	Chloride	0.237	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793399	Sulfate	1.11	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793383	Ammonia-N	0.146	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793444	Ammonia-N	1.34	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793384	Kjeldahl Nitrogen	8.26	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304040

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793407	Kjeldahl Nitrogen	0.162	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303832

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793363	NO2NO3-N	1.47	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793442	NO2NO3-N	1.86	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793383	Total-P	3.60	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304232

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793442	Total-P	2.30	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303104

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793411	O-Phosphate-P	2.25	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P303142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793320	Color (true)	0.975	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P303143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793395	Color (true)	4.93	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P303464

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793320	Total Alkalinity	0.236	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P303814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793863	Total Alkalinity	0.505	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P303758

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1792960	TDS	3.85	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P303762

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793320	TDS	3.82	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P303763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793543	TDS	4.63	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P303280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793320	Fluoride	0.509	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P303818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793863	Fluoride	0.524	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P304636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793332	Organic Carbon	0.272	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A69135
Included Lab Sample IDs: 1793409, 1793410, 1793411, 1793412, 1793413, 1793414, 1793415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	99.6	99.0	P/P	90 - 110
O-Phosphate-P	99.7	99.9	P/P	90 - 110
O-Phosphate-P	99.9	99.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69141
Included Lab Sample IDs: 1793395, 1793396, 1793397, 1793398, 1793399, 1793400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	101	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A69151

Included Lab Sample IDs: 1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.1	95.5	P/P	90 - 115
Color (true)	99.4	99.1	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69165

Included Lab Sample IDs: 1793401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	101	P/P	95 - 105

Reference Method: SM 4500 F-C-97

Run ID: A69187

Included Lab Sample IDs: 1793395, 1793396, 1793397, 1793398

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69217

Included Lab Sample IDs: 1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	102	P/P	90 - 110
Chloride	99.1	100	P/P	90 - 110
Sulfate	98.2	99.6	P/P	90 - 110
Sulfate	99.6	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A69249

Included Lab Sample IDs: 1793395, 1793396, 1793397, 1793398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.2	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69333

Included Lab Sample IDs: 1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408

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

Reference Method: SM 2320 B-97

Run ID: A69345

Included Lab Sample IDs: 1793399, 1793400, 1793401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.7	99.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A69345

Included Lab Sample IDs: 1793399, 1793400, 1793401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69353

Included Lab Sample IDs: 1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69422

Included Lab Sample IDs: 1793402, 1793403, 1793404, 1793405, 1793406, 1793407

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69462

Included Lab Sample IDs: 1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.2	97.7	P/P	90 - 110
Kjeldahl Nitrogen	98.6	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69506

Included Lab Sample IDs: 1793408

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

Reference Method: SM 5310 B-00

Run ID: A69584

Included Lab Sample IDs: 1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.4	98.4	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				3.99	
	Turbidity				0.687	
EPA 300.0 Rev. 2.1	Chloride	98.3	99.5 98.5		0.237	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 300.0 Rev. 2.1	Sulfate	95.8	96.1	95.0	1.11	
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	102	102		0.146
	Ammonia-N	99.9	101	102		1.34
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	91.3	101		8.26
	Kjeldahl Nitrogen	103	98.6	98.8		0.162
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	96.5	98.0		1.47
	NO2NO3-N	98.5	98.7	101		1.86
EPA 365.1 Rev. 2.0	Total-P	96.2	103	98.7		3.60
	Total-P	97.8	98.0	100		2.30
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	107	100	103		2.25
SM 2120 B	Color (true)				0.975	
	Color (true)				4.93	
SM 2320 B-97	Total Alkalinity	101			0.236	
	Total Alkalinity	101			0.505	
SM 2540 C-97	TDS				3.85	
	TDS				3.82	
	TDS				4.63	
SM 4500 F-C-97	Fluoride	98.8	98.2	98.9		0.509
	Fluoride	96.0	95.9	96.6		0.524
SM 5310 B-00	Organic Carbon	98.6	97.5	98.0		0.272

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1793409, 1793410, 1793411, 1793412, 1793413, 1793414, 1793415
SM 2120 B / E31780	True Color measured at 450 nm	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408

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	04/27/2016			04/27/2016 16:13	Sima Feizi	1793395, 1793396, 1793397, 1793398, 1793399, 1793400
	04/27/2016			04/28/2016 10:23	Sima Feizi	1793401
EPA 300.0 Rev. 2.1	04/27/2016			05/04/2016	Elisa J Lutz	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
EPA 350.1 Rev. 2.0	04/27/2016			05/06/2016	Diana M. Turner	1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408
EPA 351.2 Rev. 2.0	04/27/2016	05/11/2016	Sofia Elnemr	05/12/2016	Christopher Armour	1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408
EPA 353.2 Rev. 2.0	04/27/2016			05/09/2016	Peter D. Kaus	1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408
EPA 365.1 Rev. 2.0	04/27/2016	05/10/2016	Vijayalakshmi Reddy	05/11/2016	Lipi Saha	1793402, 1793403, 1793404, 1793405, 1793406, 1793407
	04/27/2016	05/10/2016	Vijayalakshmi Reddy	05/16/2016	Lipi Saha	1793408
EPA 365.1 Rev. 2.0 dissolved	04/27/2016			04/27/2016 14:50	Julia Storbeck	1793411
	04/27/2016			04/27/2016 15:14	Julia Storbeck	1793413
	04/27/2016			04/27/2016 15:15	Julia Storbeck	1793414
	04/27/2016			04/27/2016 15:54	Julia Storbeck	1793409
	04/27/2016			04/27/2016 15:55	Julia Storbeck	1793410
	04/27/2016			04/27/2016 15:56	Julia Storbeck	1793412
	04/27/2016			04/27/2016 16:01	Julia Storbeck	1793415
SM 2120 B	04/27/2016			04/28/2016 10:51	Rochelle Y Jackson	1793401
	04/27/2016			04/28/2016 10:55	Rochelle Y Jackson	1793395
	04/27/2016			04/28/2016 10:56	Rochelle Y Jackson	1793396
	04/27/2016			04/28/2016 10:57	Rochelle Y Jackson	1793397, 1793398
	04/27/2016			04/28/2016 10:58	Rochelle Y Jackson	1793399
	04/27/2016			04/28/2016 10:59	Rochelle Y Jackson	1793400
SM 2320 B-97	04/27/2016			05/04/2016	Dale L. Simmons	1793395, 1793396, 1793397, 1793398
	04/27/2016			05/06/2016	Dale L. Simmons	1793399, 1793400, 1793401
SM 2540 C-97	04/27/2016			04/29/2016	Yijie Li	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
SM 2540 D-97	04/27/2016			04/29/2016	Yijie Li	1793395, 1793396, 1793397, 1793398, 1793399, 1793400, 1793401
SM 4500 F-C-97	04/27/2016			04/30/2016	Dale L. Simmons	1793395, 1793396, 1793397, 1793398
	04/27/2016			05/06/2016	Dale L. Simmons	1793399, 1793400, 1793401
SM 5310 B-00	04/27/2016			05/19/2016	Diana M. Turner	1793402, 1793403, 1793404, 1793405, 1793406, 1793407, 1793408