

Chemical Analysis Report

NW-DIST-2019-03-14-01

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

Event Description: **Bay Walton County Run**
Request ID: **RQ-2019-03-11-25**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 03-APR-2019 10:44

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 groups are included in this report: Metals and 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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Little Black Creek upstream of Black Creek

Collection Date/Time: 03/13/2019 13:00

Field ID: G3NW0200

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069728	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P360453	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P361005	
		Sulfate	0.55	I	mg SO4/L	P361011	
	SM 2120 B	Color (true)	89		PCU	P360446	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P360897	
	SM 2540 C-97	TDS	17	I	mg/L	P360771	
	SM 2540 D-97	TSS	2	I	mg/L	P360632	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360904	
2069734	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P360670	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28		mg N/L	P360711	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.055		mg N/L	P360697	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P360604	
	SM 5310 B-00	Organic Carbon	6.1		mg C/L	P360839	
2069740	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360478	
2069763	EPA 200.7 Rev. 4.4	Barium	5.8		ug/L	P360680	
		Calcium	0.83		mg/L	P360680	
		Iron	400		ug/L	P360680	
		Magnesium	0.37		mg/L	P360680	
		Potassium	0.30	U	mg/L	P360680	
		Sodium	1.6	I	mg/L	P360680	
		Zinc	5.0	U	ug/L	P360680	
		Aluminum	189		ug/L	P360680	
		Antimony	0.050	U	ug/L	P360680	
		Arsenic	0.22		ug/L	P360680	
		Boron**	7.0	I	ug/L	P360680	
		Cadmium	0.020	U	ug/L	P360680	
		Chromium	0.40	U	ug/L	P360680	
	EPA 200.8 Rev. 5.4	Copper	0.40	U	ug/L	P360680	
		Lead	0.21	I	ug/L	P360680	
		Nickel	0.50	U	ug/L	P360680	
		Selenium	0.20	U	ug/L	P360680	MS
		Silver	0.010	U	ug/L	P360680	
		Thallium	0.10	U	ug/L	P360680	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Black Creek upstream of Hwy 20

Collection Date/Time: 03/13/2019 12:35

Field ID: G3NW0148

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069746	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P360454	
	EPA 300.0 Rev. 2.1	Chloride	2.9		mg Cl/L	P361005	
		Sulfate	0.84		mg SO4/L	P361011	
	SM 2120 B	Color (true)	150		PCU	P360447	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P360897	
	SM 2540 C-97	TDS	29		mg/L	P360771	
	SM 2540 D-97	TSS	4	I	mg/L	P360632	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360904	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P360671	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P360712	
2069747	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P360698	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P360604	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P360839	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P360480	
	dissolved						

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Bay Branch upstream of Hwy 331

Collection Date/Time: 03/13/2019 13:45

Field ID: G3NW0171

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069729	EPA 180.1 Rev. 2.0	Turbidity	8.2		NTU	P360453	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P361005	
		Sulfate	1.2		mg SO4/L	P361011	
		Color (true)	130	A	PCU	P360446	
	SM 2320 B-97	Total Alkalinity	6.6		mg CaCO3/L	P360897	
	SM 2540 C-97	TDS	38		mg/L	P360771	
	SM 2540 D-97	TSS	3	I	mg/L	P360632	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360904	
2069735	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P360671	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35		mg N/L	P360711	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P360697	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P360604	
	SM 5310 B-00	Organic Carbon	7.4		mg C/L	P360839	
2069741	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P360478	
2069764	EPA 200.7 Rev. 4.4	Barium	10.7		ug/L	P360680	
		Calcium	3.17		mg/L	P360680	
		Iron	630		ug/L	P360680	
		Magnesium	0.77		mg/L	P360680	
		Potassium	0.34	I	mg/L	P360680	
		Sodium	2.2		mg/L	P360680	
		Zinc	6.3	I	ug/L	P360680	
	EPA 200.8 Rev. 5.4	Aluminum	319		ug/L	P360680	
		Antimony	0.050	U	ug/L	P360680	
		Arsenic	0.29		ug/L	P360680	
		Boron**	7.9	I	ug/L	P360680	
		Cadmium	0.020	U	ug/L	P360680	
		Chromium	0.40	I	ug/L	P360680	
		Copper	0.40	U	ug/L	P360680	
		Lead	0.34	I	ug/L	P360680	
		Nickel	0.50	U	ug/L	P360680	
		Selenium	0.20	U	ug/L	P360680	
		Silver	0.010	U	ug/L	P360680	
		Thallium	0.10	U	ug/L	P360680	
							MS

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Panther Creek upstream of SR280

Collection Date/Time: 03/13/2019 10:20

Field ID: G3NW0061

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069730	EPA 180.1 Rev. 2.0	Turbidity	8.4		NTU	P360453	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P361005	
		Sulfate	1.2		mg SO4/L	P361011	
		Color (true)	70		PCU	P360446	
	SM 2120 B	Total Alkalinity	2.1	I	mg CaCO3/L	P360897	
	SM 2540 C-97	TDS	23	I	mg/L	P360771	
	SM 2540 D-97	TSS	4	I	mg/L	P360632	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360904	
2069736	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P360671	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P360711	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P360697	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P360604	
	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P360839	
2069742	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P360478	
2069765	EPA 200.7 Rev. 4.4	Barium	12.1		ug/L	P360680	
		Calcium	1.24		mg/L	P360680	
		Iron	660		ug/L	P360680	
		Magnesium	0.60		mg/L	P360680	
		Potassium	0.31	I	mg/L	P360680	
		Sodium	2.0		mg/L	P360680	
		Zinc	5.0	U	ug/L	P360680	
	EPA 200.8 Rev. 5.4	Aluminum	443		ug/L	P360680	
		Antimony	0.050	U	ug/L	P360680	
		Arsenic	0.26		ug/L	P360680	
		Boron**	7.0	I	ug/L	P360680	
		Cadmium	0.020	U	ug/L	P360680	
		Chromium	0.53	I	ug/L	P360680	
		Copper	0.40	U	ug/L	P360680	
		Lead	0.35	I	ug/L	P360680	
		Nickel	0.50	U	ug/L	P360680	
		Selenium	0.20	U	ug/L	P360680	MS
		Silver	0.010	U	ug/L	P360680	
		Thallium	0.10	U	ug/L	P360680	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Seven Runs upstream of Hwy 81

Collection Date/Time: 03/13/2019 11:00

Field ID: G3NW0116

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069731	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P360454	
	EPA 300.0 Rev. 2.1	Chloride	2.2		mg Cl/L	P361005	
		Sulfate	1.8		mg SO4/L	P361011	
		Color (true)	80		PCU	P360446	
	SM 2320 B-97	Total Alkalinity	0.65	I	mg CaCO3/L	P360897	
	SM 2540 C-97	TDS	19	I	mg/L	P360771	
	SM 2540 D-97	TSS	3	I	mg/L	P360632	
2069737	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360904	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P360671	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26		mg N/L	P360711	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.058		mg N/L	P360697	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P360604	
2069743	SM 5310 B-00	Organic Carbon	5.9		mg C/L	P360839	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360480	
2069766	EPA 200.7 Rev. 4.4	Barium	6.9		ug/L	P360680	
		Calcium	1.14		mg/L	P360680	
		Iron	340		ug/L	P360680	
		Magnesium	0.44		mg/L	P360680	
		Potassium	0.30	U	mg/L	P360680	
		Sodium	1.4	I	mg/L	P360680	
		Zinc	5.0	U	ug/L	P360680	
	EPA 200.8 Rev. 5.4	Aluminum	266		ug/L	P360680	
		Antimony	0.050	U	ug/L	P360680	
		Arsenic	0.14	I	ug/L	P360680	
		Boron**	7.1	I	ug/L	P360680	
		Cadmium	0.020	U	ug/L	P360680	
		Chromium	0.40	U	ug/L	P360680	
		Copper	2.85		ug/L	P360680	
		Lead	0.24	I	ug/L	P360680	
		Nickel	0.50	U	ug/L	P360680	
		Selenium	0.20	U	ug/L	P360680	MS
		Silver	0.010	U	ug/L	P360680	
		Thallium	0.10	U	ug/L	P360680	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Otter Creek upstream of Otter Creek Bridge Rd. Collection Date/Time: 03/13/2019 11:40

Field ID: G3NW0133

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069732	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P360454	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P361005	
		Sulfate	6.9		mg SO4/L	P361011	
		Color (true)	180		PCU	P360446	
	SM 2320 B-97	Total Alkalinity	9.4		mg CaCO3/L	P360897	
	SM 2540 C-97	TDS	78		mg/L	P360771	
	SM 2540 D-97	TSS	4	I	mg/L	P360632	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360904	
2069738	EPA 350.1 Rev. 2.0	Ammonia-N	0.87		mg N/L	P360671	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P360711	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P360698	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P360604	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P360839	
2069744	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360480	
2069767	EPA 200.7 Rev. 4.4	Barium	11.5		ug/L	P360680	
		Calcium	6.49		mg/L	P360680	
		Iron	770		ug/L	P360680	
		Magnesium	1.48		mg/L	P360680	
		Potassium	2.9		mg/L	P360680	
		Sodium	12.1		mg/L	P360680	
		Zinc	5.0	U	ug/L	P360680	
	EPA 200.8 Rev. 5.4	Aluminum	232		ug/L	P360680	
		Antimony	0.050	U	ug/L	P360680	
		Arsenic	0.39		ug/L	P360680	
		Boron**	63.1		ug/L	P360680	
		Cadmium	0.020	U	ug/L	P360680	
		Chromium	0.41	I	ug/L	P360680	
		Copper	0.40	U	ug/L	P360680	
		Lead	0.22	I	ug/L	P360680	
		Nickel	0.50	U	ug/L	P360680	
		Selenium	0.21	I	ug/L	P360680	MS
		Silver	0.010	U	ug/L	P360680	
		Thallium	0.10	U	ug/L	P360680	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Pine Log Creek upstream of Hwy 79

Collection Date/Time: 03/13/2019 12:10

Field ID: G3NW0153

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069733	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P360454	
	EPA 300.0 Rev. 2.1	Chloride	2.4		mg Cl/L	P361005	
		Sulfate	0.70		mg SO4/L	P361011	
		Color (true)	190		PCU	P360446	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P360897	
	SM 2540 C-97	TDS	27		mg/L	P360771	
	SM 2540 D-97	TSS	3	I	mg/L	P360632	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360904	
2069739	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P360671	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P360711	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P360698	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P360604	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P360839	
2069745	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360480	
2069768	EPA 200.7 Rev. 4.4	Barium	4.6		ug/L	P360680	
		Calcium	1.59		mg/L	P360680	
		Iron	400		ug/L	P360680	
		Magnesium	0.37		mg/L	P360680	
		Potassium	0.30	U	mg/L	P360680	
		Sodium	1.5	I	mg/L	P360680	
		Zinc	5.0	U	ug/L	P360680	
	EPA 200.8 Rev. 5.4	Aluminum	266		ug/L	P360680	
		Antimony	0.050	U	ug/L	P360680	
		Arsenic	0.26		ug/L	P360680	
		Boron**	7.0	I	ug/L	P360680	
		Cadmium	0.020	U	ug/L	P360680	
		Chromium	0.40	U	ug/L	P360680	
		Copper	0.40	U	ug/L	P360680	
		Lead	0.30	I	ug/L	P360680	
		Nickel	0.50	U	ug/L	P360680	
		Selenium	0.20	U	ug/L	P360680	MS
		Silver	0.010	U	ug/L	P360680	
		Thallium	0.10	U	ug/L	P360680	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360453

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360454

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360680

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360680

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361005

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361011

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: P360670

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360671

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360711

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360712

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360697

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360698

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360604

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360478

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360480

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P360446

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P360447

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P360897

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

Reference Method: SM 2540 C-97
Batch ID: P360771

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P360632

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P360904

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P360839

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	99.7		P	85 - 115
Calcium	102		P	85 - 115
Iron	104		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	107		P	85 - 115
Sodium	102		P	85 - 115
Zinc	98.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	93.8		P	85 - 115
Antimony	95.1		P	85 - 115
Arsenic	98.7		P	85 - 115
Boron	101		P	85 - 115
Cadmium	93.8		P	85 - 115
Chromium	89.1		P	85 - 115
Copper	101		P	85 - 115
Lead	92.1		P	85 - 115
Nickel	102		P	85 - 115
Selenium	96.0		P	85 - 115
Silver	100		P	85 - 115
Thallium	94.9		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361005

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361011

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360670

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360671

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360711

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360712

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: P360697

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360698

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360604

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360478

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360480

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

Reference Method: SM 2120 B
Batch ID: P360446

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P360447

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P360897

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P360904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360839

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2070118	Barium	102	101	P/P	80 - 120
2070118	Calcium	102		P	80 - 120
2070118	Iron	110	106	P/P	80 - 120
2070118	Magnesium	112	108	P/P	80 - 120
2070118	Potassium	108	108	P/P	80 - 120
2070118	Sodium	102		P	80 - 120
2070118	Zinc	102	101	P/P	80 - 120
2070228	Barium	101		P	80 - 120
2070228	Calcium	100		P	80 - 120
2070228	Iron	108		P	80 - 120
2070228	Magnesium	99.7		P	80 - 120
2070228	Potassium	103		P	80 - 120
2070228	Sodium	103		P	80 - 120
2070228	Zinc	98.9		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2070118	Aluminum	93.5	92.6	P/P	80 - 120
2070118	Antimony	94.7	94.4	P/P	80 - 120
2070118	Arsenic	94.8	94.3	P/P	80 - 120
2070118	Boron	93.2	93.3	P/P	80 - 120
2070118	Cadmium	96.8	94.3	P/P	80 - 120
2070118	Chromium	89.1	88.6	P/P	80 - 120
2070118	Copper	98.8	97.9	P/P	80 - 120
2070118	Lead	92.6	90.6	P/P	80 - 120
2070118	Nickel	99.1	100	P/P	80 - 120
2070118	Selenium	93.7	93.4	P/P	80 - 120
2070118	Silver	99.0	98.8	P/P	80 - 120
2070118	Thallium	96.8	95.0	P/P	80 - 120
2070228	Aluminum	92.4		P	80 - 120
2070228	Antimony	94.8		P	80 - 120
2070228	Arsenic	96.5		P	80 - 120
2070228	Boron	93.5		P	80 - 120
2070228	Cadmium	94.8		P	80 - 120
2070228	Chromium	88.3		P	80 - 120
2070228	Copper	94.1		P	80 - 120
2070228	Lead	92.2		P	80 - 120
2070228	Nickel	95.4		P	80 - 120
2070228	Selenium	73.0		F	80 - 120
2070228	Silver	98.7		P	80 - 120
2070228	Thallium	96.0		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361005

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069714	Chloride	94.9		P	90 - 110
2069732	Chloride	101		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361011

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069714	Sulfate	97.4		P	90 - 110
2069732	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360670

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069734	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360671

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069736	Ammonia-N	101	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069747	Kjeldahl Nitrogen	106	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360697

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069684	NO2NO3-N	95.7	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069738	NO2NO3-N	96.5	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360604

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069789	Total-P	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069742	O-Phosphate-P	95.7	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360480

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069748	O-Phosphate-P	98.9	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P360904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069509	Fluoride	96.7	96.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360839

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069806	Organic Carbon	96.2	96.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069680	Turbidity	8.88	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069788	Turbidity	1.47	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2070118	Barium	1.30	Spike	P	0 - 20
2070118	Calcium	0.00327	Spike	P	0 - 20
2070118	Iron	2.94	Spike	P	0 - 20
2070118	Magnesium	2.29	Spike	P	0 - 20
2070118	Potassium	0.464	Spike	P	0 - 20
2070118	Sodium	0.471	Spike	P	0 - 20
2070118	Zinc	1.47	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2070118	Aluminum	0.843	Spike	P	0 - 20
2070118	Antimony	0.359	Spike	P	0 - 20
2070118	Arsenic	0.569	Spike	P	0 - 20
2070118	Boron	0.135	Spike	P	0 - 20
2070118	Cadmium	2.62	Spike	P	0 - 20
2070118	Chromium	0.495	Spike	P	0 - 20
2070118	Copper	0.859	Spike	P	0 - 20
2070118	Lead	2.15	Spike	P	0 - 20
2070118	Nickel	0.938	Spike	P	0 - 20
2070118	Selenium	0.307	Spike	P	0 - 20
2070118	Silver	0.287	Spike	P	0 - 20
2070118	Thallium	1.90	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069714	Chloride	0.663	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360670

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069734	Ammonia-N	0.0535	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069736	Ammonia-N	3.09	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069704	Kjeldahl Nitrogen	2.63	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069747	Kjeldahl Nitrogen	2.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360697

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069684	NO2NO3-N	2.05	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069738	NO2NO3-N	0.972	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360604

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069789	Total-P	0.255	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069742	O-Phosphate-P	1.49	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360480

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069748	O-Phosphate-P	2.00	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069729	Color (true)	0.744	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069788	Color (true)	1.62	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P360897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069509	Total Alkalinity	0.102	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P360771

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069788	TDS	1.06	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P360632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069788	TSS	7.41	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P360904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069509	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P360839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069806	Organic Carbon	0.0998	Spike	P	0 - 20

Quality Assurance Report

Precision

* 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: A90016

Included Lab Sample IDs: 2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115
Color (true)	102	102	P/P	90 - 115
Color (true)	103	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A90017

Included Lab Sample IDs: 2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A90024

Included Lab Sample IDs: 2069740, 2069741, 2069742, 2069743, 2069744, 2069745, 2069748

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.5	P/P	90 - 110
O-Phosphate-P	98.7	98.8	P/P	90 - 110
O-Phosphate-P	98.8	98.9	P/P	90 - 110
O-Phosphate-P	99.5	99.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A90071

Included Lab Sample IDs: 2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	96.3	P/P	90 - 110
Chloride	96.3	99.2	P/P	90 - 110
Sulfate	101	96.6	P/P	90 - 110
Sulfate	96.6	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90092

Included Lab Sample IDs: 2069737

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.9	98.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90097

Included Lab Sample IDs: 2069734, 2069735, 2069736, 2069737, 2069738, 2069739, 2069747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	103	P/P	90 - 110
Ammonia-N	101	101	P/P	90 - 110
Ammonia-N	103	102	P/P	90 - 110
Ammonia-N	103	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90099

Included Lab Sample IDs: 2069734, 2069735, 2069736, 2069737, 2069738, 2069739, 2069747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	95.5	P/P	90 - 110
NO2NO3-N	95.5	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90127

Included Lab Sample IDs: 2069734, 2069735, 2069736, 2069737, 2069738, 2069739, 2069747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.5	101	P/P	90 - 110
Kjeldahl Nitrogen	97.4	96.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A90140

Included Lab Sample IDs: 2069763, 2069764, 2069765, 2069766, 2069767, 2069768

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Barium	102	101	P/P	95 - 105
Calcium	101	101	P/P	95 - 105
Calcium	101	100	P/P	90 - 110
Iron	101	101	P/P	95 - 105
Iron	101	101	P/P	90 - 110
Magnesium	101	102	P/P	95 - 105
Magnesium	102	102	P/P	90 - 110
Potassium	100	100	P/P	90 - 110
Potassium	99.3	100	P/P	95 - 105
Sodium	102	103	P/P	90 - 110
Sodium	99.7	102	P/P	95 - 105
Zinc	101	101	P/P	90 - 110
Zinc	102	101	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A90156

Included Lab Sample IDs: 2069734, 2069735, 2069736, 2069737, 2069738, 2069739, 2069747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.7	96.0	P/P	90 - 110
Organic Carbon	96.0	94.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90170

Included Lab Sample IDs: 2069763, 2069764, 2069765, 2069766, 2069767, 2069768

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	93.9	94.5	P/P	90 - 110
Aluminum	94.5	95.2	P/P	90 - 110
Antimony	93.8	94.7	P/P	90 - 110
Antimony	94.7	94.8	P/P	90 - 110
Arsenic	96.0	96.2	P/P	90 - 110
Arsenic	96.2	93.9	P/P	90 - 110
Boron	91.2	94.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90170

Included Lab Sample IDs: 2069763, 2069764, 2069765, 2069766, 2069767, 2069768

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	93.7	94.2	P/P	90 - 110
Cadmium	94.2	95.7	P/P	90 - 110
Chromium	92.5	93.4	P/P	90 - 110
Chromium	93.4	94.6	P/P	90 - 110
Lead	92.1	93.1	P/P	90 - 110
Lead	93.1	94.0	P/P	90 - 110
Selenium	94.4	94.7	P/P	90 - 110
Selenium	94.7	95.3	P/P	90 - 110
Silver	100	101	P/P	90 - 110
Silver	98.1	100	P/P	90 - 110
Thallium	90.3	91.2	P/P	90 - 110
Thallium	91.2	92.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A90183

Included Lab Sample IDs: 2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746

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

Reference Method: SM 4500 F-C-97

Run ID: A90183

Included Lab Sample IDs: 2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90185

Included Lab Sample IDs: 2069734, 2069735, 2069736, 2069738, 2069739, 2069747

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90207

Included Lab Sample IDs: 2069763, 2069764, 2069765, 2069766, 2069767, 2069768

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Boron	97.0	94.6	P/P	90 - 110
Copper	96.8	93.9	P/P	90 - 110
Copper	98.1	96.8	P/P	90 - 110
Nickel	97.5	94.2	P/P	90 - 110
Nickel	98.4	97.5	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					8.88	
	Turbidity					1.47	
EPA 200.7 Rev. 4.4	Barium	99.7	102	101	101		1.30
	Calcium	102	102	100			0.0032
	Iron	104	110	106	108		2.94
	Magnesium	109	112	108	99.7		2.29
	Potassium	107	108	108	103		0.464
	Sodium	102	102	103			0.471
	Zinc	98.9	102	101	98.9		1.47
EPA 200.8 Rev. 5.4	Aluminum	93.8	93.5	92.6	92.4		0.843
	Antimony	95.1	94.7	94.4	94.8		0.359
	Arsenic	98.7	94.8	94.3	96.5		0.569
	Boron	101	93.2	93.3	93.5		0.135
	Cadmium	93.8	96.8	94.3	94.8		2.62
	Chromium	89.1	89.1	88.6	88.3		0.495
	Copper	101	98.8	97.9	94.1		0.859
	Lead	92.1	92.2	92.6	90.6		2.15
	Nickel	102	99.1	100	95.4		0.938
	Selenium	96.0	93.7	93.4	73.0		0.307
	Silver	100	99.0	98.8	98.7		0.287
	Thallium	94.9	96.8	95.0	96.0		1.90
EPA 300.0 Rev. 2.1	Chloride	99.7	94.9	101		0.663	
	Sulfate	99.9	97.4	100			
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	102	102			0.0535
	Ammonia-N	100	101	98.0			3.09
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107					2.63
	Kjeldahl Nitrogen	103	106	109			2.45
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	97.5	95.7	98.7			2.05
	NO ₂ NO ₃ -N	99.0	96.5	98.0			0.972
EPA 365.1 Rev. 2.0	Total-P	103	101	101			0.255
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	95.7	97.2			1.49
	O-Phosphate-P	98.2	98.9	101			2.00
SM 2120 B	Color (true)	102				0.744	
	Color (true)	102				1.62	
SM 2320 B-97	Total Alkalinity	102				0.102	
SM 2540 C-97	TDS					1.06	
SM 2540 D-97	TSS					7.41	
SM 4500 F-C-97	Fluoride	99.0	96.7	96.7			0.0
SM 5310 B-00	Organic Carbon	97.7	96.2	96.3			0.0998

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2069763, 2069764, 2069765, 2069766, 2069767, 2069768
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2069763, 2069764, 2069765, 2069766, 2069767, 2069768
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2069734, 2069735, 2069736, 2069737, 2069738, 2069739, 2069747
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2069734, 2069735, 2069736, 2069737, 2069738, 2069739, 2069747
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2069734, 2069735, 2069736, 2069737, 2069738, 2069739, 2069747
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2069734, 2069735, 2069736, 2069737, 2069738, 2069739, 2069747
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2069740, 2069741, 2069742, 2069743, 2069744, 2069745, 2069748
SM 2120 B / E31780	True Color measured at 450 nm	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2069734, 2069735, 2069736, 2069737, 2069738, 2069739, 2069747

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	03/14/2019			03/14/2019 17:11	Adrian Shelby	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746
EPA 200.7 Rev. 4.4	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/20/2019 17:12	Vijayalakshmi Reddy	2069763
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/20/2019 17:15	Vijayalakshmi Reddy	2069764
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/20/2019 17:17	Vijayalakshmi Reddy	2069765
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/20/2019 17:20	Vijayalakshmi Reddy	2069766
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/20/2019 17:41	Vijayalakshmi Reddy	2069767
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/20/2019 17:45	Vijayalakshmi Reddy	2069768
EPA 200.8 Rev. 5.4	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/21/2019 18:55	Robert K Palmer	2069763
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/21/2019 19:05	Robert K Palmer	2069764
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/21/2019 19:14	Robert K Palmer	2069765
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/21/2019 19:24	Robert K Palmer	2069766
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/21/2019 19:33	Robert K Palmer	2069767
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/21/2019 20:02	Robert K Palmer	2069768
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/22/2019 14:16	Robert K Palmer	2069763
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/22/2019 14:23	Robert K Palmer	2069764
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/22/2019 14:29	Robert K Palmer	2069765
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/22/2019 14:35	Robert K Palmer	2069766
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/22/2019 14:42	Robert K Palmer	2069767
	03/14/2019	03/19/2019 15:45	Elliott D. Healy	03/22/2019 15:00	Robert K Palmer	2069768
	03/14/2019			03/21/2019 15:40	Lipi Saha	2069732
	03/14/2019			03/21/2019 17:29	Lipi Saha	2069728
EPA 300.0 Rev. 2.1	03/14/2019			03/21/2019 17:41	Lipi Saha	2069729
	03/14/2019			03/21/2019 17:53	Lipi Saha	2069730
	03/14/2019			03/21/2019 18:05	Lipi Saha	2069731
	03/14/2019			03/21/2019 18:17	Lipi Saha	2069733
	03/14/2019			03/21/2019 18:29	Lipi Saha	2069746
	03/14/2019			03/19/2019 09:58	Ping Hua	2069734
	03/14/2019			03/19/2019 10:25	Ping Hua	2069736
	03/14/2019			03/19/2019 10:30	Ping Hua	2069735
	03/14/2019			03/19/2019 10:37	Ping Hua	2069737
	03/14/2019			03/19/2019 10:42	Ping Hua	2069747
EPA 350.1 Rev. 2.0	03/14/2019			03/19/2019 13:01	Ping Hua	2069738
	03/14/2019			03/19/2019 13:03	Ping Hua	2069739
	03/14/2019	03/19/2019 12:20	Adrian Shelby	03/20/2019 10:12	Joseph Suarez	2069747
	03/14/2019	03/19/2019 12:25	Adrian Shelby	03/20/2019 09:54	Joseph Suarez	2069734
	03/14/2019	03/19/2019 12:25	Adrian Shelby	03/20/2019 09:55	Joseph Suarez	2069735
	03/14/2019	03/19/2019 12:25	Adrian Shelby	03/20/2019 10:00	Joseph Suarez	2069736
	03/14/2019	03/19/2019 12:25	Adrian Shelby	03/20/2019 10:02	Joseph Suarez	2069737
EPA 351.2 Rev. 2.0	03/14/2019	03/19/2019 12:25	Adrian Shelby	03/20/2019 10:03	Joseph Suarez	2069738

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 351.2 Rev. 2.0	03/14/2019	03/19/2019 12:25	Adrian Shelby	03/20/2019 10:05	Joseph Suarez	2069739
EPA 353.2 Rev. 2.0	03/14/2019			03/19/2019 13:45	Lauren Lees	2069734
	03/14/2019			03/19/2019 13:46	Lauren Lees	2069735
	03/14/2019			03/19/2019 13:48	Lauren Lees	2069736
	03/14/2019			03/19/2019 13:49	Lauren Lees	2069737
	03/14/2019			03/19/2019 13:57	Lauren Lees	2069738
	03/14/2019			03/19/2019 14:03	Lauren Lees	2069739
	03/14/2019			03/19/2019 14:04	Lauren Lees	2069747
EPA 365.1 Rev. 2.0	03/14/2019	03/18/2019 14:30	Sima Feizi	03/19/2019 10:20	Beverly Y. Sanders	2069737
	03/14/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:00	Beverly Y. Sanders	2069734
	03/14/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:08	Beverly Y. Sanders	2069735
	03/14/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:09	Beverly Y. Sanders	2069736
	03/14/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:10	Beverly Y. Sanders	2069738
	03/14/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:11	Beverly Y. Sanders	2069739
	03/14/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 14:12	Beverly Y. Sanders	2069747
EPA 365.1 Rev. 2.0 dissolved	03/14/2019			03/14/2019 15:23	Jhamieka S. Greenwood	2069742
	03/14/2019			03/14/2019 15:36	Jhamieka S. Greenwood	2069748
	03/14/2019			03/14/2019 16:33	Jhamieka S. Greenwood	2069740
	03/14/2019			03/14/2019 16:38	Jhamieka S. Greenwood	2069741
	03/14/2019			03/14/2019 16:40	Jhamieka S. Greenwood	2069743
	03/14/2019			03/14/2019 16:41	Jhamieka S. Greenwood	2069744
	03/14/2019			03/14/2019 16:42	Jhamieka S. Greenwood	2069745
SM 2120 B	03/14/2019			03/14/2019 15:58	Mariam Hanna	2069728
	03/14/2019			03/14/2019 16:00	Mariam Hanna	2069729
	03/14/2019			03/14/2019 16:01	Mariam Hanna	2069730, 2069731
	03/14/2019			03/14/2019 16:07	Mariam Hanna	2069746
	03/14/2019			03/14/2019 16:52	Mariam Hanna	2069732, 2069733
SM 2320 B-97	03/14/2019			03/21/2019 19:18	Dale L. Simmons	2069728
	03/14/2019			03/21/2019 19:29	Dale L. Simmons	2069729
	03/14/2019			03/21/2019 19:41	Dale L. Simmons	2069730
	03/14/2019			03/21/2019 19:54	Dale L. Simmons	2069731
	03/14/2019			03/21/2019 20:07	Dale L. Simmons	2069732
	03/14/2019			03/21/2019 20:17	Dale L. Simmons	2069733
	03/14/2019			03/21/2019 20:28	Dale L. Simmons	2069746
SM 2540 C-97	03/14/2019			03/15/2019 17:15	Mariam Hanna	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746
SM 2540 D-97	03/14/2019			03/15/2019 17:15	Mariam Hanna	2069728, 2069729, 2069730, 2069731, 2069732, 2069733, 2069746
SM 4500 F-C-97	03/14/2019			03/21/2019 19:18	Dale L. Simmons	2069728
	03/14/2019			03/21/2019 19:29	Dale L. Simmons	2069729

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	03/14/2019			03/21/2019 19:41	Dale L. Simmons	2069730
	03/14/2019			03/21/2019 19:54	Dale L. Simmons	2069731
	03/14/2019			03/21/2019 20:07	Dale L. Simmons	2069732
	03/14/2019			03/21/2019 20:17	Dale L. Simmons	2069733
	03/14/2019			03/21/2019 20:28	Dale L. Simmons	2069746
SM 5310 B-00	03/14/2019			03/20/2019 11:57	Julia Storbeck	2069734
	03/14/2019			03/21/2019 01:02	Julia Storbeck	2069739
	03/14/2019			03/21/2019 01:43	Julia Storbeck	2069747
	03/14/2019			03/21/2019 12:10	Julia Storbeck	2069735
	03/14/2019			03/21/2019 12:23	Julia Storbeck	2069736
	03/14/2019			03/21/2019 12:36	Julia Storbeck	2069737
	03/14/2019			03/21/2019 12:49	Julia Storbeck	2069738