

Chemical Analysis Report

NW-DIST-2019-01-29-02

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

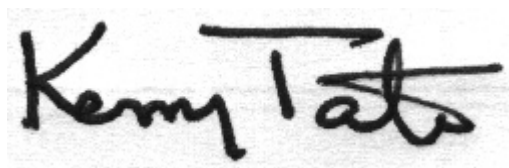
Event Description: **Defuniak Run**
Request ID: **RQ-2019-01-28-08**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 12-FEB-2019 11:41

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: HUCKLEBERRY CREEK

Collection Date/Time: 01/28/2019 10:55

Field ID: G3NW0135

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057471	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P357995	
	EPA 300.0 Rev. 2.1	Chloride	3.6		mg Cl/L	P358367	
		Sulfate	1.2		mg SO4/L	P358369	
		Color (true)	44		PCU	P358000	
	SM 2320 B-97	Total Alkalinity	3.7		mg CaCO3/L	P358270	
	SM 2540 C-97	TDS	21	I	mg/L	P358343	
	SM 2540 D-97	TSS	2	I	mg/L	P358332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358273	
2057474	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P358188	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P358126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P358040	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P358096	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P358092	
2057477	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358007	
2057509	EPA 200.7 Rev. 4.4	Barium	10.6		ug/L	P358142	
		Calcium	1.91		mg/L	P358142	
		Iron	570		ug/L	P358142	
		Magnesium	0.90		mg/L	P358142	
		Potassium	0.86	I	mg/L	P358142	
		Sodium	1.7	I	mg/L	P358142	
		Zinc	5.0	U	ug/L	P358142	
	EPA 200.8 Rev. 5.4	Aluminum	133		ug/L	P358142	
		Antimony	0.050	U	ug/L	P358142	
		Arsenic	0.28		ug/L	P358142	
		Boron**	8.1		ug/L	P358142	
		Cadmium	0.020	U	ug/L	P358142	
		Chromium	0.40	U	ug/L	P358142	
		Copper	0.40	U	ug/L	P358142	
		Lead	0.20	U	ug/L	P358142	
		Nickel	0.50	U	ug/L	P358142	
		Selenium	0.20	U	ug/L	P358142	
		Silver	0.010	U	ug/L	P358142	
		Thallium	0.10	U	ug/L	P358142	

Ref. Method and Comment:

SM 2540 C-97: 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.

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, potassium and sodium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: HUCKLEBERRY CREEK

Collection Date/Time: 01/28/2019 11:00

Field ID: G3NW0135_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057472	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P357995	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P358367	
		Sulfate	1.2		mg SO4/L	P358369	
	SM 2120 B	Color (true)	44		PCU	P358000	
	SM 2320 B-97	Total Alkalinity	3.6		mg CaCO3/L	P358270	
	SM 2540 C-97	TDS	21	I	mg/L	P358343	
	SM 2540 D-97	TSS	2	I	mg/L	P358332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358273	
2057475	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P358188	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P358126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P358040	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P358096	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P358092	
2057478	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358007	
2057510	EPA 200.7 Rev. 4.4	Barium	10.6		ug/L	P358142	
		Calcium	1.91		mg/L	P358142	
		Iron	570		ug/L	P358142	
		Magnesium	0.89		mg/L	P358142	
		Potassium	0.85	I	mg/L	P358142	
		Sodium	1.7	I	mg/L	P358142	
		Zinc	5.0	U	ug/L	P358142	
	EPA 200.8 Rev. 5.4	Aluminum	127		ug/L	P358142	
		Antimony	0.050	U	ug/L	P358142	
		Arsenic	0.28		ug/L	P358142	
		Boron**	7.9	I	ug/L	P358142	
		Cadmium	0.020	U	ug/L	P358142	
		Chromium	0.40	U	ug/L	P358142	
		Copper	0.40	U	ug/L	P358142	
		Lead	0.20	U	ug/L	P358142	
		Nickel	0.50	U	ug/L	P358142	
		Selenium	0.20	U	ug/L	P358142	
		Silver	0.010	U	ug/L	P358142	
		Thallium	0.10	U	ug/L	P358142	

Ref. Method and Comment:

SM 2540 C-97: 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.

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, potassium and sodium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: HUCKLEBERRY CREEK

Collection Date/Time: 01/28/2019 11:05

Field ID: FB_01282019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057489	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P357995	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P358368	
		Sulfate	0.20	U	mg SO4/L	P358370	
		Color (true)	2.5	U	PCU	P358001	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P358270	
	SM 2540 C-97	TDS	15	U	mg/L	P358342	
	SM 2540 D-97	TSS	2	U	mg/L	P358331	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358273	
2057490	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P358204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P358126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P358040	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P358155	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P358092	
2057491	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358008	
2057512	EPA 200.7 Rev. 4.4	Barium	1.0	U	ug/L	P358142	
		Calcium	0.075	U	mg/L	P358142	
		Iron	30	U	ug/L	P358142	
		Magnesium	0.040	U	mg/L	P358142	
		Potassium	0.30	U	mg/L	P358142	
		Sodium	0.50	U	mg/L	P358142	
		Zinc	5.0	U	ug/L	P358142	
		Aluminum	5.0	U	ug/L	P358142	
	EPA 200.8 Rev. 5.4	Antimony	0.050	U	ug/L	P358142	
		Arsenic	0.050	U	ug/L	P358142	
		Boron**	2.0	U	ug/L	P358142	
		Cadmium	0.020	U	ug/L	P358142	
		Chromium	0.40	U	ug/L	P358142	
		Copper	0.40	U	ug/L	P358142	
		Lead	0.20	U	ug/L	P358142	
		Nickel	0.50	U	ug/L	P358142	
		Selenium	0.20	U	ug/L	P358142	
		Silver	0.010	U	ug/L	P358142	
		Thallium	0.10	U	ug/L	P358142	

Ref. Method and Comment:

SM 2540 D-97: 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.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, potassium and sodium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

**Sample Location: EIGHTMILE CREEK UPSTREAM OF CR 181
(SOUTH OF)**

Collection Date/Time: 01/28/2019 11:40

Field ID: G3NW0136

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057473	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P357995	
	EPA 300.0 Rev. 2.1	Chloride	2.9		mg Cl/L	P358367	
		Sulfate	0.69		mg SO4/L	P358369	
	SM 2120 B	Color (true)	81		PCU	P358000	
	SM 2320 B-97	Total Alkalinity	7.9		mg CaCO3/L	P358270	
	SM 2540 C-97	TDS	35		mg/L	P358343	
	SM 2540 D-97	TSS	2	I	mg/L	P358332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358273	
2057476	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P358188	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P358126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.092		mg N/L	P358040	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P358096	
	SM 5310 B-00	Organic Carbon	7.7		mg C/L	P358092	
2057479	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358007	
2057511	EPA 200.7 Rev. 4.4	Barium	10.3		ug/L	P358142	
		Calcium	4.22		mg/L	P358142	
		Iron	350		ug/L	P358142	
		Magnesium	1.04		mg/L	P358142	
		Potassium	0.35	I	mg/L	P358142	
		Sodium	1.4	I	mg/L	P358142	
		Zinc	5.0	U	ug/L	P358142	
	EPA 200.8 Rev. 5.4	Aluminum	281		ug/L	P358142	
		Antimony	0.050	U	ug/L	P358142	
		Arsenic	0.24		ug/L	P358142	
		Boron**	6.2	I	ug/L	P358142	
		Cadmium	0.020	U	ug/L	P358142	
		Chromium	0.43	I	ug/L	P358142	
		Copper	0.40	U	ug/L	P358142	
		Lead	0.20	U	ug/L	P358142	
		Nickel	0.50	U	ug/L	P358142	
		Selenium	0.20	U	ug/L	P358142	
		Silver	0.010	U	ug/L	P358142	
		Thallium	0.10	U	ug/L	P358142	

Ref. Method and Comment:

SM 2540 C-97: 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.

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, potassium and sodium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for boron are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: CANEY CREEK ABOVE HWY 2A

Collection Date/Time: 01/28/2019 12:15

Field ID: G4NW0397

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057480	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P357995	
	EPA 300.0 Rev. 2.1	Chloride	5.1		mg Cl/L	P358367	
		Sulfate	0.82		mg SO4/L	P358369	
	SM 2120 B	Color (true)	38		PCU	P358000	
	SM 2320 B-97	Total Alkalinity	6.0		mg CaCO3/L	P358270	
	SM 2540 C-97	TDS	24	I	mg/L	P358343	
	SM 2540 D-97	TSS	2	I	mg/L	P358332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358273	
2057483	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P358188	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P358126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.37		mg N/L	P358040	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P358096	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P358092	
2057486	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P358007	

Ref. Method and Comment:

SM 2540 C-97: 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.

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

Sample Location: TURKEY CREEK ABOVE WILLAMS RD

Collection Date/Time: 01/28/2019 12:40

Field ID: G4NW0409

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057481	EPA 180.1 Rev. 2.0	Turbidity	6.7	A	NTU	P357995	
	EPA 300.0 Rev. 2.1	Chloride	4.7		mg Cl/L	P358368	
		Sulfate	1.4		mg SO4/L	P358370	
	SM 2120 B	Color (true)	43		PCU	P358000	
	SM 2320 B-97	Total Alkalinity	3.0		mg CaCO3/L	P358270	
	SM 2540 C-97	TDS	20	I	mg/L	P358343	
	SM 2540 D-97	TSS	7	I	mg/L	P358332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358273	
2057484	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P358188	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P358126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.46		mg N/L	P358040	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P358155	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P358092	
2057487	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P358007	

Ref. Method and Comment:

SM 2540 C-97: 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.

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

Sample Location: GUM CREEK

Collection Date/Time: 01/28/2019 13:30

Field ID: G4NW0382

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2057482	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P357995	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P358368	
		Sulfate	0.84		mg SO4/L	P358370	
	SM 2120 B	Color (true)	63		PCU	P358001	
	SM 2320 B-97	Total Alkalinity	1.5	I	mg CaCO3/L	P358270	
	SM 2540 C-97	TDS	22	IA	mg/L	P358343	
	SM 2540 D-97	TSS	2	IA	mg/L	P358332	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P358273	
2057485	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P358204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32		mg N/L	P358126	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.38		mg N/L	P358040	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P358155	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P358092	
2057488	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P358008	

Ref. Method and Comment:

SM 2540 C-97: 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.

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: P357995

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P358142

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: P358142

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: P358367

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358368

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358369

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358370

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358188

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358204

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358126

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358040

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358096

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358155

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358007

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358008

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: P358000

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P358001

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P358270

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

Reference Method: SM 2540 C-97
Batch ID: P358342

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P358343

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P358331

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P358332

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P358273

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P358092

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: P358142

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	104		P	85 - 115
Iron	105		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	103		P	85 - 115
Sodium	101		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P358142

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	105		P	85 - 115
Boron	104		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	98.5		P	85 - 115
Copper	103		P	85 - 115
Lead	106		P	85 - 115
Nickel	103		P	85 - 115
Selenium	99.7		P	85 - 115
Silver	102		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358367

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358368

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358369

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358370

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358188

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358204

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358126

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: P358040

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358096

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358155

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358007

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358008

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

Reference Method: SM 2120 B
Batch ID: P358000

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.0		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2120 B
Batch ID: P358001

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.7		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P358270

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

Reference Method: SM 4500 F-C-97
Batch ID: P358273

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.2		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P358092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P358142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057518	Barium	102		P	80 - 120
2057518	Iron	107		P	80 - 120
2057518	Magnesium	103		P	80 - 120
2057518	Potassium	102		P	80 - 120
2057518	Sodium	97.4		P	80 - 120
2057518	Zinc	105		P	80 - 120
2057636	Barium	109	109	P/P	80 - 120
2057636	Calcium	115		P	80 - 120
2057636	Iron	114	119	P/P	80 - 120
2057636	Magnesium	114		P	80 - 120
2057636	Zinc	113	114	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P358142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057518	Aluminum	98.5		P	80 - 120
2057518	Antimony	104		P	80 - 120
2057518	Arsenic	107		P	80 - 120
2057518	Boron	102		P	80 - 120
2057518	Cadmium	103		P	80 - 120
2057518	Chromium	99.5		P	80 - 120
2057518	Copper	101		P	80 - 120
2057518	Lead	107		P	80 - 120
2057518	Nickel	102		P	80 - 120
2057518	Selenium	101		P	80 - 120
2057518	Silver	101		P	80 - 120
2057518	Thallium	111		P	80 - 120
2057636	Aluminum	98.1	98.2	P/P	80 - 120
2057636	Antimony	104	104	P/P	80 - 120
2057636	Arsenic	108	109	P/P	80 - 120
2057636	Cadmium	105	104	P/P	80 - 120
2057636	Chromium	100	99.5	P/P	80 - 120
2057636	Copper	100	101	P/P	80 - 120
2057636	Lead	106	106	P/P	80 - 120
2057636	Nickel	99.6	100	P/P	80 - 120
2057636	Selenium	101	101	P/P	80 - 120
2057636	Silver	101	101	P/P	80 - 120
2057636	Thallium	110	110	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358367

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057393	Chloride	96.5		P	90 - 110
2057453	Chloride	98.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358368

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057481	Chloride	99.0		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358368

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057665	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057393	Sulfate	98.2		P	90 - 110
2057453	Sulfate	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358370

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057481	Sulfate	100		P	90 - 110
2057665	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358188

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057484	Ammonia-N	100	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358204

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057485	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358040

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057474	NO2NO3-N	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358096

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057456	Total-P	103	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057594	Total-P	102	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358007

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057477	O-Phosphate-P	99.5	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057673	O-Phosphate-P	95.4	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P358273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057453	Fluoride	96.8	97.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P358092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2057474	Organic Carbon	98.9	96.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057481	Turbidity	1.79	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P358142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057636	Barium	0.442	Spike	P	0 - 20
2057636	Calcium	3.10	Spike	P	0 - 20
2057636	Iron	4.06	Spike	P	0 - 20
2057636	Magnesium	2.43	Spike	P	0 - 20
2057636	Potassium	3.72	Spike	P	0 - 20
2057636	Sodium	3.75	Spike	P	0 - 20
2057636	Zinc	0.789	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P358142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057636	Aluminum	0.0599	Spike	P	0 - 20
2057636	Antimony	0.127	Spike	P	0 - 20
2057636	Arsenic	0.806	Spike	P	0 - 20
2057636	Boron	1.17	Spike	P	0 - 20
2057636	Cadmium	1.08	Spike	P	0 - 20
2057636	Chromium	0.910	Spike	P	0 - 20
2057636	Copper	0.0913	Spike	P	0 - 20
2057636	Lead	0.247	Spike	P	0 - 20
2057636	Nickel	0.610	Spike	P	0 - 20
2057636	Selenium	0.450	Spike	P	0 - 20
2057636	Silver	0.179	Spike	P	0 - 20
2057636	Thallium	0.534	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057393	Chloride	0.245	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358368

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057665	Chloride	0.290	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057393	Sulfate	0.358	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P358370

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057665	Sulfate	0.0744	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358188

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057484	Ammonia-N	0.740	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358204

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057485	Ammonia-N	0.163	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P358126

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057493	Kjeldahl Nitrogen	0.0258	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P358040

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057474	NO2NO3-N	0.218	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057456	Total-P	2.56	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P358155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057594	Total-P	1.67	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358007

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057477	O-Phosphate-P	1.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P358008

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057673	O-Phosphate-P	1.66	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P358000

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057455	Color (true)	0.816	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P358001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057492	Color (true)	0.620	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P358270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057453	Total Alkalinity	0.248	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P358342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057455	TDS	1.40	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P358273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057453	Fluoride	0.476	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P358092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2057474	Organic Carbon	2.17	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: EPA 180.1 Rev. 2.0

Run ID: A89074

Included Lab Sample IDs: 2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A89075

Included Lab Sample IDs: 2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.1	98.9	P/P	90 - 115
Color (true)	98.9	99.9	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89077

Included Lab Sample IDs: 2057477, 2057478, 2057479, 2057486, 2057487, 2057488, 2057491

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.8	P/P	90 - 110
O-Phosphate-P	98.8	99.1	P/P	90 - 110
O-Phosphate-P	99.8	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89086

Included Lab Sample IDs: 2057474, 2057475, 2057476, 2057483, 2057484, 2057485, 2057490

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

Reference Method: SM 5310 B-00

Run ID: A89107

Included Lab Sample IDs: 2057474, 2057475, 2057476, 2057483, 2057484, 2057485, 2057490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	99.6	P/P	90 - 110
Organic Carbon	99.6	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A89112

Included Lab Sample IDs: 2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.3	99.5	P/P	90 - 110
Chloride	99.5	100	P/P	90 - 110
Sulfate	99.6	100	P/P	90 - 110
Sulfate	99.6	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89123

Included Lab Sample IDs: 2057474, 2057475, 2057476, 2057483, 2057484

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89140

Included Lab Sample IDs: 2057474, 2057475, 2057476, 2057483, 2057484, 2057485, 2057490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89146

Included Lab Sample IDs: 2057485, 2057490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89161

Included Lab Sample IDs: 2057474, 2057475, 2057476, 2057483, 2057484, 2057485, 2057490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	100	P/P	90 - 110
Total-P	99.8	99.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89166

Included Lab Sample IDs: 2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89166

Included Lab Sample IDs: 2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	98.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A89178

Included Lab Sample IDs: 2057509, 2057510, 2057511, 2057512

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	108	P/P	90 - 110
Barium	108	105	P/P	90 - 110
Barium	99.7	101	P/P	95 - 105
Calcium	101	109	P/P	90 - 110
Calcium	109	106	P/P	90 - 110
Calcium	99.5	101	P/P	95 - 105
Iron	101	105	P/P	90 - 110
Iron	105	105	P/P	90 - 110
Iron	99.3	101	P/P	95 - 105
Magnesium	100	102	P/P	95 - 105
Magnesium	102	106	P/P	90 - 110
Magnesium	106	106	P/P	90 - 110
Potassium	100	105	P/P	90 - 110
Potassium	105	105	P/P	90 - 110
Potassium	98.5	100	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A89178

Included Lab Sample IDs: 2057509, 2057510, 2057511, 2057512

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	101	102	P/P	90 - 110
Sodium	97.3	99.7	P/P	95 - 105
Sodium	99.7	101	P/P	90 - 110
Zinc	100	102	P/P	95 - 105
Zinc	102	109	P/P	90 - 110
Zinc	109	107	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89274

Included Lab Sample IDs: 2057509, 2057510, 2057511, 2057512

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	97.4	P/P	90 - 110
Aluminum	99.8	102	P/P	90 - 110
Antimony	97.2	97.8	P/P	90 - 110
Antimony	97.8	97.7	P/P	90 - 110
Arsenic	101	99.4	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Boron	103	99.5	P/P	90 - 110
Boron	98.3	103	P/P	90 - 110
Cadmium	97.1	97.6	P/P	90 - 110
Cadmium	97.5	97.1	P/P	90 - 110
Chromium	94.3	99.5	P/P	90 - 110
Chromium	95.6	94.3	P/P	90 - 110
Copper	100	99.3	P/P	90 - 110
Copper	102	100	P/P	90 - 110
Lead	103	104	P/P	90 - 110
Lead	104	105	P/P	90 - 110
Nickel	100	99.2	P/P	90 - 110
Nickel	102	100	P/P	90 - 110
Selenium	97.0	96.3	P/P	90 - 110
Selenium	97.9	97.0	P/P	90 - 110
Silver	99.1	99.3	P/P	90 - 110
Silver	99.3	98.7	P/P	90 - 110
Thallium	97.1	98.5	P/P	90 - 110
Thallium	98.8	97.1	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	
								LCS	MS
EPA 180.1 Rev. 2.0	Turbidity							1.79	
EPA 200.7 Rev. 4.4	Barium	102	102	109	109				0.442
	Calcium	104	115						3.10
	Iron	105	107	114	119				4.06
	Magnesium	104	103	114					2.43
	Potassium	103	102						3.72
	Sodium	101	97.4						3.75
	Zinc	102	105	113	114				0.789
EPA 200.8 Rev. 5.4	Aluminum	102	98.5	98.1	98.2				0.0599
	Antimony	101	104	104	104				0.127
	Arsenic	105	107	108	109				0.806
	Boron	104	102						1.17
	Cadmium	103	103	105	104				1.08
	Chromium	98.5	99.5	100	99.5				0.910
	Copper	103	101	100	101				0.0913
	Lead	106	107	106	106				0.247
	Nickel	103	102	99.6	100				0.610
	Selenium	99.7	101	101	101				0.450
	Silver	102	101	101	101				0.179
	Thallium	104	111	110	110				0.534
EPA 300.0 Rev. 2.1	Chloride	96.6	96.5	98.2				0.245	
	Chloride	98.0	99.0	99.0				0.290	
	Sulfate	98.9	98.2	97.3				0.358	
	Sulfate	99.7	100	100				0.0744	
EPA 350.1 Rev. 2.0	Ammonia-N	97.4	100	99.2					0.740
	Ammonia-N	98.9	101	102					0.163
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103							0.0258
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	99.8						0.218
EPA 365.1 Rev. 2.0	Total-P	104	103	100					2.56
	Total-P	102	102	100					1.67
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	99.5	101					1.10
	O-Phosphate-P	101	95.4	97.0					1.66
SM 2120 B	Color (true)	99.0						0.816	
	Color (true)	99.7						0.620	
SM 2320 B-97	Total Alkalinity	102						0.248	
SM 2540 C-97	TDS							1.40	
SM 4500 F-C-97	Fluoride	96.2	96.8	97.4					0.476
SM 5310 B-00	Organic Carbon	100	98.9	96.4					2.17

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2057509, 2057510, 2057511, 2057512
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2057509, 2057510, 2057511, 2057512
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2057474, 2057475, 2057476, 2057483, 2057484, 2057485, 2057490

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2057474, 2057475, 2057476, 2057483, 2057484, 2057485, 2057490
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2057474, 2057475, 2057476, 2057483, 2057484, 2057485, 2057490
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2057474, 2057475, 2057476, 2057483, 2057484, 2057485, 2057490
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2057477, 2057478, 2057479, 2057486, 2057487, 2057488, 2057491
SM 2120 B / E31780	True Color measured at 450 nm	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2057474, 2057475, 2057476, 2057483, 2057484, 2057485, 2057490

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/29/2019			01/29/2019 16:31	Megan Treadwell	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
EPA 200.7 Rev. 4.4	01/29/2019	01/31/2019 17:30	Elliott D. Healy	02/04/2019 11:57	Betina Topolski	2057512
	01/29/2019	01/31/2019 17:30	Elliott D. Healy	02/04/2019 13:09	Betina Topolski	2057509
	01/29/2019	01/31/2019 17:30	Elliott D. Healy	02/04/2019 13:14	Betina Topolski	2057510
	01/29/2019	01/31/2019 17:30	Elliott D. Healy	02/04/2019 14:17	Betina Topolski	2057511
EPA 200.8 Rev. 5.4	01/29/2019	01/31/2019 17:30	Elliott D. Healy	02/07/2019 19:31	Allison Taylor	2057512
	01/29/2019	01/31/2019 17:30	Elliott D. Healy	02/07/2019 21:53	Allison Taylor	2057509
	01/29/2019	01/31/2019 17:30	Elliott D. Healy	02/07/2019 22:03	Allison Taylor	2057510
	01/29/2019	01/31/2019 17:30	Elliott D. Healy	02/07/2019 22:12	Allison Taylor	2057511
EPA 300.0 Rev. 2.1	01/29/2019			02/01/2019 22:11	Lipi Saha	2057471
	01/29/2019			02/01/2019 22:25	Lipi Saha	2057472
	01/29/2019			02/01/2019 22:40	Lipi Saha	2057473
	01/29/2019			02/01/2019 22:55	Lipi Saha	2057480
	01/29/2019			02/02/2019 00:53	Lipi Saha	2057481
	01/29/2019			02/02/2019 01:23	Lipi Saha	2057482
	01/29/2019			02/02/2019 01:37	Lipi Saha	2057489
EPA 350.1 Rev. 2.0	01/29/2019			01/31/2019 12:30	Ping Hua	2057484
	01/29/2019			01/31/2019 12:48	Ping Hua	2057474
	01/29/2019			01/31/2019 12:49	Ping Hua	2057475
	01/29/2019			01/31/2019 12:51	Ping Hua	2057476
	01/29/2019			01/31/2019 12:52	Ping Hua	2057483
	01/29/2019			02/01/2019 11:47	Ping Hua	2057485
	01/29/2019			02/01/2019 11:53	Ping Hua	2057490
EPA 351.2 Rev. 2.0	01/29/2019	01/31/2019 10:45	Adrian Shelby	02/01/2019 10:59	Joseph Suarez	2057474
	01/29/2019	01/31/2019 10:45	Adrian Shelby	02/01/2019 11:00	Joseph Suarez	2057475
	01/29/2019	01/31/2019 10:45	Adrian Shelby	02/01/2019 11:02	Joseph Suarez	2057476
	01/29/2019	01/31/2019 10:45	Adrian Shelby	02/01/2019 11:03	Joseph Suarez	2057483
	01/29/2019	01/31/2019 10:45	Adrian Shelby	02/01/2019 11:05	Joseph Suarez	2057484
	01/29/2019	01/31/2019 10:45	Adrian Shelby	02/01/2019 11:06	Joseph Suarez	2057485
	01/29/2019	01/31/2019 10:45	Adrian Shelby	02/01/2019 11:08	Joseph Suarez	2057490
EPA 353.2 Rev. 2.0	01/29/2019			01/30/2019 10:30	Beverly Y. Sanders	2057474
	01/29/2019			01/30/2019 10:36	Beverly Y. Sanders	2057475
	01/29/2019			01/30/2019 10:37	Beverly Y. Sanders	2057476
	01/29/2019			01/30/2019 10:38	Beverly Y. Sanders	2057483
	01/29/2019			01/30/2019 10:40	Beverly Y. Sanders	2057484
	01/29/2019			01/30/2019 10:41	Beverly Y. Sanders	2057485
	01/29/2019			01/30/2019 10:42	Beverly Y. Sanders	2057490
EPA 365.1 Rev. 2.0	01/29/2019	01/31/2019 14:30	Sima Feizi	02/01/2019 14:29	Rosalyn Ballman	2057474
	01/29/2019	01/31/2019 14:30	Sima Feizi	02/01/2019 14:30	Rosalyn Ballman	2057475

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0	01/29/2019	01/31/2019 14:30	Sima Feizi	02/01/2019 14:31	Rosalyn Ballman	2057476
	01/29/2019	01/31/2019 14:30	Sima Feizi	02/01/2019 14:32	Rosalyn Ballman	2057483
	01/29/2019	01/31/2019 14:30	Sima Feizi	02/01/2019 14:35	Rosalyn Ballman	2057484
	01/29/2019	01/31/2019 14:30	Sima Feizi	02/01/2019 14:43	Rosalyn Ballman	2057485
	01/29/2019	01/31/2019 14:30	Sima Feizi	02/01/2019 14:44	Rosalyn Ballman	2057490
EPA 365.1 Rev. 2.0 dissolved	01/29/2019			01/29/2019 15:07	Jhamieka S. Greenwood	2057477
	01/29/2019			01/29/2019 15:36	Jhamieka S. Greenwood	2057491
	01/29/2019			01/29/2019 15:48	Jhamieka S. Greenwood	2057478
	01/29/2019			01/29/2019 15:49	Jhamieka S. Greenwood	2057479
	01/29/2019			01/29/2019 15:50	Jhamieka S. Greenwood	2057486
	01/29/2019			01/29/2019 15:51	Jhamieka S. Greenwood	2057487
SM 2120 B	01/29/2019			01/29/2019 15:52	Jhamieka S. Greenwood	2057488
	01/29/2019			01/29/2019 15:47	Chelsea Hernandez	2057471
	01/29/2019			01/29/2019 15:48	Chelsea Hernandez	2057472
	01/29/2019			01/29/2019 15:49	Chelsea Hernandez	2057473
	01/29/2019			01/29/2019 15:50	Chelsea Hernandez	2057480, 2057481
	01/29/2019			01/29/2019 15:54	Chelsea Hernandez	2057482
SM 2320 B-97	01/29/2019			01/29/2019 15:55	Chelsea Hernandez	2057489
	01/29/2019			02/03/2019 18:08	Dale L. Simmons	2057471
	01/29/2019			02/03/2019 18:21	Dale L. Simmons	2057472
	01/29/2019			02/03/2019 18:33	Dale L. Simmons	2057473
	01/29/2019			02/03/2019 18:44	Dale L. Simmons	2057480
	01/29/2019			02/03/2019 18:57	Dale L. Simmons	2057481
SM 2540 C-97	01/29/2019			02/03/2019 19:09	Dale L. Simmons	2057482
	01/29/2019			02/03/2019 19:23	Dale L. Simmons	2057489
	01/29/2019			01/31/2019 14:21	Yijie Li	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
	01/29/2019			01/31/2019 14:21	Yijie Li	2057471, 2057472, 2057473, 2057480, 2057481, 2057482, 2057489
SM 4500 F-C-97	01/29/2019			02/03/2019 18:08	Dale L. Simmons	2057471
	01/29/2019			02/03/2019 18:21	Dale L. Simmons	2057472
	01/29/2019			02/03/2019 18:33	Dale L. Simmons	2057473
	01/29/2019			02/03/2019 18:44	Dale L. Simmons	2057480
	01/29/2019			02/03/2019 18:57	Dale L. Simmons	2057481
	01/29/2019			02/03/2019 19:09	Dale L. Simmons	2057482
SM 5310 B-00	01/29/2019			02/03/2019 19:23	Dale L. Simmons	2057489
	01/29/2019			01/30/2019 21:34	Chelsea Hernandez	2057474
	01/29/2019			01/30/2019 22:48	Chelsea Hernandez	2057475
	01/29/2019			01/30/2019 23:00	Chelsea Hernandez	2057476
	01/29/2019			01/30/2019 23:12	Chelsea Hernandez	2057483

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	01/29/2019			01/30/2019 23:24	Chelsea Hernandez	2057484
	01/29/2019			01/30/2019 23:36	Chelsea Hernandez	2057485
	01/29/2019			01/30/2019 23:49	Chelsea Hernandez	2057490