

Chemical Analysis Report

CEN-DIST-2019-03-19-01

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

Event Description: **Cypress Crk / Ingram / Felter / Lotta**
Request ID: **RQ-2019-03-18-30**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 09-APR-2019 18:21



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: LAKE LOTTA @ CENTER OF SOUTHERN LOBE Collection Date/Time: 03/18/2019 10:10

Field ID: G2CE0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071038	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P360702	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P361109	
		Sulfate	10		mg SO4/L	P361111	
	SM 2120 B	Color (true)	53		PCU	P360745	
	SM 2320 B-97	Total Alkalinity	61		mg CaCO3/L	P361242	
	SM 2540 C-97	TDS	111		mg/L	P361037	
	SM 2540 D-97	TSS	6	I	mg/L	P361029	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P361246	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P361176	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P360911	
2071040	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P360960	
	EPA 365.1 Rev. 2.0	Total-P	0.059		mg P/L	P361117	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P360941	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P360706	
	dissolved						

Ref. Method and Comment:

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

Sample Location: LAKE FELTER @ CENTER

Collection Date/Time: 03/18/2019 11:05

Field ID: G1CE0042

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071039	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P360702	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P361109	
		Sulfate	1.1		mg SO4/L	P361111	
	SM 2120 B	Color (true)	92		PCU	P360745	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P361242	
	SM 2540 C-97	TDS	86		mg/L	P361037	
	SM 2540 D-97	TSS	2	I	mg/L	P361029	
	SM 4500 F-C-97	Fluoride	0.080	I	mg F/L	P361246	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.18		mg N/L	P361176	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P360911	
2071041	EPA 353.2 Rev. 2.0	NO2NO3-N	0.051		mg N/L	P360960	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P361117	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P360941	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P360706	
	dissolved						

Ref. Method and Comment:

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

Sample Location: LAKE INGRAM WEST

Collection Date/Time: 03/18/2019 12:18

Field ID: G4CE0154

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071032	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P360702	
	EPA 300.0 Rev. 2.1	Chloride	8.4		mg Cl/L	P361109	
		Sulfate	3.0		mg SO4/L	P361111	
		Color (true)	43		PCU	P360745	
	SM 2320 B-97	Total Alkalinity	11		mg CaCO3/L	P361242	
	SM 2540 C-97	TDS	56		mg/L	P361037	
	SM 2540 D-97	TSS	2	U	mg/L	P361029	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P361246	
2071034	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P361176	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P360911	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P360960	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P360991	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P360941	
2071036	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360706	
2071074	EPA 200.7 Rev. 4.4	Barium	2.7	I	ug/L	P360846	
		Calcium	3.38		mg/L	P360846	
		Iron	110	I	ug/L	P360846	
		Magnesium	2.63		mg/L	P360846	
		Potassium	1.3		mg/L	P360846	
		Sodium	4.5		mg/L	P360846	
		Zinc	5.0	U	ug/L	P360846	
		Aluminum	21		ug/L	P360846	
		Antimony	0.14	I	ug/L	P360846	
		Arsenic	1.41		ug/L	P360846	
	EPA 200.8 Rev. 5.4	Boron**	23.1		ug/L	P360846	
		Cadmium	0.020	U	ug/L	P360846	
		Chromium	0.40	U	ug/L	P360846	
		Copper	1.01		ug/L	P360846	
		Lead	0.20	U	ug/L	P360846	
		Nickel	0.50	U	ug/L	P360846	
		Selenium	0.20	U	ug/L	P360846	
		Silver	0.010	U	ug/L	P360846	
		Thallium	0.10	U	ug/L	P360846	

Ref. Method and Comment:

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

Sample Location: LAKE INGRAM EAST

Collection Date/Time: 03/18/2019 12:27

Field ID: G4CE0155

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071033	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P360702	
	EPA 300.0 Rev. 2.1	Chloride	8.6		mg Cl/L	P361109	
		Sulfate	3.0		mg SO4/L	P361111	
		Color (true)	43		PCU	P360745	
	SM 2320 B-97	Total Alkalinity	11		mg CaCO3/L	P361242	
	SM 2540 C-97	TDS	57		mg/L	P361037	
	SM 2540 D-97	TSS	4	I	mg/L	P361029	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P361246	
2071035	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P361176	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P360911	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P360960	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P361117	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P360941	
2071037	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360706	
2071075	EPA 200.7 Rev. 4.4	Barium	2.9	I	ug/L	P360846	
		Calcium	3.36		mg/L	P360846	
		Iron	100	I	ug/L	P360846	
		Magnesium	2.66		mg/L	P360846	
		Potassium	1.4		mg/L	P360846	
		Sodium	4.5		mg/L	P360846	
		Zinc	5.0	U	ug/L	P360846	
	EPA 200.8 Rev. 5.4	Aluminum	21		ug/L	P360846	
		Antimony	0.13	I	ug/L	P360846	
		Arsenic	1.41		ug/L	P360846	
		Boron**	23.0		ug/L	P360846	
		Cadmium	0.020	U	ug/L	P360846	
		Chromium	0.40	U	ug/L	P360846	
		Copper	1.02		ug/L	P360846	
		Lead	0.20	U	ug/L	P360846	
		Nickel	0.50	U	ug/L	P360846	
		Selenium	0.20	U	ug/L	P360846	
		Silver	0.010	U	ug/L	P360846	
		Thallium	0.10	U	ug/L	P360846	

Ref. Method and Comment:

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

Sample Location: CYPRESS CREEK @ SR 535

Collection Date/Time: 03/18/2019 13:15

Field ID: G4CE0008

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071026	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P360702	
	EPA 300.0 Rev. 2.1	Chloride	38	A	mg Cl/L	P361109	
		Sulfate	18	A	mg SO4/L	P361111	
		Color (true)	120		PCU	P360745	
	SM 2120 B	Total Alkalinity	13		mg CaCO3/L	P361242	
	SM 2540 C-97	TDS	134		mg/L	P361036	
	SM 2540 D-97	TSS	2	U	mg/L	P361028	
	SM 4500 F-C-97	Fluoride	0.097	I	mg F/L	P361246	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P361176	
2071028	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P360910	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P360960	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P360991	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P360941	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360706	
2071072	EPA 200.7 Rev. 4.4	Barium	7.2		ug/L	P360788	
		Calcium	7.79		mg/L	P360788	
		Iron	58	I	ug/L	P360788	
		Magnesium	4.56		mg/L	P360788	
		Potassium	6.5		mg/L	P360788	
		Sodium	22.4		mg/L	P360788	
		Zinc	5.0	U	ug/L	P360788	
	EPA 200.8 Rev. 5.4	Aluminum	27		ug/L	P360788	
		Antimony	0.050	U	ug/L	P360788	
		Arsenic	0.54		ug/L	P360788	
		Boron**	45.3		ug/L	P360788	
		Cadmium	0.020	U	ug/L	P360788	
		Chromium	0.40	U	ug/L	P360788	
		Copper	0.40	U	ug/L	P360788	
		Lead	0.20	U	ug/L	P360788	
		Nickel	0.50	U	ug/L	P360788	
		Selenium	0.20	U	ug/L	P360788	
		Silver	0.010	U	ug/L	P360788	
		Thallium	0.10	U	ug/L	P360788	

Ref. Method and Comment:

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

Sample Location: UPPER CYPRESS CREEK @ JACARANDA

Collection Date/Time: 03/18/2019 13:43

Field ID: G4CE0157

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071027	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P360702	
	EPA 300.0 Rev. 2.1	Chloride	38		mg Cl/L	P361109	
		Sulfate	17		mg SO4/L	P361111	
		Color (true)	140		PCU	P360745	
	SM 2320 B-97	Total Alkalinity	11		mg CaCO3/L	P361242	
	SM 2540 C-97	TDS	131		mg/L	P361036	
	SM 2540 D-97	TSS	2	I	mg/L	P361028	
	SM 4500 F-C-97	Fluoride	0.095	I	mg F/L	P361246	
2071029	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P361176	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P360911	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P360960	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P360991	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P360941	
2071031	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P360706	
2071073	EPA 200.7 Rev. 4.4	Barium	6.7		ug/L	P360788	
		Calcium	7.48		mg/L	P360788	
		Iron	80	I	ug/L	P360788	
		Magnesium	4.46		mg/L	P360788	
		Potassium	6.7		mg/L	P360788	
		Sodium	22.6		mg/L	P360788	
		Zinc	5.0	U	ug/L	P360788	
	EPA 200.8 Rev. 5.4	Aluminum	41		ug/L	P360788	
		Antimony	0.050	U	ug/L	P360788	
		Arsenic	0.57		ug/L	P360788	
		Boron**	44.7		ug/L	P360788	
		Cadmium	0.020	U	ug/L	P360788	
		Chromium	0.40	U	ug/L	P360788	
		Copper	0.45	I	ug/L	P360788	
		Lead	0.20	U	ug/L	P360788	
		Nickel	0.50	U	ug/L	P360788	
		Selenium	0.20	U	ug/L	P360788	
		Silver	0.010	U	ug/L	P360788	
		Thallium	0.10	U	ug/L	P360788	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360702

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360788

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 200.7 Rev. 4.4
Batch ID: P360846

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: P360788

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 200.8 Rev. 5.4
Batch ID: P360846

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360846

Component	Result	Code	Units
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: P361109

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361111

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361176

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360910

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360911

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360960

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360991

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361117

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360706

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

Reference Method: SM 2120 B
Batch ID: P360745

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P361242

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

Reference Method: SM 2540 C-97
Batch ID: P361036

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P361037

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P361028

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P361029

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P361246

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P360941

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: P360788

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	98.6		P	85 - 115
Calcium	101		P	85 - 115
Iron	102		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	104		P	85 - 115
Sodium	95.9		P	85 - 115
Zinc	98.7		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P360846

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	97.3		P	85 - 115
Iron	100		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	98.9		P	85 - 115
Sodium	97.8		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P360788

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.8		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	105		P	85 - 115
Boron	95.9		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	97.1		P	85 - 115
Copper	105		P	85 - 115
Lead	97.2		P	85 - 115
Nickel	107		P	85 - 115
Selenium	104		P	85 - 115
Silver	105		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P360846

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.1		P	85 - 115
Antimony	94.8		P	85 - 115
Arsenic	100		P	85 - 115
Boron	93.0		P	85 - 115
Cadmium	95.3		P	85 - 115
Chromium	90.6		P	85 - 115
Copper	96.7		P	85 - 115
Lead	92.5		P	85 - 115
Nickel	96.6		P	85 - 115
Selenium	102		P	85 - 115
Silver	101		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360846

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Thallium	97.5		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361109

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361111

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361176

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360911

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360960

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: P360991

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361117

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360706

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

Reference Method: SM 2120 B
Batch ID: P360745

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	104		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P361242

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P361246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360941

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: P360788

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2070879	Barium	97.8	98.3	P/P	80 - 120
2070879	Calcium	103		P	80 - 120
2070879	Iron	102	103	P/P	80 - 120
2070879	Magnesium	105	109	P/P	80 - 120
2070879	Potassium	101	102	P/P	80 - 120
2070879	Sodium	99.7		P	80 - 120
2070879	Zinc	98.0	99.2	P/P	80 - 120
2070990	Barium	100		P	80 - 120
2070990	Calcium	102		P	80 - 120
2070990	Iron	104		P	80 - 120
2070990	Magnesium	108		P	80 - 120
2070990	Potassium	102		P	80 - 120
2070990	Sodium	99.3		P	80 - 120
2070990	Zinc	100		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071118	Barium	97.5		P	80 - 120
2071118	Calcium	98.3		P	80 - 120
2071118	Iron	97.7		P	80 - 120
2071118	Magnesium	96.6		P	80 - 120
2071118	Potassium	97.9		P	80 - 120
2071118	Sodium	96.9		P	80 - 120
2071118	Zinc	98.1		P	80 - 120
2071273	Barium	100	96.4	P/P	80 - 120
2071273	Calcium	97.3		P	80 - 120
2071273	Iron	100	98.2	P/P	80 - 120
2071273	Magnesium	102	97.8	P/P	80 - 120
2071273	Potassium	99.4	97.6	P/P	80 - 120
2071273	Sodium	95.7		P	80 - 120
2071273	Zinc	104	99.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360788

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2070879	Aluminum	104	101	P/P	80 - 120
2070879	Antimony	98.9	100	P/P	80 - 120
2070879	Arsenic	101	102	P/P	80 - 120
2070879	Boron	98.3	98.9	P/P	80 - 120
2070879	Cadmium	103	101	P/P	80 - 120
2070879	Chromium	95.3	96.4	P/P	80 - 120
2070879	Copper	107	103	P/P	80 - 120
2070879	Lead	98.0	98.0	P/P	80 - 120
2070879	Nickel	103	104	P/P	80 - 120
2070879	Selenium	98.6	98.9	P/P	80 - 120
2070879	Silver	106	105	P/P	80 - 120
2070879	Thallium	103	107	P/P	80 - 120
2070990	Aluminum	99.9		P	80 - 120
2070990	Antimony	99.6		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360788

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2070990	Arsenic	101		P	80 - 120
2070990	Boron	99.5		P	80 - 120
2070990	Cadmium	101		P	80 - 120
2070990	Chromium	95.6		P	80 - 120
2070990	Copper	103		P	80 - 120
2070990	Lead	98.7		P	80 - 120
2070990	Nickel	104		P	80 - 120
2070990	Selenium	101		P	80 - 120
2070990	Silver	106		P	80 - 120
2070990	Thallium	104		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071118	Aluminum	95.2		P	80 - 120
2071118	Antimony	97.7		P	80 - 120
2071118	Arsenic	99.1		P	80 - 120
2071118	Boron	96.7		P	80 - 120
2071118	Cadmium	98.9		P	80 - 120
2071118	Chromium	90.8		P	80 - 120
2071118	Copper	91.5		P	80 - 120
2071118	Lead	95.4		P	80 - 120
2071118	Nickel	92.0		P	80 - 120
2071118	Selenium	97.9		P	80 - 120
2071118	Silver	100		P	80 - 120
2071118	Thallium	102		P	80 - 120
2071273	Aluminum	95.5	93.3	P/P	80 - 120
2071273	Antimony	97.7	94.4	P/P	80 - 120
2071273	Arsenic	99.3	95.9	P/P	80 - 120
2071273	Boron	97.1	94.9	P/P	80 - 120
2071273	Cadmium	99.0	95.9	P/P	80 - 120
2071273	Chromium	92.3	90.0	P/P	80 - 120
2071273	Copper	94.8	91.7	P/P	80 - 120
2071273	Lead	97.0	94.3	P/P	80 - 120
2071273	Nickel	96.3	94.7	P/P	80 - 120
2071273	Selenium	99.4	92.8	P/P	80 - 120
2071273	Silver	101	103	P/P	80 - 120
2071273	Thallium	102	100	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2070906	Chloride	98.5		P	90 - 110
2071026	Chloride	96.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2070906	Sulfate	99.2		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071026	Sulfate	96.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361176

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071028	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071016	Kjeldahl Nitrogen	95.1	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071029	Kjeldahl Nitrogen	98.8	95.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360960

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071028	NO2NO3-N	97.7	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360991

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071017	Total-P	99.0	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361117

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071035	Total-P	95.9	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071036	O-Phosphate-P	90.6	91.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P361246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071123	Fluoride	100	99.2	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P360941

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071021	Organic Carbon	95.8	92.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360702

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071023	Turbidity	3.48	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2070879	Barium	0.513	Spike	P	0 - 20
2070879	Calcium	1.69	Spike	P	0 - 20
2070879	Iron	1.23	Spike	P	0 - 20
2070879	Magnesium	2.49	Spike	P	0 - 20
2070879	Potassium	0.428	Spike	P	0 - 20
2070879	Sodium	2.29	Spike	P	0 - 20
2070879	Zinc	1.19	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071273	Barium	3.89	Spike	P	0 - 20
2071273	Calcium	2.55	Spike	P	0 - 20
2071273	Iron	1.63	Spike	P	0 - 20
2071273	Magnesium	2.39	Spike	P	0 - 20
2071273	Potassium	1.45	Spike	P	0 - 20
2071273	Sodium	1.50	Spike	P	0 - 20
2071273	Zinc	4.45	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2070879	Aluminum	2.00	Spike	P	0 - 20
2070879	Antimony	1.43	Spike	P	0 - 20
2070879	Arsenic	1.29	Spike	P	0 - 20
2070879	Boron	0.519	Spike	P	0 - 20
2070879	Cadmium	1.39	Spike	P	0 - 20
2070879	Chromium	1.05	Spike	P	0 - 20
2070879	Copper	3.47	Spike	P	0 - 20
2070879	Lead	0.0299	Spike	P	0 - 20
2070879	Nickel	1.01	Spike	P	0 - 20
2070879	Selenium	0.286	Spike	P	0 - 20
2070879	Silver	1.57	Spike	P	0 - 20
2070879	Thallium	3.46	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071273	Aluminum	2.15	Spike	P	0 - 20
2071273	Antimony	3.45	Spike	P	0 - 20
2071273	Arsenic	3.41	Spike	P	0 - 20
2071273	Boron	1.73	Spike	P	0 - 20
2071273	Cadmium	3.18	Spike	P	0 - 20
2071273	Chromium	2.58	Spike	P	0 - 20
2071273	Copper	2.47	Spike	P	0 - 20
2071273	Lead	2.78	Spike	P	0 - 20
2071273	Nickel	1.70	Spike	P	0 - 20
2071273	Selenium	6.86	Spike	P	0 - 20
2071273	Silver	2.23	Spike	P	0 - 20
2071273	Thallium	1.76	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071026	Chloride	0.214	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071026	Sulfate	0.180	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071028	Ammonia-N	0.986	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071016	Kjeldahl Nitrogen	1.31	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071029	Kjeldahl Nitrogen	2.08	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360960

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071028	NO2NO3-N	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071017	Total-P	0.806	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361117

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071035	Total-P	1.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071036	O-Phosphate-P	1.42	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071014	Color (true)	1.27	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P361242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071123	Total Alkalinity	0.972	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P361036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071023	TDS	5.78	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P361037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071125	TDS	4.49	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P361246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071123	Fluoride	0.993	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P360941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071021	Organic Carbon	2.02	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A90071

Included Lab Sample IDs: 2071026, 2071027, 2071032, 2071033, 2071038, 2071039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	100	100	P/P	90 - 110
Chloride	97.6	100	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110
Sulfate	98.6	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A90100

Included Lab Sample IDs: 2071026, 2071027, 2071032, 2071033, 2071038, 2071039

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A90101

Included Lab Sample IDs: 2071030, 2071031, 2071036, 2071037, 2071042, 2071043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.2	P/P	90 - 110
O-Phosphate-P	99.7	99.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A90166

Included Lab Sample IDs: 2071072, 2071073

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	100	99.3	P/P	90 - 110
Calcium	100	101	P/P	90 - 110
Iron	99.6	99.6	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	99.0	98.7	P/P	90 - 110
Sodium	100	101	P/P	90 - 110
Zinc	101	99.3	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A90206

Included Lab Sample IDs: 2071028, 2071029, 2071034, 2071035, 2071040, 2071041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.8	97.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A90208

Included Lab Sample IDs: 2071074, 2071075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	100	99.1	P/P	90 - 110
Calcium	102	99.5	P/P	90 - 110
Iron	100	98.7	P/P	90 - 110
Magnesium	101	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A90208

Included Lab Sample IDs: 2071074, 2071075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Potassium	99.2	96.7	P/P	90 - 110
Sodium	102	98.9	P/P	90 - 110
Zinc	101	99.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90215

Included Lab Sample IDs: 2071028, 2071029, 2071034, 2071035, 2071040, 2071041

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90230

Included Lab Sample IDs: 2071072, 2071073

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.2	98.0	P/P	90 - 110
Antimony	98.9	98.2	P/P	90 - 110
Arsenic	100	99.9	P/P	90 - 110
Boron	98.5	100	P/P	90 - 110
Cadmium	100	100	P/P	90 - 110
Chromium	99.7	100	P/P	90 - 110
Copper	102	103	P/P	90 - 110
Lead	95.9	97.5	P/P	90 - 110
Nickel	100	102	P/P	90 - 110
Selenium	101	99.0	P/P	90 - 110
Silver	104	105	P/P	90 - 110
Thallium	95.0	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90235

Included Lab Sample IDs: 2071028, 2071029, 2071034, 2071035, 2071040, 2071041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	93.8	P/P	90 - 110
Kjeldahl Nitrogen	97.2	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90254

Included Lab Sample IDs: 2071074, 2071075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.0	98.7	P/P	90 - 110
Antimony	97.3	98.1	P/P	90 - 110
Arsenic	99.5	97.6	P/P	90 - 110
Boron	91.7	99.3	P/P	90 - 110
Cadmium	97.2	98.3	P/P	90 - 110
Chromium	97.0	98.7	P/P	90 - 110
Copper	98.5	96.5	P/P	90 - 110
Lead	97.1	97.1	P/P	90 - 110
Nickel	98.1	96.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90254

Included Lab Sample IDs: 2071074, 2071075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	100	98.7	P/P	90 - 110
Silver	102	103	P/P	90 - 110
Thallium	95.7	95.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90273

Included Lab Sample IDs: 2071028, 2071029, 2071034

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90288

Included Lab Sample IDs: 2071028, 2071029, 2071034, 2071035, 2071040, 2071041

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90290

Included Lab Sample IDs: 2071040

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90303

Included Lab Sample IDs: 2071035, 2071041

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

Reference Method: SM 2320 B-97

Run ID: A90311

Included Lab Sample IDs: 2071026, 2071027, 2071032, 2071033, 2071038, 2071039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A90311

Included Lab Sample IDs: 2071026, 2071027, 2071032, 2071033, 2071038, 2071039

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

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						3.48	
EPA 200.7 Rev. 4.4	Barium	98.6	97.8	98.3	100			0.513
	Barium	101	97.5	100	96.4			3.89
	Calcium	101	103	102				1.69
	Calcium	97.3	98.3	97.3				2.55
	Iron	102	102	103	104			1.23
	Iron	100	97.7	100	98.2			1.63
	Magnesium	108	105	109	108			2.49
	Magnesium	105	96.6	102	97.8			2.39
	Potassium	104	101	102	102			0.428
	Potassium	98.9	97.9	99.4	97.6			1.45
	Sodium	95.9	99.7	99.3				2.29
	Sodium	97.8	96.9	95.7				1.50
	Zinc	98.7	98.0	99.2	100			1.19
	Zinc	101	98.1	104	99.8			4.45
EPA 200.8 Rev. 5.4	Aluminum	98.8	104	101	99.9			2.00
	Aluminum	95.1	95.2	95.5	93.3			2.15
	Antimony	100	98.9	100	99.6			1.43
	Antimony	94.8	97.7	97.7	94.4			3.45
	Arsenic	105	101	102	101			1.29
	Arsenic	100	99.1	99.3	95.9			3.41
	Boron	95.9	98.3	98.9	99.5			0.519
	Boron	93.0	96.7	97.1	94.9			1.73
	Cadmium	102	103	101	101			1.39
	Cadmium	95.3	98.9	99.0	95.9			3.18
	Chromium	97.1	95.3	96.4	95.6			1.05
	Chromium	90.6	90.8	92.3	90.0			2.58
	Copper	105	107	103	103			3.47
	Copper	96.7	91.5	94.8	91.7			2.47
	Lead	97.2	98.0	98.0	98.7			0.0299
	Lead	92.5	95.4	97.0	94.3			2.78
	Nickel	107	103	104	104			1.01
	Nickel	96.6	92.0	96.3	94.7			1.70
	Selenium	104	98.6	98.9	101			0.286
	Selenium	102	97.9	99.4	92.8			6.86
	Silver	105	106	105	106			1.57
	Silver	101	100	101	103			2.23
	Thallium	102	103	107	104			3.46
	Thallium	97.5	102	102	100			1.76
EPA 300.0 Rev. 2.1	Chloride	98.2	96.2	98.5			0.214	
	Sulfate	99.2	96.9	99.2			0.180	
EPA 350.1 Rev. 2.0	Ammonia-N	101	103	104				0.986
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	93.7	95.1	97.6				1.31
	Kjeldahl Nitrogen	105	98.8	95.7				2.08
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.7	99.2				1.49
EPA 365.1 Rev. 2.0	Total-P	97.6	99.0	98.2				0.806
	Total-P	96.2	95.9	97.3				1.39
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	90.6	91.9				1.42
SM 2120 B	Color (true)	104					1.27	
SM 2320 B-97	Total Alkalinity	104					0.972	
SM 2540 C-97	TDS						5.78	
	TDS						4.49	
SM 4500 F-C-97	Fluoride	101	100	99.2				0.993
SM 5310 B-00	Organic Carbon	100	95.8	92.4				2.02

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2071072, 2071073, 2071074, 2071075
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2071072, 2071073, 2071074, 2071075
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2071028, 2071029, 2071034, 2071035, 2071040, 2071041
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2071028, 2071029, 2071034, 2071035, 2071040, 2071041
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2071028, 2071029, 2071034, 2071035, 2071040, 2071041
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2071028, 2071029, 2071034, 2071035, 2071040, 2071041
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2071030, 2071031, 2071036, 2071037, 2071042, 2071043
SM 2120 B / E31780	True Color measured at 450 nm	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2071028, 2071029, 2071034, 2071035, 2071040, 2071041

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	03/19/2019			03/19/2019 15:54	Adrian Shelby	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
EPA 200.7 Rev. 4.4	03/19/2019	03/20/2019 16:30	Elliott D. Healy	03/21/2019 15:51	Betina Topolski	2071072
	03/19/2019	03/20/2019 16:30	Elliott D. Healy	03/21/2019 15:57	Betina Topolski	2071073
	03/19/2019	03/21/2019 15:15	Elliott D. Healy	03/22/2019 15:48	Betina Topolski	2071074
	03/19/2019	03/21/2019 15:15	Elliott D. Healy	03/22/2019 15:54	Betina Topolski	2071075
EPA 200.8 Rev. 5.4	03/19/2019	03/20/2019 16:30	Elliott D. Healy	03/26/2019 04:42	Robert K Palmer	2071072
	03/19/2019	03/20/2019 16:30	Elliott D. Healy	03/26/2019 04:52	Robert K Palmer	2071073
	03/19/2019	03/21/2019 15:15	Elliott D. Healy	03/26/2019 18:27	Robert K Palmer	2071074
	03/19/2019	03/21/2019 15:15	Elliott D. Healy	03/26/2019 18:37	Robert K Palmer	2071075
EPA 300.0 Rev. 2.1	03/19/2019			03/23/2019 17:09	Lipi Saha	2071026
	03/19/2019			03/23/2019 20:46	Lipi Saha	2071027
	03/19/2019			03/23/2019 20:58	Lipi Saha	2071032
	03/19/2019			03/23/2019 21:35	Lipi Saha	2071033
	03/19/2019			03/23/2019 21:47	Lipi Saha	2071038
	03/19/2019			03/23/2019 21:59	Lipi Saha	2071039
EPA 350.1 Rev. 2.0	03/19/2019			03/27/2019 10:22	Ping Hua	2071028
	03/19/2019			03/27/2019 10:26	Ping Hua	2071029
	03/19/2019			03/27/2019 10:28	Ping Hua	2071034
	03/19/2019			03/27/2019 10:35	Ping Hua	2071035
	03/19/2019			03/27/2019 10:37	Ping Hua	2071040
	03/19/2019			03/27/2019 10:38	Ping Hua	2071041
EPA 351.2 Rev. 2.0	03/19/2019	03/22/2019 12:00	Adrian Shelby	03/26/2019 11:48	Joseph Suarez	2071028
	03/19/2019	03/22/2019 12:00	Adrian Shelby	03/26/2019 11:55	Joseph Suarez	2071029
	03/19/2019	03/22/2019 12:00	Adrian Shelby	03/26/2019 12:03	Joseph Suarez	2071034
	03/19/2019	03/22/2019 12:00	Adrian Shelby	03/26/2019 12:05	Joseph Suarez	2071035
	03/19/2019	03/22/2019 12:00	Adrian Shelby	03/26/2019 12:06	Joseph Suarez	2071040
	03/19/2019	03/22/2019 12:00	Adrian Shelby	03/26/2019 12:08	Joseph Suarez	2071041
EPA 353.2 Rev. 2.0	03/19/2019			03/22/2019 10:10	Beverly Y. Sanders	2071028
	03/19/2019			03/22/2019 10:11	Beverly Y. Sanders	2071029
	03/19/2019			03/22/2019 10:12	Beverly Y. Sanders	2071034
	03/19/2019			03/22/2019 10:14	Beverly Y. Sanders	2071035
	03/19/2019			03/22/2019 10:15	Beverly Y. Sanders	2071040
	03/19/2019			03/22/2019 10:16	Beverly Y. Sanders	2071041
EPA 365.1 Rev. 2.0	03/19/2019	03/25/2019 14:50	Adrian Shelby	03/27/2019 12:30	Rosalyn Ballman	2071028
	03/19/2019	03/25/2019 14:50	Adrian Shelby	03/27/2019 12:31	Rosalyn Ballman	2071029
	03/19/2019	03/25/2019 14:50	Adrian Shelby	03/27/2019 12:32	Rosalyn Ballman	2071034
	03/19/2019	03/27/2019 12:00	Adrian Shelby	03/28/2019 10:15	Rosalyn Ballman	2071040
	03/19/2019	03/27/2019 12:00	Adrian Shelby	03/28/2019 14:29	Rosalyn Ballman	2071035
	03/19/2019	03/27/2019 12:00	Adrian Shelby	03/28/2019 14:30	Rosalyn Ballman	2071041

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 dissolved	03/19/2019			03/19/2019 15:13	Julia Storbeck	2071036
	03/19/2019			03/19/2019 15:46	Julia Storbeck	2071030
	03/19/2019			03/19/2019 15:47	Julia Storbeck	2071031
	03/19/2019			03/19/2019 15:48	Julia Storbeck	2071037, 2071042
	03/19/2019			03/19/2019 15:49	Julia Storbeck	2071043
SM 2120 B	03/19/2019			03/19/2019 15:44	Mariam Hanna	2071026
	03/19/2019			03/19/2019 15:45	Mariam Hanna	2071027
	03/19/2019			03/19/2019 15:46	Mariam Hanna	2071032
	03/19/2019			03/19/2019 15:47	Mariam Hanna	2071033, 2071038
	03/19/2019			03/19/2019 15:48	Mariam Hanna	2071039
SM 2320 B-97	03/19/2019			03/28/2019 10:02	Dale L. Simmons	2071026
	03/19/2019			03/28/2019 10:13	Dale L. Simmons	2071027
	03/19/2019			03/28/2019 10:25	Dale L. Simmons	2071032
	03/19/2019			03/28/2019 10:38	Dale L. Simmons	2071033
	03/19/2019			03/28/2019 10:51	Dale L. Simmons	2071038
SM 2540 C-97	03/19/2019			03/28/2019 11:03	Dale L. Simmons	2071039
	03/19/2019			03/20/2019 15:26	Yijie Li	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
SM 2540 D-97	03/19/2019			03/20/2019 15:26	Yijie Li	2071026, 2071027, 2071032, 2071033, 2071038, 2071039
SM 4500 F-C-97	03/19/2019			03/28/2019 10:02	Dale L. Simmons	2071026
	03/19/2019			03/28/2019 10:13	Dale L. Simmons	2071027
	03/19/2019			03/28/2019 10:25	Dale L. Simmons	2071032
	03/19/2019			03/28/2019 10:38	Dale L. Simmons	2071033
	03/19/2019			03/28/2019 10:51	Dale L. Simmons	2071038
SM 5310 B-00	03/19/2019			03/28/2019 11:03	Dale L. Simmons	2071039
	03/19/2019			03/23/2019 03:09	Lauren Lees	2071028
	03/19/2019			03/23/2019 03:25	Lauren Lees	2071029
	03/19/2019			03/23/2019 03:44	Lauren Lees	2071034
	03/19/2019			03/23/2019 03:59	Lauren Lees	2071035
	03/19/2019			03/23/2019 04:18	Lauren Lees	2071040
	03/19/2019			03/23/2019 04:33	Lauren Lees	2071041