

Chemical Analysis Report

NE-DIST-2019-02-19-02

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

Event Description: **Nassau North Boat**
Request ID: **RQ-2019-02-18-09**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
Suite 100
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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 13-MAR-2019 17:34



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: ST. MARY RIVER AT CRANDALL RD

Collection Date/Time: 02/18/2019 09:10

Field ID: G4NE0293

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2063442	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P359190	
	EPA 300.0	Bromide	24		mg Br/L	P359948	
	SM 2320 B-97	Total Alkalinity	51		mg CaCO3/L	P359610	
	SM 2540 D-97	TSS	27	A	mg/L	P359299	
	SM 4500 F-C-97	Fluoride	0.48	I	mg F/L	P359612	
2063444	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P359377	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P359322	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P359286	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P359310	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P359685	
2063446	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P359179	
2063458	EPA 200.7 Rev. 4.4	Iron	870		ug/L	P359254	
		Manganese	23		ug/L	P359254	
		Zinc	15	U	ug/L	P359254	
	EPA 200.8 Rev. 5.4	Aluminum	716		ug/L	P359254	
		Antimony	0.20	U	ug/L	P359254	
		Arsenic	1.74		ug/L	P359254	
		Cadmium	0.080	U	ug/L	P359254	
		Chromium	4.0	U	ug/L	P359254	
		Copper	1.6	U	ug/L	P359254	
		Lead	2.0	U	ug/L	P359254	
		Nickel	2.0	U	ug/L	P359254	
		Selenium	0.80	U	ug/L	P359254	
		Silver	0.040	U	ug/L	P359254	
		Thallium	0.40	U	ug/L	P359254	

Sample Location: ST MARYS AT GA LINE US 17

Collection Date/Time: 02/18/2019 10:15

Field ID: 19010001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2063443	EPA 180.1 Rev. 2.0	Turbidity	6.7		NTU	P359190	
	EPA 300.0	Bromide	0.26		mg Br/L	P359948	
	SM 2320 B-97	Total Alkalinity	4.8		mg CaCO3/L	P359425	
	SM 2540 D-97	TSS	8	I	mg/L	P359444	
	SM 4500 F-C-97	Fluoride	0.045	I	mg F/L	P359429	
2063445	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P359379	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P359321	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P359486	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P359307	
	SM 5310 B-00	Organic Carbon	28		mg C/L	P359499	
2063447	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.015		mg P/L	P359178	
2063459	EPA 200.7 Rev. 4.4	Iron	840		ug/L	P359253	
		Manganese	13.2		ug/L	P359253	
		Zinc	5.3	I	ug/L	P359253	
	EPA 200.8 Rev. 5.4	Aluminum	636		ug/L	P359253	
		Antimony	0.050	U	ug/L	P359253	
		Arsenic	0.57		ug/L	P359253	
		Cadmium	0.020	U	ug/L	P359253	
		Chromium	1.1	I	ug/L	P359253	
		Copper	0.69	I	ug/L	P359253	
		Lead	0.72		ug/L	P359253	
		Nickel	0.68	I	ug/L	P359253	
		Selenium	0.20	U	ug/L	P359253	
		Silver	0.010	U	ug/L	P359253	
		Thallium	0.10	U	ug/L	P359253	

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: LITTLE ST. MARYS AT WHITE OAK RD.

Collection Date/Time: 02/18/2019 11:25

Field ID: G4NE0289

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2063448	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P359191	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P359739	
		Sulfate	3.1		mg SO4/L	P359741	
	SM 2120 B	Color (true)	330		PCU	P359184	
	SM 2320 B-97	Total Alkalinity	3.3		mg CaCO3/L	P359425	
	SM 2540 C-97	TDS	115		mg/L	P359536	
	SM 2540 D-97	TSS	3	I	mg/L	P359442	
	SM 4500 F-C-97	Fluoride	0.039	I	mg F/L	P359429	
2063449	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P359379	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P359321	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P359486	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P359307	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P359683	
2063450	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P359178	
2063460	EPA 200.7 Rev. 4.4	Iron	760		ug/L	P359253	
		Manganese	12.9		ug/L	P359253	
		Zinc	5.0	U	ug/L	P359253	
	EPA 200.8 Rev. 5.4	Aluminum	553		ug/L	P359253	
		Antimony	0.050	U	ug/L	P359253	
		Arsenic	0.62		ug/L	P359253	
		Cadmium	0.020	U	ug/L	P359253	
		Chromium	1.1	I	ug/L	P359253	
		Copper	0.52	I	ug/L	P359253	
		Lead	0.65		ug/L	P359253	
		Nickel	0.65	I	ug/L	P359253	
		Selenium	0.20	U	ug/L	P359253	
		Silver	0.010	U	ug/L	P359253	
		Thallium	0.10	U	ug/L	P359253	

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: ST MARYS R AT GA LINE US 17

Collection Date/Time: 02/18/2019 09:20

Field ID: FB 02182019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2063451	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P359191	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P359739	
		Sulfate	0.20	U	mg SO4/L	P359741	
	SM 2120 B	Color (true)	2.5	U	PCU	P359184	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P359425	
	SM 2540 C-97	TDS	15	U	mg/L	P359532	
	SM 2540 D-97	TSS	2	U	mg/L	P359438	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P359429	
2063452	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P359379	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P359321	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P359486	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P359307	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P359683	
2063453	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359178	

Ref. Method and Comment:

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

EPA 353.2 Rev. 2.0: The result was confirmed on 02/25/2019.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359190

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359191

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359253

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359254

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359253

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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: P359254

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359254

Component	Result	Code	Units
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0
Batch ID: P359948

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359739

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359741

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359377

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359379

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359321

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359322

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359286

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359486

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359307

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359310

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359178

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359179

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

Reference Method: SM 2120 B
Batch ID: P359184

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P359425

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

Reference Method: SM 2320 B-97
Batch ID: P359610

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

Reference Method: SM 2540 C-97
Batch ID: P359532

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P359536

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P359299

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P359438

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P359442

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P359444

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P359429

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P359612

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P359499

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

Reference Method: SM 5310 B-00
Batch ID: P359683

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P359685

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: P359253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	110		P	85 - 115
Manganese	106		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	107		P	85 - 115
Manganese	105		P	85 - 115
Zinc	106		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.4		P	85 - 115
Antimony	99.5		P	85 - 115
Arsenic	105		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	102		P	85 - 115
Copper	106		P	85 - 115
Lead	104		P	85 - 115
Nickel	102		P	85 - 115
Selenium	100		P	85 - 115
Silver	101		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.8		P	85 - 115
Antimony	96.0		P	85 - 115
Arsenic	100		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	99.7		P	85 - 115
Copper	98.1		P	85 - 115
Lead	94.1		P	85 - 115
Nickel	98.2		P	85 - 115
Selenium	100		P	85 - 115
Silver	101		P	85 - 115
Thallium	99.9		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P359948

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359739

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359741

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359377

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359379

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359321

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359322

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: P359286

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359486

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359307

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359310

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359178

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359179

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

Reference Method: SM 2120 B
Batch ID: P359184

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

Reference Method: SM 2320 B-97
Batch ID: P359425

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P359610

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

Reference Method: SM 4500 F-C-97
Batch ID: P359429

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P359612

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359499

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.9		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P359683

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.3		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P359685

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063376	Iron	106		P	80 - 120
2063376	Manganese	101		P	80 - 120
2063376	Zinc	103		P	80 - 120
2063439	Iron	112	110	P/P	80 - 120
2063439	Manganese	107	106	P/P	80 - 120
2063439	Zinc	107	106	P/P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063332	Iron	103	106	P/P	80 - 120
2063332	Manganese	98.2	100	P/P	80 - 120
2063332	Zinc	104	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063376	Aluminum	96.1		P	80 - 120
2063376	Antimony	103		P	80 - 120
2063376	Arsenic	108		P	80 - 120
2063376	Cadmium	105		P	80 - 120
2063376	Chromium	105		P	80 - 120
2063376	Copper	105		P	80 - 120
2063376	Lead	107		P	80 - 120
2063376	Nickel	103		P	80 - 120
2063376	Selenium	101		P	80 - 120
2063376	Silver	99.3		P	80 - 120
2063376	Thallium	112		P	80 - 120
2063439	Aluminum	94.9	95.8	P/P	80 - 120
2063439	Antimony	98.7	99.8	P/P	80 - 120
2063439	Arsenic	106	107	P/P	80 - 120
2063439	Cadmium	102	104	P/P	80 - 120
2063439	Chromium	108	109	P/P	80 - 120
2063439	Copper	111	113	P/P	80 - 120
2063439	Lead	105	106	P/P	80 - 120
2063439	Nickel	108	110	P/P	80 - 120
2063439	Selenium	97.5	97.9	P/P	80 - 120
2063439	Silver	99.5	101	P/P	80 - 120
2063439	Thallium	107	107	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063332	Aluminum	112	110	P/P	70 - 130
2063332	Antimony	99.7	101	P/P	70 - 130
2063332	Arsenic	109	107	P/P	70 - 130
2063332	Cadmium	94.6	92.0	P/P	70 - 130
2063332	Chromium	99.3	96.5	P/P	70 - 130
2063332	Copper	96.1	94.0	P/P	70 - 130

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063332	Lead	98.4	97.3	P/P	70 - 130
2063332	Nickel	95.4	93.4	P/P	70 - 130
2063332	Selenium	102	100	P/P	70 - 130
2063332	Silver	95.1	94.2	P/P	70 - 130
2063332	Thallium	104	106	P/P	70 - 130

Reference Method: EPA 300.0
Batch ID: P359948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063443	Bromide	101	96.7	P/P	90 - 110
2065388	Bromide	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063433	Chloride	104		P	90 - 110
2063517	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P359741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063433	Sulfate	103		P	90 - 110
2063517	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063311	Ammonia-N	102	106	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063478	Ammonia-N	102	96.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359321

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063397	Kjeldahl Nitrogen	95.4	90.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063120	Kjeldahl Nitrogen	96.6	94.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359286

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063119	NO2NO3-N	99.5	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359486

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063395	NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063478	Total-P	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063472	Total-P	108	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359178

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063479	O-Phosphate-P	95.5	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359179

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063312	O-Phosphate-P	95.1	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P359429

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063517	Fluoride	98.9	98.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P359612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2061821	Fluoride	94.5	96.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359499

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063395	Organic Carbon	95.9	96.6	P/P	85 - 115

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P359683

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063449	Organic Carbon	103		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P359685

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062786	Organic Carbon	98.5	99.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063392	Turbidity	10.2	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063477	Turbidity	2.65	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063439	Iron	1.96	Spike	P	0 - 20
2063439	Manganese	0.983	Spike	P	0 - 20
2063439	Zinc	1.12	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063332	Iron	2.24	Spike	P	0 - 20
2063332	Manganese	1.66	Spike	P	0 - 20
2063332	Zinc	1.49	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063439	Aluminum	0.902	Spike	P	0 - 20
2063439	Antimony	1.11	Spike	P	0 - 20
2063439	Arsenic	0.988	Spike	P	0 - 20
2063439	Cadmium	2.01	Spike	P	0 - 20
2063439	Chromium	0.229	Spike	P	0 - 20
2063439	Copper	1.36	Spike	P	0 - 20
2063439	Lead	1.02	Spike	P	0 - 20
2063439	Nickel	1.49	Spike	P	0 - 20
2063439	Selenium	0.494	Spike	P	0 - 20
2063439	Silver	1.49	Spike	P	0 - 20
2063439	Thallium	0.702	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063332	Aluminum	1.76	Spike	P	0 - 20
2063332	Antimony	0.830	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P359254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063332	Arsenic	1.68	Spike	P	0 - 20
2063332	Cadmium	2.82	Spike	P	0 - 20
2063332	Chromium	2.90	Spike	P	0 - 20
2063332	Copper	2.20	Spike	P	0 - 20
2063332	Lead	1.06	Spike	P	0 - 20
2063332	Nickel	2.21	Spike	P	0 - 20
2063332	Selenium	2.23	Spike	P	0 - 20
2063332	Silver	1.01	Spike	P	0 - 20
2063332	Thallium	1.26	Spike	P	0 - 20

Reference Method: EPA 300.0
 Batch ID: P359948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063443	Bromide	2.78	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P359739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063517	Chloride	0.0364	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P359741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063517	Sulfate	0.222	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P359377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063311	Ammonia-N	2.39	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P359379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063478	Ammonia-N	2.95	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P359321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063397	Kjeldahl Nitrogen	3.53	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063120	Kjeldahl Nitrogen	2.04	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359286

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063119	NO2NO3-N	2.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359486

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063395	NO2NO3-N	0.477	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063478	Total-P	0.595	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063472	Total-P	1.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063479	O-Phosphate-P	1.48	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063312	O-Phosphate-P	2.08	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P359184

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063487	Color (true)	0.676	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P359425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063517	Total Alkalinity	0.279	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P359610

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063307	Total Alkalinity	0.249	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P359532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062799	TDS	6.90	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P359536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063487	TDS	3.92	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P359299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063442	TSS	4.51	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P359429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063517	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P359612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2061821	Fluoride	1.42	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P359499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063395	Organic Carbon	0.622	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P359683

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063449	Organic Carbon	0.424	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P359685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062786	Organic Carbon	0.541	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89509

Included Lab Sample IDs: 2063446, 2063447, 2063450, 2063453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.8	P/P	90 - 110
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	99.8	99.4	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A89510

Included Lab Sample IDs: 2063448, 2063451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115
Color (true)	104	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A89511

Included Lab Sample IDs: 2063442, 2063443, 2063448, 2063451

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89554

Included Lab Sample IDs: 2063444

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A89559

Included Lab Sample IDs: 2063459, 2063460

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	104	104	P/P	90 - 110
Manganese	105	104	P/P	90 - 110
Zinc	102	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A89563

Included Lab Sample IDs: 2063458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	99.6	99.3	P/P	90 - 110
Manganese	102	102	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89571

Included Lab Sample IDs: 2063459, 2063460

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	96.8	94.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89571

Included Lab Sample IDs: 2063459, 2063460

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	97.6	95.7	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Cadmium	97.9	96.9	P/P	90 - 110
Chromium	104	105	P/P	90 - 110
Copper	106	108	P/P	90 - 110
Lead	102	103	P/P	90 - 110
Nickel	103	104	P/P	90 - 110
Selenium	97.7	96.6	P/P	90 - 110
Silver	96.4	96.4	P/P	90 - 110
Thallium	98.1	99.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89592

Included Lab Sample IDs: 2063444, 2063445, 2063449, 2063452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	99.4	P/P	90 - 110
Ammonia-N	104	102	P/P	90 - 110
Ammonia-N	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89597

Included Lab Sample IDs: 2063444, 2063445, 2063449, 2063452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.5	P/P	90 - 110
Total-P	98.2	99.2	P/P	90 - 110
Total-P	98.5	98.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89606

Included Lab Sample IDs: 2063443, 2063448, 2063451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.4	P/P	90 - 110
Total Alkalinity	99.4	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89606

Included Lab Sample IDs: 2063443, 2063448, 2063451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.0	P/P	90 - 110
Fluoride	99.0	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89633

Included Lab Sample IDs: 2063445, 2063449, 2063452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89639

Included Lab Sample IDs: 2063444

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89640

Included Lab Sample IDs: 2063445, 2063449, 2063452

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

Reference Method: SM 5310 B-00

Run ID: A89647

Included Lab Sample IDs: 2063445

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.8	95.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A89674

Included Lab Sample IDs: 2063448, 2063451

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

Reference Method: SM 2320 B-97

Run ID: A89688

Included Lab Sample IDs: 2063442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89688

Included Lab Sample IDs: 2063442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	98.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89712

Included Lab Sample IDs: 2063458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	107	105	P/P	90 - 110
Antimony	96.6	97.6	P/P	90 - 110
Arsenic	99.0	97.2	P/P	90 - 110
Cadmium	97.9	98.0	P/P	90 - 110
Copper	97.0	95.2	P/P	90 - 110
Lead	93.4	94.6	P/P	90 - 110
Nickel	93.8	92.9	P/P	90 - 110
Silver	102	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89713

Included Lab Sample IDs: 2063458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	97.0	101	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A89721

Included Lab Sample IDs: 2063444, 2063449, 2063452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.0	93.1	P/P	90 - 110
Organic Carbon	94.4	94.6	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A89785

Included Lab Sample IDs: 2063442, 2063443

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	98.1	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89815

Included Lab Sample IDs: 2063458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	104	102	P/P	90 - 110
Thallium	98.7	99.0	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						10.2	
	Turbidity						2.65	
EPA 200.7 Rev. 4.4	Iron	110	106	112	110			1.96
	Iron	107	103	106				2.24
	Manganese	106	101	107	106			0.983
	Manganese	105	98.2	100				1.66
	Zinc	104	103	107	106			1.12
	Zinc	106	104	106				1.49
EPA 200.8 Rev. 5.4	Aluminum	99.4	96.1	94.9	95.8			0.902
	Aluminum	99.8	112	110				1.76
	Antimony	99.5	103	98.7	99.8			1.11
	Antimony	96.0	99.7	101				0.830
	Arsenic	105	108	106	107			0.988
	Arsenic	100	109	107				1.68
	Cadmium	101	105	102	104			2.01
	Cadmium	100	94.6	92.0				2.82
	Chromium	102	105	108	109			0.229
	Chromium	99.7	99.3	96.5				2.90
	Copper	106	105	111	113			1.36
	Copper	98.1	96.1	94.0				2.20
	Lead	104	107	105	106			1.02
	Lead	94.1	98.4	97.3				1.06
	Nickel	102	103	108	110			1.49
	Nickel	98.2	95.4	93.4				2.21
	Selenium	100	101	97.5	97.9			0.494
	Selenium	100	102	100				2.23
	Silver	101	99.3	99.5	101			1.49
	Silver	101	95.1	94.2				1.01
	Thallium	102	112	107	107			0.702
	Thallium	99.9	104	106				1.26
EPA 300.0	Bromide	107	101	96.7	99.3			2.78
EPA 300.0 Rev. 2.1	Chloride	104	101	104			0.0364	
	Sulfate	105	100	103			0.222	
EPA 350.1 Rev. 2.0	Ammonia-N	98.5	102	106				2.39
	Ammonia-N	96.5	102	96.7				2.95
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	95.4	90.7				3.53
	Kjeldahl Nitrogen	103	96.6	94.3				2.04
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	99.5	102				2.48
	NO2NO3-N	99.0	96.5					0.477
EPA 365.1 Rev. 2.0	Total-P	105	103	102				0.595
	Total-P	107	108	106				1.77
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	95.5	97.1				1.48
	O-Phosphate-P	102	95.1	97.8				2.08
SM 2120 B	Color (true)	102					0.676	
SM 2320 B-97	Total Alkalinity	101					0.279	
	Total Alkalinity	102					0.249	
SM 2540 C-97	TDS						6.90	
	TDS						3.92	
SM 2540 D-97	TSS						4.51	
SM 4500 F-C-97	Fluoride	97.3	98.9	98.9				0.0
	Fluoride	96.3	94.5	96.3				1.42
SM 5310 B-00	Organic Carbon	96.9	95.9	96.6				0.622
	Organic Carbon	94.3	103					0.424
	Organic Carbon	95.9	98.5	99.0				0.541

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2063442, 2063443, 2063448, 2063451
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2063458, 2063459, 2063460
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2063458, 2063459, 2063460
EPA 300.0 / E31780	Bromide in aqueous matrices	2063442, 2063443
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2063448, 2063451
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2063448, 2063451
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2063444, 2063445, 2063449, 2063452
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2063444, 2063445, 2063449, 2063452
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2063444, 2063445, 2063449, 2063452
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2063444, 2063445, 2063449, 2063452
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2063446, 2063447, 2063450, 2063453
SM 2120 B / E31780	True Color measured at 450 nm	2063448, 2063451
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2063442, 2063443, 2063448, 2063451
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2063448, 2063451
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2063442, 2063443, 2063448, 2063451
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2063442, 2063443, 2063448, 2063451
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2063444, 2063445, 2063449, 2063452

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	02/19/2019			02/19/2019 17:21	Adrian Shelby	2063442, 2063443, 2063448, 2063451
EPA 200.7 Rev. 4.4	02/19/2019	02/20/2019 17:30	Elliott D. Healy	02/21/2019 13:33	Betina Topolski	2063459
	02/19/2019	02/20/2019 17:30	Elliott D. Healy	02/21/2019 13:40	Betina Topolski	2063460
	02/19/2019	02/20/2019 17:30	Elliott D. Healy	02/21/2019 14:22	Martin Acosta	2063458
EPA 200.8 Rev. 5.4	02/19/2019	02/20/2019 17:30	Elliott D. Healy	02/22/2019 00:26	Allison Taylor	2063459
	02/19/2019	02/20/2019 17:30	Elliott D. Healy	02/22/2019 00:36	Allison Taylor	2063460
	02/19/2019	02/20/2019 17:30	Elliott D. Healy	02/27/2019 22:13	Allison Taylor	2063458
	02/19/2019	02/20/2019 17:30	Elliott D. Healy	02/28/2019 03:40	Robert K Palmer	2063458
	02/19/2019	02/20/2019 17:30	Elliott D. Healy	02/28/2019 04:56	Robert K Palmer	2063458
	02/19/2019	02/20/2019 17:30	Elliott D. Healy	03/05/2019 18:16	Robert K Palmer	2063458
EPA 300.0	02/19/2019			03/05/2019 14:05	Lipi Saha	2063443
	02/19/2019			03/05/2019 16:21	Lipi Saha	2063442
EPA 300.0 Rev. 2.1	02/19/2019			02/28/2019 13:28	Lipi Saha	2063448
	02/19/2019			02/28/2019 13:43	Lipi Saha	2063451
EPA 350.1 Rev. 2.0	02/19/2019			02/22/2019 11:02	Ping Hua	2063444
	02/19/2019			02/22/2019 12:03	Ping Hua	2063445
	02/19/2019			02/22/2019 12:04	Ping Hua	2063449
	02/19/2019			02/22/2019 12:21	Ping Hua	2063452
EPA 351.2 Rev. 2.0	02/19/2019	02/21/2019 16:30	Adrian Shelby	02/22/2019 14:18	Joseph Suarez	2063445
	02/19/2019	02/21/2019 16:30	Adrian Shelby	02/22/2019 14:19	Joseph Suarez	2063449
	02/19/2019	02/21/2019 16:30	Adrian Shelby	02/22/2019 14:21	Joseph Suarez	2063452
	02/19/2019	02/21/2019 16:30	Adrian Shelby	02/22/2019 16:19	Joseph Suarez	2063444
EPA 353.2 Rev. 2.0	02/19/2019			02/21/2019 10:25	Beverly Y. Sanders	2063444
	02/19/2019			02/25/2019 11:04	Beverly Y. Sanders	2063445
	02/19/2019			02/25/2019 11:05	Beverly Y. Sanders	2063449
	02/19/2019			02/25/2019 11:06	Beverly Y. Sanders	2063452
EPA 365.1 Rev. 2.0	02/19/2019	02/21/2019 13:10	Sima Feizi	02/22/2019 15:54	Rosalyn Ballman	2063445
	02/19/2019	02/21/2019 13:10	Sima Feizi	02/22/2019 16:02	Rosalyn Ballman	2063449
	02/19/2019	02/21/2019 13:10	Sima Feizi	02/22/2019 16:03	Rosalyn Ballman	2063452
	02/19/2019	02/21/2019 13:10	Sima Feizi	02/22/2019 16:26	Rosalyn Ballman	2063444
EPA 365.1 Rev. 2.0 dissolved	02/19/2019			02/19/2019 14:53	Jhamieka S. Greenwood	2063453
	02/19/2019			02/19/2019 15:09	Jhamieka S. Greenwood	2063447
	02/19/2019			02/19/2019 15:10	Jhamieka S. Greenwood	2063450
	02/19/2019			02/19/2019 15:21	Jhamieka S. Greenwood	2063446
SM 2120 B	02/19/2019			02/19/2019 16:40	Chelsea Hernandez	2063451
	02/19/2019			02/19/2019 17:19	Chelsea Hernandez	2063448
SM 2320 B-97	02/19/2019			02/23/2019 09:41	Lauren Lees	2063443
	02/19/2019			02/23/2019 09:51	Lauren Lees	2063448
	02/19/2019			02/23/2019 10:47	Lauren Lees	2063451
	02/19/2019			02/27/2019 03:20	Dale L. Simmons	2063442

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 C-97	02/19/2019			02/20/2019 16:21	Yijie Li	2063448, 2063451
SM 2540 D-97	02/19/2019			02/20/2019 15:05	Mariam Hanna	2063442
	02/19/2019			02/20/2019 16:21	Yijie Li	2063443, 2063448, 2063451
SM 4500 F-C-97	02/19/2019			02/23/2019 09:41	Lauren Lees	2063443
	02/19/2019			02/23/2019 09:51	Lauren Lees	2063448
	02/19/2019			02/23/2019 10:47	Lauren Lees	2063451
	02/19/2019			02/27/2019 02:54	Dale L. Simmons	2063442
SM 5310 B-00	02/19/2019			02/25/2019 03:32	Chelsea Hernandez	2063445
	02/19/2019			02/27/2019 04:10	Chelsea Hernandez	2063449
	02/19/2019			02/27/2019 05:36	Chelsea Hernandez	2063452
	02/19/2019			02/28/2019 08:57	Chelsea Hernandez	2063444