

Chemical Analysis Report

TLH-ROC-2021-01-20-01

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

Event Description: **Run 7**
Request ID: **RQ-2021-01-11-14**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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Certified by: Colin Wright, Program Administrator

Date Certified: 10-FEB-2021 11:19

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a white background.

Case Narrative

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

Results for the following analytical groups are included in this report: Metals and Nutrients.

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: OYSTER BAY2

Collection Date/Time: 01/20/2021 13:00

Field ID: G1TLHR0152

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220255	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P392689	
	EPA 300.0 Rev. 2.1	Bromide	28		mg Br/L	P393037	
	SM 2320 B-2011	Total Alkalinity	95		mg CaCO3/L	P392865	
	SM 2540 D-2011	TSS	3	U	mg/L	P392983	
	SM 4500 F-C-2011	Fluoride	0.58		mg F/L	P392869	
2220257	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P393202	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P393093	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.045		mg N/L	P392960	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P392785	
	SM 5310 B-2011	Organic Carbon	9.0		mg C/L	P392987	
2220259	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P392636	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: OYSTER BAY1

Collection Date/Time: 01/20/2021 13:10

Field ID: G1TLHR0151

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220256	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P392689	
	EPA 300.0 Rev. 2.1	Bromide	8.8		mg Br/L	P393037	
	SM 2320 B-2011	Total Alkalinity	91		mg CaCO3/L	P393214	
	SM 2540 D-2011	TSS	2	IA	mg/L	P392981	
	SM 4500 F-C-2011	Fluoride	0.20		mg F/L	P392867	
2220258	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P393204	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P393093	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P392960	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P392785	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P392755	
2220260	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P392636	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Gully Branch 80m North Of Gully Branch Rd

Collection Date/Time: 01/20/2021 10:25

Field ID: G2TLHR0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220281	EPA 180.1 Rev. 2.0	Turbidity	2.9	A	NTU	P392689	
	EPA 300.0 Rev. 2.1	Chloride	6.5		mg Cl/L	P392789	
		Sulfate	1.3		mg SO4/L	P392790	
		Color (true)	270		PCU	P392710	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P393214	
	SM 2540 D-2011	TSS	2	I	mg/L	P392981	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P392867	
2220282	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P393334	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P393057	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P392813	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P392786	
	SM 5310 B-2011	Organic Carbon	34		mg C/L	P392755	
2220283	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P392640	
2220295	EPA 200.7 Rev. 4.4	Barium	6.0		ug/L	P392709	
		Calcium	2.80		mg/L	P392709	
		Iron	860		ug/L	P392709	
		Magnesium	0.63		mg/L	P392709	
		Manganese	6.7		ug/L	P392709	
		Potassium	0.30	U	mg/L	P392709	
		Sodium	3.8		mg/L	P392709	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P392709	
		Aluminum	702		ug/L	P392709	
		Antimony	0.050	U	ug/L	P392709	
		Arsenic	0.20		ug/L	P392709	
		Beryllium	0.027	I	ug/L	P392709	
		Boron**	9.3		ug/L	P392709	
		Cadmium	0.020	U	ug/L	P392709	
		Chromium	0.75	I	ug/L	P392709	
		Copper	0.40	U	ug/L	P392709	
		Lead	0.45		ug/L	P392709	
		Nickel	0.50	U	ug/L	P392709	
		Selenium	0.20	U	ug/L	P392709	
		Silver	0.010	U	ug/L	P392709	
		Thallium	0.10	U	ug/L	P392709	
		Hardness	9.6		mg/L	P392709	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Alligator Harbor Near Clam Beds

Collection Date/Time: 01/20/2021 11:55

Field ID: G2TLHR0025

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220272	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P392689	
	EPA 300.0 Rev. 2.1	Bromide	60		mg Br/L	P393037	
	SM 2320 B-2011	Total Alkalinity	108	A	mg CaCO3/L	P392865	
	SM 2540 D-2011	TSS	3	U	mg/L	P392983	
	SM 4500 F-C-2011	Fluoride	1.1		mg F/L	P392869	
2220273	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P393202	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P393090	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P392960	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P392785	
	SM 5310 B-2011	Organic Carbon	2.8		mg C/L	P392987	
2220274	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P392636	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Spring Creek Springs Middle

Collection Date/Time: 01/20/2021 13:25

Field ID: G1TLHR0129

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220275	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P392689	
	EPA 300.0 Rev. 2.1	Bromide	6.6		mg Br/L	P393037	
	SM 2320 B-2011	Total Alkalinity	91		mg CaCO3/L	P393214	
	SM 2540 D-2011	TSS	2	U	mg/L	P392981	
	SM 4500 F-C-2011	Fluoride	0.16		mg F/L	P392867	
2220277	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P393337	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31	I	mg N/L	P393090	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P392960	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P392785	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P392755	
2220279	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P392636	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Spring Creek Spring

Collection Date/Time: 01/20/2021 13:35

Field ID: G1TLHR0131

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2220276	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P392689	
	EPA 300.0 Rev. 2.1	Bromide	5.3		mg Br/L	P393037	
	SM 2320 B-2011	Total Alkalinity	92		mg CaCO3/L	P393214	
	SM 2540 D-2011	TSS	2	I	mg/L	P392981	
	SM 4500 F-C-2011	Fluoride	0.13		mg F/L	P392867	
2220278	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P393337	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32	I	mg N/L	P393090	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P392960	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P392785	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P392755	
2220280	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.021		mg P/L	P392636	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P392689

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P392709

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
Manganese	1.0	U	ug/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: P392709

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392789

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392790

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393037

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393202

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393204

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393334

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393337

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393057

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393090

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393093

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392813

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392960

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392785

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392786

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392636

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392640

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

Reference Method: SM 2120 B-2011
Batch ID: P392710

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P392865

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

Reference Method: SM 2320 B-2011
Batch ID: P393214

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

Reference Method: SM 2540 D-2011
Batch ID: P392981

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P392983

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P392867

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P392869

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P392755

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

Reference Method: SM 5310 B-2011
Batch ID: P392987

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: P392709

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	98.2		P	85 - 115
Calcium	106		P	85 - 115
Iron	108		P	85 - 115
Magnesium	107		P	85 - 115
Manganese	99.4		P	85 - 115
Potassium	98.1		P	85 - 115
Sodium	104		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P392709

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.4		P	85 - 115
Antimony	104		P	85 - 115
Arsenic	101		P	85 - 115
Beryllium	96.3		P	85 - 115
Boron	92.7		P	85 - 115
Cadmium	96.7		P	85 - 115
Chromium	106		P	85 - 115
Copper	98.9		P	85 - 115
Lead	103		P	85 - 115
Nickel	99.7		P	85 - 115
Selenium	98.6		P	85 - 115
Silver	109		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P392789

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

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P392790

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

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P393037

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P393202

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393204

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393334

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393337

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393057

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393090

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393093

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392813

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392960

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392785

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P392786

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P392636

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P392640

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.8		P	90 - 110

Reference Method: SM 2120 B-2011

Batch ID: P392710

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.5		P	85 - 115

Reference Method: SM 2320 B-2011

Batch ID: P392865

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.2		P	93 - 104

Reference Method: SM 2320 B-2011

Batch ID: P393214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.1		P	93 - 104

Reference Method: SM 4500 F-C-2011

Batch ID: P392867

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	90 - 106

Reference Method: SM 4500 F-C-2011

Batch ID: P392869

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	90 - 106

Reference Method: SM 5310 B-2011

Batch ID: P392755

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P392987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P392709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220092	Barium	101		P	80 - 120
2220092	Calcium	109		P	80 - 120
2220092	Iron	110		P	80 - 120
2220092	Magnesium	109		P	80 - 120
2220092	Manganese	101		P	80 - 120
2220092	Potassium	104		P	80 - 120
2220092	Sodium	105		P	80 - 120
2220092	Zinc	104		P	80 - 120
2220307	Barium	104	102	P/P	80 - 120
2220307	Calcium	111	110	P/P	80 - 120
2220307	Iron	113	114	P/P	80 - 120
2220307	Magnesium	111	112	P/P	80 - 120
2220307	Manganese	105	102	P/P	80 - 120
2220307	Potassium	105	102	P/P	80 - 120
2220307	Sodium	106	102	P/P	80 - 120
2220307	Zinc	106	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P392709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220092	Aluminum	95.1		P	80 - 120
2220092	Antimony	100		P	80 - 120
2220092	Arsenic	96.5		P	80 - 120
2220092	Beryllium	93.1		P	80 - 120
2220092	Boron	98.2		P	80 - 120
2220092	Cadmium	93.8		P	80 - 120
2220092	Chromium	102		P	80 - 120
2220092	Copper	94.8		P	80 - 120
2220092	Lead	101		P	80 - 120
2220092	Nickel	94.0		P	80 - 120
2220092	Selenium	92.0		P	80 - 120
2220092	Silver	106		P	80 - 120
2220092	Thallium	102		P	80 - 120
2220307	Aluminum	93.8	96.0	P/P	80 - 120
2220307	Antimony	102	103	P/P	80 - 120
2220307	Arsenic	96.9	98.2	P/P	80 - 120
2220307	Beryllium	92.6	93.7	P/P	80 - 120
2220307	Boron	97.0	98.3	P/P	80 - 120
2220307	Cadmium	95.2	96.8	P/P	80 - 120
2220307	Chromium	106	108	P/P	80 - 120
2220307	Copper	95.5	96.9	P/P	80 - 120
2220307	Lead	102	103	P/P	80 - 120
2220307	Nickel	97.9	98.9	P/P	80 - 120
2220307	Selenium	92.8	94.9	P/P	80 - 120
2220307	Silver	109	108	P/P	80 - 120
2220307	Thallium	99.8	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P392789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220281	Chloride	102		P	90 - 110
2220423	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P392790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220281	Sulfate	103		P	90 - 110
2220423	Sulfate	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393037

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219957	Bromide	90.3		P	90 - 110
2220312	Bromide	97.8	97.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393202

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219307	Ammonia-N	106	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393204

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2219552	Ammonia-N	107	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393334

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220302	Ammonia-N	103	93.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393337

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220717	Ammonia-N	107	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393057

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220178	Kjeldahl Nitrogen	94.1	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393090

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220273	Kjeldahl Nitrogen	96.3	96.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393093

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220042	Kjeldahl Nitrogen	93.5	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392813

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220107	NO2NO3-N	97.2	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392960

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220258	NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220161	Total-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220129	O-Phosphate-P	97.7	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392640

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220283	O-Phosphate-P	99.2	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P392867

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220650	Fluoride	98.3	99.5	P/P	94 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P392869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220272	Fluoride	101	103	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P392755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220106	Organic Carbon	98.9	102	P/P	85 - 115

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P392987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2220273	Organic Carbon	93.6	93.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P392689

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220281	Turbidity	4.51	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P392709

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220307	Barium	2.07	Spike	P	0 - 20
2220307	Calcium	0.647	Spike	P	0 - 20
2220307	Iron	0.954	Spike	P	0 - 20
2220307	Magnesium	0.962	Spike	P	0 - 20
2220307	Manganese	2.15	Spike	P	0 - 20
2220307	Potassium	2.76	Spike	P	0 - 20
2220307	Sodium	2.69	Spike	P	0 - 20
2220307	Zinc	1.66	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P392709

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220307	Aluminum	2.27	Spike	P	0 - 20
2220307	Antimony	1.45	Spike	P	0 - 20
2220307	Arsenic	1.39	Spike	P	0 - 20
2220307	Beryllium	1.05	Spike	P	0 - 20
2220307	Boron	1.25	Spike	P	0 - 20
2220307	Cadmium	1.73	Spike	P	0 - 20
2220307	Chromium	1.98	Spike	P	0 - 20
2220307	Copper	1.46	Spike	P	0 - 20
2220307	Lead	1.43	Spike	P	0 - 20
2220307	Nickel	1.07	Spike	P	0 - 20
2220307	Selenium	2.27	Spike	P	0 - 20
2220307	Silver	0.393	Spike	P	0 - 20
2220307	Thallium	2.09	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P392789

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220423	Chloride	0.819	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P392790

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220423	Sulfate	1.08	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P393037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220312	Bromide	0.421	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393202

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219307	Ammonia-N	0.686	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393204

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2219552	Ammonia-N	1.21	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393334

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220302	Ammonia-N	8.69	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P393337

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220717	Ammonia-N	0.854	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393057

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220178	Kjeldahl Nitrogen	6.44	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393090

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220273	Kjeldahl Nitrogen	0.299	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P393093

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220042	Kjeldahl Nitrogen	3.59	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220107	NO2NO3-N	0.685	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P392960

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220258	NO2NO3-N	0.334	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220126	Total-P	0.0855	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P392786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220161	Total-P	1.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220129	O-Phosphate-P	0.875	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P392640

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220283	O-Phosphate-P	0.101	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P392710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220321	Color (true)	1.31	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P392865

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220272	Total Alkalinity	0.789	Sample	P	0 - 8.1

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P393214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220650	Total Alkalinity	1.41	Sample	P	0 - 8.1

Reference Method: SM 4500 F-C-2011
Batch ID: P392867

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220650	Fluoride	0.927	Spike	P	0 - 2.8

Reference Method: SM 4500 F-C-2011
Batch ID: P392869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220272	Fluoride	0.927	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P392755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220106	Organic Carbon	1.50	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P392987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2220273	Organic Carbon	0.398	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A103142

Included Lab Sample IDs: 2220259, 2220260, 2220274, 2220279, 2220280, 2220283

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.2	P/P	90 - 110
O-Phosphate-P	99.4	99.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A103154

Included Lab Sample IDs: 2220281

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A103158

Included Lab Sample IDs: 2220255, 2220256, 2220272, 2220275, 2220276, 2220281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A103163

Included Lab Sample IDs: 2220281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: SM 5310 B-2011

Run ID: A103188

Included Lab Sample IDs: 2220258, 2220277, 2220278, 2220282

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A103210

Included Lab Sample IDs: 2220282

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A103221

Included Lab Sample IDs: 2220295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	99.5	99.8	P/P	90 - 110
Iron	102	104	P/P	90 - 110
Magnesium	99.4	99.8	P/P	90 - 110
Manganese	102	102	P/P	90 - 110
Potassium	94.7	93.5	P/P	90 - 110
Sodium	100	99.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A103221

Included Lab Sample IDs: 2220295

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

Reference Method: SM 2320 B-2011

Run ID: A103225

Included Lab Sample IDs: 2220255, 2220272

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.9	93.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A103225

Included Lab Sample IDs: 2220255, 2220256, 2220272, 2220275, 2220276, 2220281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110
Fluoride	101	102	P/P	90 - 110
Fluoride	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A103237

Included Lab Sample IDs: 2220257, 2220258, 2220273, 2220277, 2220278, 2220282

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	95.8	P/P	90 - 110
Total-P	99.8	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A103259

Included Lab Sample IDs: 2220257, 2220258, 2220273, 2220277, 2220278

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

Reference Method: SM 5310 B-2011

Run ID: A103265

Included Lab Sample IDs: 2220257, 2220273

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.6	95.8	P/P	90 - 110
Organic Carbon	96.8	94.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A103266

Included Lab Sample IDs: 2220255, 2220256, 2220272, 2220275, 2220276

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	96.0	96.5	P/P	90 - 110
Bromide	96.5	96.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A103276

Included Lab Sample IDs: 2220295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.0	97.0	P/P	90 - 110
Antimony	99.3	99.4	P/P	90 - 110
Arsenic	97.7	97.7	P/P	90 - 110
Beryllium	96.3	96.8	P/P	90 - 110
Boron	101	102	P/P	90 - 110
Chromium	104	105	P/P	90 - 110
Copper	94.2	94.9	P/P	90 - 110
Lead	102	102	P/P	90 - 110
Nickel	95.5	96.6	P/P	90 - 110
Selenium	96.4	96.1	P/P	90 - 110
Silver	104	106	P/P	90 - 110
Thallium	103	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A103299

Included Lab Sample IDs: 2220295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	98.7	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A103322

Included Lab Sample IDs: 2220257, 2220258, 2220273, 2220277, 2220278, 2220282

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.4	98.9	P/P	90 - 110
Kjeldahl Nitrogen	98.5	97.7	P/P	90 - 110
Kjeldahl Nitrogen	99.4	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A103348

Included Lab Sample IDs: 2220257, 2220258, 2220273

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	95.8	P/P	90 - 110
Ammonia-N	102	103	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A103352

Included Lab Sample IDs: 2220256, 2220275, 2220276, 2220281

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	93.7	95.3	P/P	90 - 110
Total Alkalinity	95.3	93.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A103396

Included Lab Sample IDs: 2220277, 2220278, 2220282

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	98.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A103396

Included Lab Sample IDs: 2220277, 2220278, 2220282

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	94.7	103	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						4.51	
EPA 200.7 Rev. 4.4	Barium	98.2	101	104	102			2.07
	Calcium	106	109	111	110			0.647
	Iron	108	110	113	114			0.954
	Magnesium	107	109	111	112			0.962
	Manganese	99.4	101	105	102			2.15
	Potassium	98.1	104	105	102			2.76
	Sodium	104	105	106	102			2.69
	Zinc	101	104	106	104			1.66
EPA 200.8 Rev. 5.4	Aluminum	97.4	93.8	96.0	95.1			2.27
	Antimony	104	102	103	100			1.45
	Arsenic	101	96.9	98.2	96.5			1.39
	Beryllium	96.3	92.6	93.7	93.1			1.05
	Boron	92.7	97.0	98.3	98.2			1.25
	Cadmium	96.7	95.2	96.8	93.8			1.73
	Chromium	106	106	108	102			1.98
	Copper	98.9	95.5	96.9	94.8			1.46
	Lead	103	102	103	101			1.43
	Nickel	99.7	97.9	98.9	94.0			1.07
	Selenium	98.6	92.8	94.9	92.0			2.27
	Silver	109	109	108	106			0.393
	Thallium	101	99.8	102	102			2.09
EPA 300.0 Rev. 2.1	Bromide	99.0	97.8	97.3	90.3			0.421
	Chloride	101	102	102			0.819	
	Sulfate	103	102	103			1.08	
EPA 350.1 Rev. 2.0	Ammonia-N	102	106	107				0.686
	Ammonia-N	100	107	105				1.21
	Ammonia-N	103	103	93.9				8.69
	Ammonia-N	102	107	106				0.854
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.1	94.1	106				6.44
	Kjeldahl Nitrogen	96.9	96.3	96.6				0.299
	Kjeldahl Nitrogen	98.6	93.5	97.2				3.59
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.2	98.2				0.685
	NO2NO3-N	99.5	99.0	98.5				0.334
EPA 365.1 Rev. 2.0	Total-P	103						0.0855
	Total-P	104	102	103				1.50
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.7	96.8				0.875
	O-Phosphate-P	98.8	99.2	99.3				0.101
SM 2120 B-2011	Color (true)	99.5					1.31	
SM 2320 B-2011	Total Alkalinity	96.2					0.789	
	Total Alkalinity	97.1					1.41	
SM 4500 F-C-2011	Fluoride	98.6	98.3	99.5				0.927
	Fluoride	102	101	103				0.927
SM 5310 B-2011	Organic Carbon	101	98.9	102				1.50
	Organic Carbon	95.0	93.6	93.2				0.398

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2220255, 2220256, 2220272, 2220275, 2220276, 2220281
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2220295

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2220295
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2220255, 2220256, 2220272, 2220275, 2220276
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2220281
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2220281
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2220257, 2220258, 2220273, 2220277, 2220278, 2220282
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2220257, 2220258, 2220273, 2220277, 2220278, 2220282
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2220257, 2220258, 2220273, 2220277, 2220278, 2220282
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2220257, 2220258, 2220273, 2220277, 2220278, 2220282
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2220259, 2220260, 2220274, 2220279, 2220280, 2220283
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2220281
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2220255, 2220256, 2220272, 2220275, 2220276, 2220281
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2220295
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2220255, 2220256, 2220272, 2220275, 2220276, 2220281
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2220255, 2220256, 2220272, 2220275, 2220276, 2220281
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2220257, 2220258, 2220273, 2220277, 2220278, 2220282

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/20/2021			01/20/2021 16:14	Yen Ta	2220255, 2220256, 2220272, 2220275, 2220276, 2220281
EPA 200.7 Rev. 4.4	01/20/2021	01/21/2021 16:35	Elliott D. Healy	01/25/2021 14:42	Betina Topolski	2220295
EPA 200.8 Rev. 5.4	01/20/2021	01/21/2021 16:35	Elliott D. Healy	01/27/2021 20:45	Alexander Thompson	2220295
	01/20/2021	01/21/2021 16:35	Elliott D. Healy	01/28/2021 12:58	Alexander Thompson	2220295
EPA 300.0 Rev. 2.1	01/20/2021			01/22/2021 16:33	Lipi Saha	2220281
	01/20/2021			01/27/2021 18:32	Lipi Saha	2220255
	01/20/2021			01/27/2021 19:26	Lipi Saha	2220256
	01/20/2021			01/27/2021 19:44	Lipi Saha	2220272
	01/20/2021			01/27/2021 20:02	Lipi Saha	2220275
	01/20/2021			01/27/2021 20:20	Lipi Saha	2220276
EPA 350.1 Rev. 2.0	01/20/2021			02/01/2021 17:25	Ping Hua	2220257
	01/20/2021			02/01/2021 17:27	Ping Hua	2220273
	01/20/2021			02/01/2021 19:27	Ping Hua	2220258
	01/20/2021			02/03/2021 17:05	Ping Hua	2220282
	01/20/2021			02/03/2021 18:38	Ping Hua	2220277
	01/20/2021			02/03/2021 18:39	Ping Hua	2220278
EPA 351.2 Rev. 2.0	01/20/2021	01/28/2021 13:00	Yen Ta	01/29/2021 13:31	Julia Storbeck	2220282
	01/20/2021	01/28/2021 13:00	Yen Ta	01/29/2021 13:46	Julia Storbeck	2220273
	01/20/2021	01/28/2021 13:00	Yen Ta	01/29/2021 13:52	Julia Storbeck	2220277
	01/20/2021	01/28/2021 13:00	Yen Ta	01/29/2021 13:54	Julia Storbeck	2220278
	01/20/2021	01/28/2021 17:00	Yen Ta	01/29/2021 15:31	Julia Storbeck	2220257
	01/20/2021	01/28/2021 17:00	Yen Ta	01/29/2021 15:33	Julia Storbeck	2220258
EPA 353.2 Rev. 2.0	01/20/2021			01/25/2021 09:44	Beverly Y. Sanders	2220282
	01/20/2021			01/27/2021 09:55	Beverly Y. Sanders	2220258
	01/20/2021			01/27/2021 10:01	Beverly Y. Sanders	2220257
	01/20/2021			01/27/2021 10:02	Beverly Y. Sanders	2220273
	01/20/2021			01/27/2021 10:03	Beverly Y. Sanders	2220277
	01/20/2021			01/27/2021 10:04	Beverly Y. Sanders	2220278
EPA 365.1 Rev. 2.0	01/20/2021	01/22/2021 17:15	Shengyu Wang	01/26/2021 10:44	Shengyu Wang	2220257
	01/20/2021	01/22/2021 17:15	Shengyu Wang	01/26/2021 10:45	Shengyu Wang	2220258
	01/20/2021	01/22/2021 17:15	Shengyu Wang	01/26/2021 10:46	Shengyu Wang	2220273
	01/20/2021	01/22/2021 17:15	Shengyu Wang	01/26/2021 10:47	Shengyu Wang	2220277
	01/20/2021	01/22/2021 17:15	Shengyu Wang	01/26/2021 10:48	Shengyu Wang	2220278
	01/20/2021	01/22/2021 17:15	Shengyu Wang	01/26/2021 11:01	Shengyu Wang	2220282
EPA 365.1 Rev. 2.0 dissolved	01/20/2021			01/20/2021 15:35	Blanca Fach	2220259
	01/20/2021			01/20/2021 15:36	Blanca Fach	2220260
	01/20/2021			01/20/2021 15:37	Blanca Fach	2220274
	01/20/2021			01/20/2021 15:39	Blanca Fach	2220280
	01/20/2021			01/20/2021 15:50	Blanca Fach	2220283

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	01/20/2021			01/20/2021 15:52	Blanca Fach	2220279
SM 2120 B-2011	01/20/2021			01/21/2021 16:28	Benjamin T. Nordmann	2220281
SM 2320 B-2011	01/20/2021			01/23/2021 07:54	Dale L. Simmons	2220272
	01/20/2021			01/23/2021 08:06	Dale L. Simmons	2220255
	01/20/2021			01/29/2021 17:10	Dale L. Simmons	2220281
	01/20/2021			01/29/2021 20:12	Dale L. Simmons	2220276
	01/20/2021			01/29/2021 20:23	Dale L. Simmons	2220275
	01/20/2021			01/29/2021 20:33	Dale L. Simmons	2220256
SM 2340B	01/20/2021			01/25/2021 14:42	Betina Topolski	2220295
SM 2540 D-2011	01/20/2021			01/22/2021 15:16	Yijie Li	2220255, 2220256, 2220272, 2220275, 2220276, 2220281
SM 4500 F-C-2011	01/20/2021			01/22/2021 23:26	Dale L. Simmons	2220281
	01/20/2021			01/23/2021 02:42	Dale L. Simmons	2220276
	01/20/2021			01/23/2021 02:55	Dale L. Simmons	2220275
	01/20/2021			01/23/2021 03:08	Dale L. Simmons	2220256
	01/20/2021			01/23/2021 07:14	Dale L. Simmons	2220272
	01/20/2021			01/23/2021 07:27	Dale L. Simmons	2220255
SM 5310 B-2011	01/20/2021			01/22/2021 05:26	Touraj Touran	2220258
	01/20/2021			01/22/2021 05:39	Touraj Touran	2220277
	01/20/2021			01/22/2021 05:55	Touraj Touran	2220278
	01/20/2021			01/22/2021 06:07	Touraj Touran	2220282
	01/20/2021			01/26/2021 10:33	Madeline Gruver	2220273
	01/20/2021			01/26/2021 14:00	Madeline Gruver	2220257