

Chemical Analysis Report

NW-DIST-2021-05-19-01

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

Event Description: **Pace Run**
Request ID: **RQ-2021-05-17-62**
Customer: **NW-DIST**
Project ID: **SMP**

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

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 08-JUN-2021 15:00

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

Case Narrative

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

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

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: Bucket Branch Downstream of Pat Brown Road Collection Date/Time: 05/18/2021 11:35

Field ID: G4NW0532

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2248483	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P398465	
	EPA 300.0 Rev. 2.1	Chloride	4.7		mg Cl/L	P398869	
		Sulfate	1.1		mg SO4/L	P398873	
	SM 2120 B-2011	Color (true)	41	A	PCU	P398460	
	SM 2320 B-2011	Total Alkalinity	4.3		mg CaCO3/L	P398632	
	SM 2540 C-2011	TDS	18	I	mg/L	P398894	
	SM 2540 D-2011	TSS	4	I	mg/L	P398607	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398636	
2248484	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P399058	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32		mg N/L	P398681	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.30		mg N/L	P398487	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P398730	
	SM 5310 B-2011	Organic Carbon	3.5		mg C/L	P398806	
2248485	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P398453	
2248517	EPA 200.7 Rev. 4.4	Barium	23.2		ug/L	P398651	
		Calcium	1.75		mg/L	P398651	
		Iron	740		ug/L	P398651	
		Magnesium	1.21		mg/L	P398651	
		Manganese	49.1		ug/L	P398651	
		Potassium	0.51	I	mg/L	P398651	
		Sodium	2.3		mg/L	P398651	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P398651	
		Aluminum	223		ug/L	P398651	
		Antimony	0.050	U	ug/L	P398651	
		Arsenic	0.43		ug/L	P398651	
		Beryllium	0.014	I	ug/L	P398651	
		Boron**	11.6		ug/L	P398651	
		Cadmium	0.020	U	ug/L	P398651	
		Chromium	0.40	U	ug/L	P398651	
		Copper	0.40	U	ug/L	P398651	
		Lead	0.24	I	ug/L	P398651	
		Nickel	0.50	U	ug/L	P398651	
		Selenium	0.20	U	ug/L	P398651	
		Silver	0.010	U	ug/L	P398651	
		Thallium	0.10	U	ug/L	P398651	
		Hardness	9.4		mg/L	P398651	

Ref. Method and Comment:

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

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

Sample Location: Big Coldwater Creek Below CR191

Collection Date/Time: 05/18/2021 12:00

Field ID: G4NW0026

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2248477	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P398465	
	EPA 300.0 Rev. 2.1	Chloride	4.4		mg Cl/L	P398869	
		Sulfate	0.84		mg SO4/L	P398873	
	SM 2120 B-2011	Color (true)	21	A	PCU	P398459	
	SM 2320 B-2011	Total Alkalinity	2.0	I	mg CaCO3/L	P398631	
	SM 2540 C-2011	TDS	29		mg/L	P398894	
	SM 2540 D-2011	TSS	2	I	mg/L	P398607	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398635	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P399058	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P398681	
2248479	EPA 353.2 Rev. 2.0	NO2NO3-N	1.0		mg N/L	P398487	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P398730	
	SM 5310 B-2011	Organic Carbon	2.4		mg C/L	P398806	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P398453	
	dissolved						

Ref. Method and Comment:

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

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

Sample Location: Clear Creek Upstream of Pat Brown Road

Collection Date/Time: 05/18/2021 11:15

Field ID: G4NW0360

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2248486	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P398465	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P398869	
		Sulfate	0.39	I	mg SO4/L	P398873	
	SM 2120 B-2011	Color (true)	10		PCU	P398459	
	SM 2320 B-2011	Total Alkalinity	2.7		mg CaCO3/L	P398632	
	SM 2540 C-2011	TDS	17	I	mg/L	P398894	
	SM 2540 D-2011	TSS	3	I	mg/L	P398607	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398636	
2248490	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P399058	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P398681	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.96		mg N/L	P398487	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P398730	
	SM 5310 B-2011	Organic Carbon	1.0		mg C/L	P398806	
2248494	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P398454	

Ref. Method and Comment:

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

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

Sample Location: Big Coldwater Creek End of Steel Bridge Rd. Collection Date/Time: 05/18/2021 12:25

Field ID: G4NW0027

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2248478	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P398465	
	EPA 300.0 Rev. 2.1	Chloride	4.5		mg Cl/L	P398869	
		Sulfate	0.86		mg SO4/L	P398873	
	SM 2120 B-2011	Color (true)	22		PCU	P398459	
	SM 2320 B-2011	Total Alkalinity	2.3	I	mg CaCO3/L	P398632	
	SM 2540 C-2011	TDS	26		mg/L	P398894	
	SM 2540 D-2011	TSS	4	I	mg/L	P398607	
2248480	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398636	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P399058	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P398681	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.1		mg N/L	P398487	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P398730	
2248482	SM 5310 B-2011	Organic Carbon	2.4		mg C/L	P398806	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P398453	

Ref. Method and Comment:

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

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

Sample Location: Coldwater Creek West Fork Downstream of HWY 87

Collection Date/Time: 05/18/2021 13:15

Field ID: G4NW0017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2248487	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P398465	
	EPA 300.0 Rev. 2.1	Chloride	5.7		mg Cl/L	P398869	
		Sulfate	15		mg SO4/L	P398873	
	SM 2120 B-2011	Color (true)	11		PCU	P398459	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P398632	
	SM 2540 C-2011	TDS	42		mg/L	P398893	
	SM 2540 D-2011	TSS	4	I	mg/L	P398606	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398636	
2248491	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P399058	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31		mg N/L	P398681	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.9		mg N/L	P398487	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P398730	
	SM 5310 B-2011	Organic Carbon	2.0		mg C/L	P398806	
2248495	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P398454	

Ref. Method and Comment:

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

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

Sample Location: Coldwater Creek West Fork on CR 178

Collection Date/Time: 05/18/2021 13:35

Field ID: G4NW0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2248488	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P398465	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P398869	
		Sulfate	1.5		mg SO4/L	P398873	
	SM 2120 B-2011	Color (true)	23		PCU	P398459	
	SM 2320 B-2011	Total Alkalinity	3.9		mg CaCO3/L	P398632	
	SM 2540 C-2011	TDS	33		mg/L	P398894	
	SM 2540 D-2011	TSS	4	I	mg/L	P398607	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398636	
2248492	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P399059	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	J	mg N/L	P398682	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.5		mg N/L	P398487	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P398730	
	SM 5310 B-2011	Organic Carbon	2.4		mg C/L	P398806	
2248496	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P398454	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Clear Creek Upstream of Hwy 87A

Collection Date/Time: 05/18/2021 14:00

Field ID: G4NW0510

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2248489	EPA 180.1 Rev. 2.0	Turbidity	3.4	A	NTU	P398466	
	EPA 300.0 Rev. 2.1	Chloride	4.4		mg Cl/L	P398869	
		Sulfate	4.6		mg SO4/L	P398873	
	SM 2120 B-2011	Color (true)	3.8	I	PCU	P398459	
	SM 2320 B-2011	Total Alkalinity	0.76	I	mg CaCO3/L	P398632	
	SM 2540 C-2011	TDS	22	I	mg/L	P398894	
	SM 2540 D-2011	TSS	3	I	mg/L	P398607	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398636	
2248493	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P399059	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P398682	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.6		mg N/L	P398488	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P398730	
	SM 5310 B-2011	Organic Carbon	0.96	I	mg C/L	P398806	
2248497	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P398454	

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: FB

Collection Date/Time: 05/18/2021 11:40

Field ID: FB_05182021

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2248498	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P398466	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P398869	
		Sulfate	0.20	U	mg SO4/L	P398873	
		Color (true)	2.5	U	PCU	P398459	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P398632	
	SM 2540 C-2011	TDS	15	U	mg/L	P398890	
	SM 2540 D-2011	TSS	2	U	mg/L	P398603	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398636	
2248499	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P399059	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P398682	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P398487	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P398730	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P398806	
2248500	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P398454	
2248518	EPA 200.7 Rev. 4.4	Barium	1.0	U	ug/L	P398651	
		Calcium	0.089	I	mg/L	P398651	
		Iron	30	U	ug/L	P398651	
		Magnesium	0.040	U	mg/L	P398651	
		Manganese	1.0	U	ug/L	P398651	
		Potassium	0.30	U	mg/L	P398651	
		Sodium	0.50	U	mg/L	P398651	
		Zinc	5.0	U	ug/L	P398651	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P398651	
		Antimony	0.050	U	ug/L	P398651	
		Arsenic	0.050	U	ug/L	P398651	
		Beryllium	0.010	U	ug/L	P398651	
		Boron**	2.0	U	ug/L	P398651	
		Cadmium	0.020	U	ug/L	P398651	
		Chromium	0.40	U	ug/L	P398651	
		Copper	0.40	U	ug/L	P398651	
		Lead	0.20	U	ug/L	P398651	
		Nickel	0.50	U	ug/L	P398651	
		Selenium	0.20	U	ug/L	P398651	
		Silver	0.010	U	ug/L	P398651	
		Thallium	0.10	U	ug/L	P398651	
		Hardness	0.35	U	mg/L	P398651	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: The calcium result was confirmed in the undigested sample on 05/26/2021.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P398465

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P398466

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398651

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: P398651

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: P398869

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398873

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399058

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399059

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398681

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398682

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398487

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398488

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398730

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398453

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398454

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B-2011
Batch ID: P398459

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B-2011
Batch ID: P398460

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P398631

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

Reference Method: SM 2320 B-2011
Batch ID: P398632

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

Reference Method: SM 2540 C-2011
Batch ID: P398890

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P398893

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P398894

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P398603

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P398606

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P398607

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P398635

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P398636

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P398806

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: P398651

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	95.0		P	85 - 115
Calcium	104		P	85 - 115
Iron	103		P	85 - 115
Magnesium	103		P	85 - 115
Manganese	97.7		P	85 - 115
Potassium	96.7		P	85 - 115
Sodium	111		P	85 - 115
Zinc	95.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398651

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.3		P	85 - 115
Antimony	97.7		P	85 - 115
Arsenic	99.9		P	85 - 115
Beryllium	93.2		P	85 - 115
Boron	99.3		P	85 - 115
Cadmium	99.8		P	85 - 115
Chromium	96.9		P	85 - 115
Copper	98.4		P	85 - 115
Lead	91.6		P	85 - 115
Nickel	98.5		P	85 - 115
Selenium	98.6		P	85 - 115
Silver	101		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398869

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398873

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399058

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399059

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398681

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398682

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398487

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398488

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398730

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398453

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398454

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

Reference Method: SM 2120 B-2011
Batch ID: P398459

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.4		P	85 - 115

Reference Method: SM 2120 B-2011
Batch ID: P398460

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P398631

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.4		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P398632

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.2		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P398635

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P398636

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	104		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P398806

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P398651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248212	Barium	101		P	80 - 120
2248212	Calcium	109		P	80 - 120
2248212	Iron	107		P	80 - 120
2248212	Magnesium	107		P	80 - 120
2248212	Manganese	104		P	80 - 120
2248212	Potassium	101		P	80 - 120
2248212	Sodium	112		P	80 - 120
2248212	Zinc	103		P	80 - 120
2248517	Barium	103	103	P/P	80 - 120
2248517	Calcium	111	111	P/P	80 - 120
2248517	Iron	108	108	P/P	80 - 120
2248517	Magnesium	108	109	P/P	80 - 120
2248517	Manganese	105	106	P/P	80 - 120
2248517	Potassium	101	102	P/P	80 - 120
2248517	Sodium	114	118	P/P	80 - 120
2248517	Zinc	103	103	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P398651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248212	Aluminum	96.9		P	80 - 120
2248212	Antimony	97.1		P	80 - 120
2248212	Arsenic	99.5		P	80 - 120
2248212	Beryllium	93.1		P	80 - 120
2248212	Boron	102		P	80 - 120
2248212	Cadmium	100		P	80 - 120
2248212	Chromium	97.5		P	80 - 120
2248212	Copper	100		P	80 - 120
2248212	Lead	92.7		P	80 - 120
2248212	Nickel	99.5		P	80 - 120
2248212	Selenium	97.6		P	80 - 120
2248212	Silver	114		P	80 - 120
2248212	Thallium	104		P	80 - 120
2248517	Aluminum	93.8	96.6	P/P	80 - 120
2248517	Antimony	95.3	97.7	P/P	80 - 120
2248517	Arsenic	97.4	101	P/P	80 - 120
2248517	Beryllium	90.8	93.3	P/P	80 - 120
2248517	Boron	97.9	101	P/P	80 - 120
2248517	Cadmium	97.9	100	P/P	80 - 120
2248517	Chromium	97.1	99.3	P/P	80 - 120
2248517	Copper	97.7	101	P/P	80 - 120
2248517	Lead	91.0	92.3	P/P	80 - 120
2248517	Nickel	98.4	101	P/P	80 - 120
2248517	Selenium	97.7	99.3	P/P	80 - 120
2248517	Silver	100	99.0	P/P	80 - 120
2248517	Thallium	103	105	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P398869

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: P398869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248422	Chloride	101		P	90 - 110
2248488	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P398873

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248422	Sulfate	97.8		P	90 - 110
2248488	Sulfate	95.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P399058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248246	Ammonia-N	96.0	97.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P399059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248492	Ammonia-N	97.2	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P398682

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248492	Kjeldahl Nitrogen	103	110	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P398487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248436	NO2NO3-N	98.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P398488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248547	NO2NO3-N	95.5	95.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P398730

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248427	Total-P	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P398453

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248482	O-Phosphate-P	99.3	97.9	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398454

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248494	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P398635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248796	Fluoride	99.4	99.4	P/P	92 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P398636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248865	Fluoride	101	101	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P398806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2248322	Organic Carbon	101	102	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P398465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248423	Turbidity	5.50	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P398466

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248489	Turbidity	10.7	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248517	Barium	0.378	Spike	P	0 - 20
2248517	Calcium	0.259	Spike	P	0 - 20
2248517	Iron	0.493	Spike	P	0 - 20
2248517	Magnesium	0.897	Spike	P	0 - 20
2248517	Manganese	0.199	Spike	P	0 - 20
2248517	Potassium	1.25	Spike	P	0 - 20
2248517	Sodium	2.32	Spike	P	0 - 20
2248517	Zinc	0.341	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248517	Aluminum	2.27	Spike	P	0 - 20
2248517	Antimony	2.47	Spike	P	0 - 20
2248517	Arsenic	3.14	Spike	P	0 - 20
2248517	Beryllium	2.58	Spike	P	0 - 20
2248517	Boron	3.14	Spike	P	0 - 20
2248517	Cadmium	2.34	Spike	P	0 - 20
2248517	Chromium	2.21	Spike	P	0 - 20
2248517	Copper	3.40	Spike	P	0 - 20
2248517	Lead	1.41	Spike	P	0 - 20
2248517	Nickel	2.27	Spike	P	0 - 20
2248517	Selenium	1.69	Spike	P	0 - 20
2248517	Silver	0.977	Spike	P	0 - 20
2248517	Thallium	2.05	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248422	Chloride	0.270	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248422	Sulfate	0.345	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248246	Ammonia-N	0.966	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P399059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248492	Ammonia-N	1.55	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248425	Kjeldahl Nitrogen	0.155	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248492	Kjeldahl Nitrogen	5.80	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248436	NO2NO3-N	0.196	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248547	NO2NO3-N	0.289	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248427	Total-P	1.93	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248482	O-Phosphate-P	1.33	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248494	O-Phosphate-P	0.697	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P398459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248477	Color (true)	2.64	Sample	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P398460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248483	Color (true)	0.160	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P398631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248796	Total Alkalinity	0.361	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011
Batch ID: P398632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248865	Total Alkalinity	0.829	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P398890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247874	TDS	6.99	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P398893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248320	TDS	3.42	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P398894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248435	TDS	4.71	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P398603

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247874	TSS	7.69	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P398635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248796	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 4500 F-C-2011
Batch ID: P398636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248865	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P398806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248322	Organic Carbon	0.616	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: A105535

Included Lab Sample IDs: 2248481, 2248482, 2248485, 2248494, 2248495, 2248496, 2248497, 2248500

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	99.3	P/P	90 - 110
O-Phosphate-P	99.3	100	P/P	90 - 110
O-Phosphate-P	99.4	99.1	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A105536

Included Lab Sample IDs: 2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	103	P/P	90 - 115
Color (true)	102	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A105537

Included Lab Sample IDs: 2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105
Turbidity	99.0	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A105553

Included Lab Sample IDs: 2248479, 2248480, 2248484, 2248490, 2248491, 2248492, 2248493, 2248499

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

Reference Method: SM 2320 B-2011

Run ID: A105605

Included Lab Sample IDs: 2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.2	99.7	P/P	90 - 110
Total Alkalinity	99.6	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A105605

Included Lab Sample IDs: 2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A105658

Included Lab Sample IDs: 2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A105658

Included Lab Sample IDs: 2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105668

Included Lab Sample IDs: 2248479, 2248480, 2248484, 2248490, 2248491, 2248492, 2248493, 2248499

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

Reference Method: SM 5310 B-2011

Run ID: A105673

Included Lab Sample IDs: 2248479, 2248480, 2248484, 2248490, 2248491, 2248492, 2248493, 2248499

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105701

Included Lab Sample IDs: 2248517, 2248518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.8	97.1	P/P	90 - 110
Antimony	97.9	97.8	P/P	90 - 110
Arsenic	102	100	P/P	90 - 110
Beryllium	97.8	97.9	P/P	90 - 110
Boron	102	103	P/P	90 - 110
Cadmium	99.0	98.8	P/P	90 - 110
Chromium	96.9	97.0	P/P	90 - 110
Copper	99.2	97.3	P/P	90 - 110
Lead	93.1	92.6	P/P	90 - 110
Nickel	99.5	98.3	P/P	90 - 110
Selenium	102	101	P/P	90 - 110
Silver	97.9	97.1	P/P	90 - 110
Thallium	95.8	95.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A105705

Included Lab Sample IDs: 2248517, 2248518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.1	103	P/P	95 - 105
Iron	97.6	102	P/P	95 - 105
Magnesium	99.7	104	P/P	95 - 105
Potassium	97.5	101	P/P	95 - 105
Sodium	102	103	P/P	90 - 110
Sodium	96.3	99.4	P/P	95 - 105
Zinc	101	107	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A105714

Included Lab Sample IDs: 2248479, 2248480, 2248484, 2248490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.6	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A105725

Included Lab Sample IDs: 2248491, 2248492, 2248493, 2248499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	95.7	P/P	90 - 110
Kjeldahl Nitrogen	95.7	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A105759

Included Lab Sample IDs: 2248518

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A105796

Included Lab Sample IDs: 2248479, 2248480, 2248484, 2248490, 2248491, 2248492, 2248493, 2248499

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.2	P/P	90 - 110
Ammonia-N	99.2	98.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A105798

Included Lab Sample IDs: 2248517

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A105822

Included Lab Sample IDs: 2248518

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	95.3	94.1	P/P	95 - 105
Manganese	96.6	95.2	P/P	95 - 105

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

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					5.50	
	Turbidity					10.7	
EPA 200.7 Rev. 4.4	Barium	95.0	101	103	103		0.378
	Calcium	104	109	111	111		0.259
	Iron	103	107	108	108		0.493
	Magnesium	103	107	108	109		0.897
	Manganese	97.7	104	105	106		0.199
	Potassium	96.7	101	101	102		1.25
	Sodium	111	112	114	118		2.32
	Zinc	95.2	103	103	103		0.341
EPA 200.8 Rev. 5.4	Aluminum	95.3	93.8	96.6	96.9		2.27
	Antimony	97.7	95.3	97.7	97.1		2.47
	Arsenic	99.9	97.4	101	99.5		3.14
	Beryllium	93.2	90.8	93.3	93.1		2.58
	Boron	99.3	97.9	101	102		3.14
	Cadmium	99.8	97.9	100	100		2.34
	Chromium	96.9	97.1	99.3	97.5		2.21
	Copper	98.4	97.7	101	100		3.40
	Lead	91.6	91.0	92.3	92.7		1.41
	Nickel	98.5	98.4	101	99.5		2.27
	Selenium	98.6	97.7	99.3	97.6		1.69
	Silver	101	100	99.0	114		0.977
	Thallium	103	103	105	104		2.05
EPA 300.0 Rev. 2.1	Chloride	102	101	101		0.270	
	Sulfate	99.3	97.8	95.1		0.345	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	96.0	97.2			0.966
	Ammonia-N	95.8	97.2	99.2			1.55
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.1					0.155
	Kjeldahl Nitrogen	101	103	110			5.80
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	98.2				0.196
	NO ₂ NO ₃ -N	102	95.5	95.0			0.289
EPA 365.1 Rev. 2.0	Total-P	105	104	102			1.93
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	99.3	97.9			1.33
	O-Phosphate-P	98.4	100	101			0.697
SM 2120 B-2011	Color (true)	99.4				2.64	
	Color (true)	101				0.160	
SM 2320 B-2011	Total Alkalinity	99.4				0.361	
	Total Alkalinity	99.2				0.829	
SM 2540 C-2011	TDS					6.99	
	TDS					3.42	
	TDS					4.71	
SM 2540 D-2011	TSS					7.69	
SM 4500 F-C-2011	Fluoride	102	99.4	99.4			0.0
	Fluoride	104	101	101			0.0
SM 5310 B-2011	Organic Carbon	98.2	101	102			0.616

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2248517, 2248518

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	2248517, 2248518
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2248479, 2248480, 2248484, 2248490, 2248491, 2248492, 2248493, 2248499
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2248479, 2248480, 2248484, 2248490, 2248491, 2248492, 2248493, 2248499
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2248479, 2248480, 2248484, 2248490, 2248491, 2248492, 2248493, 2248499
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2248479, 2248480, 2248484, 2248490, 2248491, 2248492, 2248493, 2248499
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2248481, 2248482, 2248485, 2248494, 2248495, 2248496, 2248497, 2248500
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2248517, 2248518
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2248479, 2248480, 2248484, 2248490, 2248491, 2248492, 2248493, 2248499

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	05/19/2021			05/19/2021 16:40	Yen Ta	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
EPA 200.7 Rev. 4.4	05/19/2021	05/24/2021 14:20	Elliott D. Healy	05/26/2021 18:49	Josef B Mick	2248518
	05/19/2021	05/24/2021 14:20	Elliott D. Healy	05/26/2021 22:07	Josef B Mick	2248517
	05/19/2021	05/24/2021 14:20	Elliott D. Healy	06/02/2021 00:31	Betina Topolski	2248517
	05/19/2021	05/24/2021 14:20	Elliott D. Healy	06/02/2021 13:42	Josef B Mick	2248518
EPA 200.8 Rev. 5.4	05/19/2021	05/24/2021 14:20	Elliott D. Healy	05/26/2021 15:43	Alexander Thompson	2248518
	05/19/2021	05/24/2021 14:20	Elliott D. Healy	05/26/2021 16:21	Alexander Thompson	2248517
	05/19/2021	05/24/2021 14:20	Elliott D. Healy	05/27/2021 15:20	Alexander Thompson	2248518
EPA 300.0 Rev. 2.1	05/19/2021			05/26/2021 20:28	Lipi Saha	2248488
	05/19/2021			05/26/2021 21:40	Lipi Saha	2248477
	05/19/2021			05/26/2021 21:52	Lipi Saha	2248478
	05/19/2021			05/26/2021 22:04	Lipi Saha	2248483
	05/19/2021			05/26/2021 22:16	Lipi Saha	2248486
	05/19/2021			05/26/2021 22:52	Lipi Saha	2248487
	05/19/2021			05/26/2021 23:04	Lipi Saha	2248489
	05/19/2021			05/26/2021 23:16	Lipi Saha	2248498
EPA 350.1 Rev. 2.0	05/19/2021			06/01/2021 13:42	Roberta Tatti	2248479
	05/19/2021			06/01/2021 13:44	Roberta Tatti	2248480
	05/19/2021			06/01/2021 13:45	Roberta Tatti	2248484
	05/19/2021			06/01/2021 13:46	Roberta Tatti	2248490
	05/19/2021			06/01/2021 13:48	Roberta Tatti	2248491
	05/19/2021			06/01/2021 13:58	Roberta Tatti	2248492
	05/19/2021			06/01/2021 14:02	Roberta Tatti	2248493
	05/19/2021			06/01/2021 14:04	Roberta Tatti	2248499
EPA 351.2 Rev. 2.0	05/19/2021	05/24/2021 12:55	Benjamin T. Nordmann	05/26/2021 11:10	Virginia P. Brown	2248479
	05/19/2021	05/24/2021 12:55	Benjamin T. Nordmann	05/26/2021 11:11	Virginia P. Brown	2248480
	05/19/2021	05/24/2021 12:55	Benjamin T. Nordmann	05/26/2021 11:13	Virginia P. Brown	2248484
	05/19/2021	05/24/2021 12:55	Benjamin T. Nordmann	05/26/2021 11:15	Virginia P. Brown	2248490
	05/19/2021	05/24/2021 12:55	Benjamin T. Nordmann	05/26/2021 13:58	Virginia P. Brown	2248491
	05/19/2021	05/24/2021 12:55	Benjamin T. Nordmann	05/26/2021 14:03	Virginia P. Brown	2248492
	05/19/2021	05/24/2021 12:55	Benjamin T. Nordmann	05/26/2021 14:07	Virginia P. Brown	2248493
	05/19/2021	05/24/2021 12:55	Benjamin T. Nordmann	05/26/2021 14:12	Virginia P. Brown	2248499
EPA 353.2 Rev. 2.0	05/19/2021			05/20/2021 11:08	Beverly Y. Sanders	2248479
	05/19/2021			05/20/2021 11:09	Beverly Y. Sanders	2248480
	05/19/2021			05/20/2021 11:11	Beverly Y. Sanders	2248484
	05/19/2021			05/20/2021 11:12	Beverly Y. Sanders	2248490
	05/19/2021			05/20/2021 11:13	Beverly Y. Sanders	2248491
	05/19/2021			05/20/2021 11:14	Beverly Y. Sanders	2248492
	05/19/2021			05/20/2021 11:15	Beverly Y. Sanders	2248499

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 353.2 Rev. 2.0	05/19/2021			05/20/2021 11:19	Beverly Y. Sanders	2248493
EPA 365.1 Rev. 2.0	05/19/2021	05/25/2021 12:56	Yen Ta	05/26/2021 11:53	Shengyu Ding	2248479
	05/19/2021	05/25/2021 12:56	Yen Ta	05/26/2021 11:54	Shengyu Ding	2248480
	05/19/2021	05/25/2021 12:56	Yen Ta	05/26/2021 11:55	Shengyu Ding	2248484
	05/19/2021	05/25/2021 12:56	Yen Ta	05/26/2021 11:56	Shengyu Ding	2248490
	05/19/2021	05/25/2021 12:56	Yen Ta	05/26/2021 11:57	Shengyu Ding	2248491
	05/19/2021	05/25/2021 12:56	Yen Ta	05/26/2021 11:58	Shengyu Ding	2248492
	05/19/2021	05/25/2021 12:56	Yen Ta	05/26/2021 12:05	Shengyu Ding	2248493
	05/19/2021	05/25/2021 12:56	Yen Ta	05/26/2021 12:29	Shengyu Ding	2248499
EPA 365.1 Rev. 2.0 dissolved	05/19/2021			05/19/2021 15:26	Blanca Fach	2248482
	05/19/2021			05/19/2021 15:39	Blanca Fach	2248481
	05/19/2021			05/19/2021 15:40	Blanca Fach	2248485
	05/19/2021			05/19/2021 15:43	Blanca Fach	2248494
	05/19/2021			05/19/2021 15:50	Blanca Fach	2248500
	05/19/2021			05/19/2021 15:51	Blanca Fach	2248495
	05/19/2021			05/19/2021 15:52	Blanca Fach	2248496
	05/19/2021			05/19/2021 15:53	Blanca Fach	2248497
SM 2120 B-2011	05/19/2021			05/19/2021 16:02	Sarah A Nixon	2248477
	05/19/2021			05/19/2021 16:03	Sarah A Nixon	2248478, 2248486
	05/19/2021			05/19/2021 16:04	Sarah A Nixon	2248487
	05/19/2021			05/19/2021 16:05	Sarah A Nixon	2248488
	05/19/2021			05/19/2021 16:06	Sarah A Nixon	2248489, 2248498
	05/19/2021			05/19/2021 16:13	Sarah A Nixon	2248483
SM 2320 B-2011	05/19/2021			05/22/2021 06:39	Dale L. Simmons	2248477
	05/19/2021			05/22/2021 08:28	Dale L. Simmons	2248478
	05/19/2021			05/22/2021 08:38	Dale L. Simmons	2248483
	05/19/2021			05/22/2021 08:47	Dale L. Simmons	2248486
	05/19/2021			05/22/2021 08:53	Dale L. Simmons	2248487
	05/19/2021			05/22/2021 09:03	Dale L. Simmons	2248488
	05/19/2021			05/22/2021 09:12	Dale L. Simmons	2248489
	05/19/2021			05/22/2021 09:20	Dale L. Simmons	2248498
SM 2340B	05/19/2021			05/26/2021 18:49	Josef B Mick	2248518
	05/19/2021			06/02/2021 00:31	Betina Topolski	2248517
SM 2540 C-2011	05/19/2021			05/20/2021 15:22	Yijie Li	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
SM 2540 D-2011	05/19/2021			05/20/2021 15:22	Yijie Li	2248477, 2248478, 2248483, 2248486, 2248487, 2248488, 2248489, 2248498
SM 4500 F-C-2011	05/19/2021			05/22/2021 06:39	Dale L. Simmons	2248477
	05/19/2021			05/22/2021 08:28	Dale L. Simmons	2248478
	05/19/2021			05/22/2021 08:38	Dale L. Simmons	2248483

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-2011	05/19/2021			05/22/2021 08:47	Dale L. Simmons	2248486
	05/19/2021			05/22/2021 08:53	Dale L. Simmons	2248487
	05/19/2021			05/22/2021 09:03	Dale L. Simmons	2248488
	05/19/2021			05/22/2021 09:12	Dale L. Simmons	2248489
	05/19/2021			05/22/2021 09:20	Dale L. Simmons	2248498
SM 5310 B-2011	05/19/2021			05/24/2021 23:10	Madeline Gruver	2248479
	05/19/2021			05/24/2021 23:25	Madeline Gruver	2248480
	05/19/2021			05/24/2021 23:38	Madeline Gruver	2248484
	05/19/2021			05/24/2021 23:55	Madeline Gruver	2248490
	05/19/2021			05/25/2021 00:08	Madeline Gruver	2248491
	05/19/2021			05/25/2021 00:21	Madeline Gruver	2248492
	05/19/2021			05/25/2021 01:02	Madeline Gruver	2248493
	05/19/2021			05/25/2021 01:15	Madeline Gruver	2248499