Chemical Analysis Report

NW-DIST-2021-05-18-01

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

Event Description: **Holmes Run**
Request ID: **RQ-2021-05-10-33**
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

For additional information please contact
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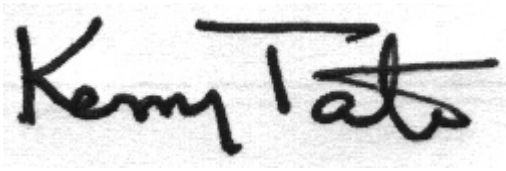
Phone (850) 245-8085

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

Date Certified: 08-JUN-2021 14:03



NON-CONFORMANCE REPORT INCLUDED

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: Bay Branch Upstream of Hwy 331 **Collection Date/Time: 05/17/2021 10:05**

Field ID: G3NW0171 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2247901	EPA 180.1 Rev. 2.0	Turbidity	5.5		NTU	P398379	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P398766	
		Sulfate	1.1		mg SO4/L	P398768	
	SM 2120 B-2011	Color (true)	110		PCU	P398382	
	SM 2320 B-2011	Total Alkalinity	6.6		mg CaCO3/L	P398525	
	SM 2540 C-2011	TDS	17	I	mg/L	P398891	
	SM 2540 D-2011	TSS	2	I	mg/L	P398604	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398528	
2247903	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P398994	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P398585	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P398400	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P398543	
	SM 5310 B-2011	Organic Carbon	6.9		mg C/L	P398622	
2247905	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P398368	
2247917	EPA 200.7 Rev. 4.4	Barium	9.6	J	ug/L	P398521	
		Calcium	3.47	J	mg/L	P398521	
		Iron	730	J	ug/L	P398521	
		Magnesium	0.74	J	mg/L	P398521	
		Manganese	8.5	J	ug/L	P398521	
		Potassium	0.30	UJ	mg/L	P398521	
		Sodium	2.0	J	mg/L	P398521	
		Zinc	6.2	I J	ug/L	P398521	
	EPA 200.8 Rev. 5.4	Aluminum	331	J	ug/L	P398521	
		Antimony	0.050	UJ	ug/L	P398521	
		Arsenic	0.39	J	ug/L	P398521	
		Beryllium	0.020	I J	ug/L	P398521	
		Boron**	9.1	J	ug/L	P398521	
		Cadmium	0.020	UJ	ug/L	P398521	
		Chromium	0.42	I J	ug/L	P398521	
		Copper	0.40	UJ	ug/L	P398521	
		Lead	0.39	I J	ug/L	P398521	
		Nickel	0.50	UJ	ug/L	P398521	
		Selenium	0.20	UJ	ug/L	P398521	
		Silver	0.010	UJ	ug/L	P398521	
		Thallium	0.10	UJ	ug/L	P398521	
	SM 2340B	Hardness	11.7	J	mg/L	P398521	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Cracked sample container, sample integrity may be compromised. See attached NCR.
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for aluminum are unavailable for one of two spiked samples because of high analyte concentration in the QC sample. Cracked sample container, sample integrity may be compromised. See attached NCR.
SM 2340B: Cracked sample container, sample integrity may be compromised. See attached NCR.

Sample Location: Panther Creek Upstream of SR280 **Collection Date/Time: 05/17/2021 10:40**

Field ID: G3NW0061 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2247895	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P398379	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P398766	
		Sulfate	1.2		mg SO4/L	P398768	
	SM 2120 B-2011	Color (true)	56	A	PCU	P398382	
	SM 2320 B-2011	Total Alkalinity	1.7	I	mg CaCO3/L	P398525	
	SM 2540 C-2011	TDS	23	I	mg/L	P398891	
	SM 2540 D-2011	TSS	2	I	mg/L	P398604	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398528	
2247897	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P398994	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26		mg N/L	P398426	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P398399	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P398543	
	SM 5310 B-2011	Organic Carbon	5.0		mg C/L	P398622	
2247899	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P398368	

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: Sikes Creek Upstream of Harris Stevenson Rd. Collection Date/Time: 05/17/2021 12:05

Field ID: G3NW0450 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2247919	EPA 200.7 Rev. 4.4	Barium	10.3		ug/L	P398521	
		Calcium	5.21		mg/L	P398521	
		Iron	910		ug/L	P398521	
		Magnesium	0.58		mg/L	P398521	
		Manganese	27.6		ug/L	P398521	
		Potassium	0.33	I	mg/L	P398521	
		Sodium	1.1	I	mg/L	P398521	
		Zinc	5.0	U	ug/L	P398521	
	EPA 200.8 Rev. 5.4	Aluminum	443		ug/L	P398521	
		Antimony	0.050	U	ug/L	P398521	
		Arsenic	0.38		ug/L	P398521	
		Beryllium	0.044		ug/L	P398521	
		Boron**	7.5	I	ug/L	P398521	
		Cadmium	0.020	U	ug/L	P398521	
		Chromium	0.70	I	ug/L	P398521	
		Copper	0.40	U	ug/L	P398521	
		Lead	0.62		ug/L	P398521	
		Nickel	0.50	U	ug/L	P398521	
		Selenium	0.20	U	ug/L	P398521	
		Silver	0.010	U	ug/L	P398521	
		Thallium	0.10	U	ug/L	P398521	
	SM 2340B	Hardness	15.4		mg/L	P398521	

Ref. Method and Comment:
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for aluminum are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.The lead result was confirmed in the undigested sample on 06/04/2021.

Sample Location: Sikes Creek Upstream of Bonifay Gritney Rd. **Collection Date/Time: 05/17/2021 12:20**

Field ID: G3NW0159 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2247896	EPA 180.1 Rev. 2.0	Turbidity	8.5		NTU	P398379	
	EPA 300.0 Rev. 2.1	Chloride	2.4		mg Cl/L	P398766	
		Sulfate	0.31	I	mg SO4/L	P398768	
	SM 2120 B-2011	Color (true)	190		PCU	P398382	
	SM 2320 B-2011	Total Alkalinity	8.9		mg CaCO3/L	P398525	
	SM 2540 C-2011	TDS	51		mg/L	P398891	
	SM 2540 D-2011	TSS	7	I	mg/L	P398604	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398528	
2247898	EPA 350.1 Rev. 2.0	Ammonia-N	0.058		mg N/L	P398994	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P398585	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P398399	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P398543	
	SM 5310 B-2011	Organic Carbon	15		mg C/L	P398622	
2247900	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P398368	

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: Gum Creek Downstream of Bess Nook Rd. **Collection Date/Time: 05/17/2021 12:50**

Field ID: G3NW0452 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2247902	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P398379	
	EPA 300.0 Rev. 2.1	Chloride	2.6		mg Cl/L	P398766	
		Sulfate	0.21	I	mg SO4/L	P398768	
	SM 2120 B-2011	Color (true)	170		PCU	P398382	
	SM 2320 B-2011	Total Alkalinity	0.79	I	mg CaCO3/L	P398525	
	SM 2540 C-2011	TDS	29		mg/L	P398891	
	SM 2540 D-2011	TSS	2	I	mg/L	P398604	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P398528	
2247904	EPA 350.1 Rev. 2.0	Ammonia-N	0.046		mg N/L	P398996	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P398585	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P398400	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P398543	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P398622	
2247906	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P398368	
2247918	EPA 200.7 Rev. 4.4	Barium	7.9		ug/L	P398521	
		Calcium	1.37		mg/L	P398521	
		Iron	980		ug/L	P398521	
		Magnesium	0.48		mg/L	P398521	
		Manganese	32.6		ug/L	P398521	
		Potassium	0.39	I	mg/L	P398521	
		Sodium	1.4	I	mg/L	P398521	
		Zinc	5.0	U	ug/L	P398521	
	EPA 200.8 Rev. 5.4	Aluminum	427		ug/L	P398521	
		Antimony	0.050	U	ug/L	P398521	
		Arsenic	0.40		ug/L	P398521	
		Beryllium	0.013	I	ug/L	P398521	
		Boron**	8.2		ug/L	P398521	
		Cadmium	0.020	U	ug/L	P398521	
		Chromium	0.46	I	ug/L	P398521	
		Copper	0.40	U	ug/L	P398521	
		Lead	0.69		ug/L	P398521	
		Nickel	0.50	U	ug/L	P398521	
		Selenium	0.20	U	ug/L	P398521	
		Silver	0.010	U	ug/L	P398521	
		Thallium	0.10	U	ug/L	P398521	
	SM 2340B	Hardness	5.4		mg/L	P398521	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for aluminum are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.The lead result was confirmed in the undigested sample on 06/04/2021.

Non-Conformance Report

NCR ID: 8842

Event(s)	Job(s)	Sample(s)	Test(s)
NW-DIST-2021-05-18-01	TLH-2021-05-18-51	2247917	

NCR Type: PREPARATION **NCR Category: Sample Custody**

Observation: A portion of the sample leaked from the bottle when the cap was broken in the laboratory on 5/19/2021. The remaining portion of the sample was retained and a new cap provided.

Resolution: Sample integrity was compromised due to sample loss from the original container. Supervisors were notified and data will be qualified as appropriate.

Authorized by/Date: Kerry Tate, Ph.D. 6/8/2021

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P398379

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398521

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: P398521

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: P398766

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398768

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398994

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398996

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398426

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398585

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398399

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398400

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398543

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398368

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

Reference Method: SM 2120 B-2011
Batch ID: P398382

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P398525

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P398891

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P398604

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P398528

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P398622

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: P398521

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	95.2		P	85 - 115
Calcium	104		P	85 - 115
Iron	104		P	85 - 115
Magnesium	102		P	85 - 115
Manganese	99.4		P	85 - 115
Potassium	96.7		P	85 - 115
Sodium	101		P	85 - 115
Zinc	90.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398521

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	109		P	85 - 115
Arsenic	105		P	85 - 115
Beryllium	102		P	85 - 115
Boron	103		P	85 - 115
Cadmium	109		P	85 - 115
Chromium	103		P	85 - 115
Copper	102		P	85 - 115
Lead	111		P	85 - 115
Nickel	104		P	85 - 115
Selenium	105		P	85 - 115
Silver	105		P	85 - 115
Thallium	110		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398766

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398768

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398994

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398996

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398426

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398585

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.3		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398399

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: P398400

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: P398543

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398368

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.3		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P398382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.3		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P398525

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P398528

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P398622

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247980	Barium	93.9		P	80 - 120
2247980	Calcium	101		P	80 - 120
2247980	Iron	102		P	80 - 120
2247980	Magnesium	101		P	80 - 120
2247980	Manganese	98.4		P	80 - 120
2247980	Potassium	93.2		P	80 - 120
2247980	Sodium	97.9		P	80 - 120
2247980	Zinc	91.0		P	80 - 120
2248112	Barium	99.8	100	P/P	80 - 120
2248112	Calcium	112	112	P/P	80 - 120
2248112	Iron	108	108	P/P	80 - 120
2248112	Magnesium	108	108	P/P	80 - 120
2248112	Manganese	104	105	P/P	80 - 120
2248112	Potassium	101	100	P/P	80 - 120
2248112	Sodium	104		P	80 - 120
2248112	Zinc	98.4	99.2	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247980	Antimony	111		P	80 - 120
2247980	Arsenic	107		P	80 - 120
2247980	Beryllium	100		P	80 - 120
2247980	Boron	104		P	80 - 120
2247980	Cadmium	109		P	80 - 120
2247980	Chromium	105		P	80 - 120
2247980	Copper	103		P	80 - 120
2247980	Lead	114		P	80 - 120
2247980	Nickel	104		P	80 - 120
2247980	Selenium	104		P	80 - 120
2247980	Silver	105		P	80 - 120
2247980	Thallium	113		P	80 - 120
2248112	Aluminum	106	105	P/P	80 - 120
2248112	Antimony	109	109	P/P	80 - 120
2248112	Arsenic	107	105	P/P	80 - 120
2248112	Beryllium	99.8	98.4	P/P	80 - 120
2248112	Boron	109	106	P/P	80 - 120
2248112	Cadmium	111	109	P/P	80 - 120
2248112	Chromium	105	103	P/P	80 - 120
2248112	Copper	107	105	P/P	80 - 120
2248112	Lead	116	116	P/P	80 - 120
2248112	Nickel	105	103	P/P	80 - 120
2248112	Selenium	105	103	P/P	80 - 120
2248112	Silver	106	104	P/P	80 - 120
2248112	Thallium	113	115	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247514	Chloride	97.3		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247847	Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247514	Sulfate	98.7		P	90 - 110
2247847	Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398994

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247848	Ammonia-N	93.8	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398996

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247904	Ammonia-N	97.2	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247789	Kjeldahl Nitrogen	104	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398585

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247898	Kjeldahl Nitrogen	94.6	91.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398399

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247813	NO2NO3-N	99.0	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398400

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247903	NO2NO3-N	98.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398543

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247875	Total-P	104	108	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398368

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247790	O-Phosphate-P	95.2	95.1	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P398528

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2246890	Fluoride	99.6	100	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P398622

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2247848	Organic Carbon	100	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P398379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247846	Turbidity	5.00	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P398521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248112	Barium	0.389	Spike	P	0 - 20
2248112	Calcium	0.404	Spike	P	0 - 20
2248112	Iron	0.145	Spike	P	0 - 20
2248112	Magnesium	0.0653	Spike	P	0 - 20
2248112	Manganese	0.389	Spike	P	0 - 20
2248112	Potassium	0.526	Spike	P	0 - 20
2248112	Sodium	1.17	Spike	P	0 - 20
2248112	Zinc	0.830	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P398521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2248112	Aluminum	0.761	Spike	P	0 - 20
2248112	Antimony	0.467	Spike	P	0 - 20
2248112	Arsenic	1.87	Spike	P	0 - 20
2248112	Beryllium	1.49	Spike	P	0 - 20
2248112	Boron	1.98	Spike	P	0 - 20
2248112	Cadmium	1.60	Spike	P	0 - 20
2248112	Chromium	1.32	Spike	P	0 - 20
2248112	Copper	2.11	Spike	P	0 - 20
2248112	Lead	0.0721	Spike	P	0 - 20
2248112	Nickel	2.59	Spike	P	0 - 20
2248112	Selenium	2.19	Spike	P	0 - 20
2248112	Silver	1.80	Spike	P	0 - 20
2248112	Thallium	1.28	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247514	Chloride	0.583	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247514	Sulfate	0.970	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247848	Ammonia-N	4.08	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247904	Ammonia-N	1.06	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247789	Kjeldahl Nitrogen	1.68	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P398585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247898	Kjeldahl Nitrogen	1.96	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398399

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247813	NO2NO3-N	0.418	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P398400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247903	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P398543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247875	Total-P	3.59	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P398368

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247790	O-Phosphate-P	0.0641	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P398382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247895	Color (true)	2.14	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P398525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246890	Total Alkalinity	2.02	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P398891

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247927	TDS	5.30	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P398528

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2246890	Fluoride	0.477	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P398622

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2247848	Organic Carbon	0.164	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: A105506
Included Lab Sample IDs: 2247899, 2247900, 2247905, 2247906

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.5	P/P	90 - 110
O-Phosphate-P	99.5	99.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A105510
Included Lab Sample IDs: 2247895, 2247896, 2247901, 2247902

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.0	98.0	P/P	95 - 105

Reference Method: SM 2120 B-2011
Run ID: A105511
Included Lab Sample IDs: 2247895, 2247896, 2247901, 2247902

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	90 - 115
Color (true)	98.7	100	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A105523
Included Lab Sample IDs: 2247897, 2247898, 2247903, 2247904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A105567
Included Lab Sample IDs: 2247895, 2247896, 2247901, 2247902

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A105567
Included Lab Sample IDs: 2247895, 2247896, 2247901, 2247902

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A105597
Included Lab Sample IDs: 2247897, 2247898, 2247903, 2247904

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A105604
Included Lab Sample IDs: 2247897, 2247898, 2247903, 2247904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	98.1	P/P	90 - 110
Organic Carbon	98.1	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A105619
Included Lab Sample IDs: 2247898, 2247903, 2247904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.6	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A105623
Included Lab Sample IDs: 2247897

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A105650
Included Lab Sample IDs: 2247917, 2247918, 2247919

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	102	104	P/P	90 - 110
Calcium	102	103	P/P	90 - 110
Iron	104	106	P/P	90 - 110
Magnesium	103	104	P/P	90 - 110
Manganese	104	105	P/P	90 - 110
Potassium	101	101	P/P	90 - 110
Sodium	102	102	P/P	90 - 110
Zinc	97.1	99.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A105658
Included Lab Sample IDs: 2247895, 2247896, 2247901, 2247902

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105709
Included Lab Sample IDs: 2247917, 2247918, 2247919

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	103	106	P/P	90 - 110
Antimony	106	106	P/P	90 - 110
Arsenic	103	104	P/P	90 - 110
Beryllium	103	102	P/P	90 - 110
Boron	102	106	P/P	90 - 110
Cadmium	105	105	P/P	90 - 110
Chromium	100	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105709
Included Lab Sample IDs: 2247917, 2247918, 2247919

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	99.1	101	P/P	90 - 110
Nickel	100	102	P/P	90 - 110
Selenium	105	105	P/P	90 - 110
Silver	100	101	P/P	90 - 110
Thallium	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A105765
Included Lab Sample IDs: 2247897, 2247898, 2247903, 2247904

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.3	98.2	P/P	90 - 110
Ammonia-N	98.7	98.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A105862
Included Lab Sample IDs: 2247917, 2247918, 2247919

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	106	104	P/P	90 - 110

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						5.00	
EPA 200.7 Rev. 4.4	Barium	95.2	93.9	99.8	100			0.389
	Calcium	104	101	112	112			0.404
	Iron	104	102	108	108			0.145
	Magnesium	102	101	108	108			0.0653
	Manganese	99.4	98.4	104	105			0.389
	Potassium	96.7	93.2	101	100			0.526
	Sodium	101	97.9	104				1.17
	Zinc	90.7	91.0	98.4	99.2			0.830
EPA 200.8 Rev. 5.4	Aluminum	103	106	105				0.761
	Antimony	109	111	109	109			0.467
	Arsenic	105	107	107	105			1.87
	Beryllium	102	100	99.8	98.4			1.49
	Boron	103	104	109	106			1.98
	Cadmium	109	109	111	109			1.60
	Chromium	103	105	105	103			1.32
	Copper	102	103	107	105			2.11
	Lead	111	114	116	116			0.0721
	Nickel	104	104	105	103			2.59
	Selenium	105	104	105	103			2.19
	Silver	105	105	106	104			1.80
	Thallium	110	113	113	115			1.28
EPA 300.0 Rev. 2.1	Chloride	102	97.3	99.9			0.583	
	Sulfate	100	98.7	99.9			0.970	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	93.8	98.6				4.08
	Ammonia-N	98.4	97.2	99.2				1.06
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	110	104	107				1.68
	Kjeldahl Nitrogen	98.3	94.6	91.4				1.96
EPA 353.2 Rev. 2.0	NO2NO3-N	101	99.0	99.6				0.418
	NO2NO3-N	102	98.0	98.0				0.0
EPA 365.1 Rev. 2.0	Total-P	106	104	108				3.59
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.3	95.2	95.1				0.0641
SM 2120 B-2011	Color (true)	98.3					2.14	
SM 2320 B-2011	Total Alkalinity	99.3					2.02	
SM 2540 C-2011	TDS						5.30	
SM 4500 F-C-2011	Fluoride	100	99.6	100				0.477
SM 5310 B-2011	Organic Carbon	95.4	100	100				0.164

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2247895, 2247896, 2247901, 2247902
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2247917, 2247918, 2247919
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2247917, 2247918, 2247919
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2247895, 2247896, 2247901, 2247902
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2247895, 2247896, 2247901, 2247902
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2247897, 2247898, 2247903, 2247904
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2247897, 2247898, 2247903, 2247904
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2247897, 2247898, 2247903, 2247904
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2247897, 2247898, 2247903, 2247904

Reference Method Descriptions

Method	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2247899, 2247900, 2247905, 2247906
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2247895, 2247896, 2247901, 2247902
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2247895, 2247896, 2247901, 2247902
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2247917, 2247918, 2247919
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2247895, 2247896, 2247901, 2247902
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2247895, 2247896, 2247901, 2247902
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2247895, 2247896, 2247901, 2247902
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2247897, 2247898, 2247903, 2247904

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	05/18/2021			05/18/2021 15:36	Sarah A Nixon	2247895, 2247896, 2247901, 2247902
EPA 200.7 Rev. 4.4	05/18/2021	05/20/2021 16:00	Elliott D. Healy	05/25/2021 13:38	Betina Topolski	2247917
	05/18/2021	05/20/2021 16:00	Elliott D. Healy	05/25/2021 13:44	Betina Topolski	2247918
	05/18/2021	05/20/2021 16:00	Elliott D. Healy	05/25/2021 13:50	Betina Topolski	2247919
EPA 200.8 Rev. 5.4	05/18/2021	05/20/2021 16:00	Elliott D. Healy	05/26/2021 15:37	McKinley C Carter	2247917
	05/18/2021	05/20/2021 16:00	Elliott D. Healy	05/26/2021 15:45	McKinley C Carter	2247918
	05/18/2021	05/20/2021 16:00	Elliott D. Healy	05/26/2021 15:54	McKinley C Carter	2247919
	05/18/2021	05/20/2021 16:00	Elliott D. Healy	06/03/2021 23:58	Alexander Thompson	2247917
	05/18/2021	05/20/2021 16:00	Elliott D. Healy	06/04/2021 00:04	Alexander Thompson	2247918
	05/18/2021	05/20/2021 16:00	Elliott D. Healy	06/04/2021 00:10	Alexander Thompson	2247919
EPA 300.0 Rev. 2.1	05/18/2021			05/24/2021 23:26	Lipi Saha	2247895
	05/18/2021			05/24/2021 23:38	Lipi Saha	2247896
	05/18/2021			05/24/2021 23:50	Lipi Saha	2247901
	05/18/2021			05/25/2021 00:02	Lipi Saha	2247902
EPA 350.1 Rev. 2.0	05/18/2021			05/28/2021 12:42	Roberta Tatti	2247897
	05/18/2021			05/28/2021 12:44	Roberta Tatti	2247898
	05/18/2021			05/28/2021 12:46	Roberta Tatti	2247903
	05/18/2021			05/28/2021 13:20	Roberta Tatti	2247904
EPA 351.2 Rev. 2.0	05/18/2021	05/19/2021 14:18	Benjamin T. Nordmann	05/24/2021 16:01	Virginia P. Brown	2247897
	05/18/2021	05/21/2021 13:15	Benjamin T. Nordmann	05/24/2021 09:29	Virginia P. Brown	2247898
	05/18/2021	05/21/2021 13:15	Benjamin T. Nordmann	05/24/2021 09:34	Virginia P. Brown	2247903
	05/18/2021	05/21/2021 13:15	Benjamin T. Nordmann	05/24/2021 09:36	Virginia P. Brown	2247904
EPA 353.2 Rev. 2.0	05/18/2021			05/19/2021 09:37	Beverly Y. Sanders	2247897
	05/18/2021			05/19/2021 09:39	Beverly Y. Sanders	2247898
	05/18/2021			05/19/2021 09:46	Beverly Y. Sanders	2247903
	05/18/2021			05/19/2021 09:51	Beverly Y. Sanders	2247904
EPA 365.1 Rev. 2.0	05/18/2021	05/20/2021 14:05	Yen Ta	05/21/2021 14:42	Shengyu Ding	2247897
	05/18/2021	05/20/2021 14:05	Yen Ta	05/21/2021 14:43	Shengyu Ding	2247898
	05/18/2021	05/20/2021 14:05	Yen Ta	05/21/2021 14:44	Shengyu Ding	2247903
	05/18/2021	05/20/2021 14:05	Yen Ta	05/21/2021 14:45	Shengyu Ding	2247904
EPA 365.1 Rev. 2.0 dissolved	05/18/2021			05/18/2021 15:17	Lipi Saha	2247899
	05/18/2021			05/18/2021 15:18	Lipi Saha	2247900
	05/18/2021			05/18/2021 15:19	Lipi Saha	2247905
	05/18/2021			05/18/2021 15:24	Lipi Saha	2247906
SM 2120 B-2011	05/18/2021			05/18/2021 16:40	Sarah A Nixon	2247895
	05/18/2021			05/18/2021 16:45	Sarah A Nixon	2247901
	05/18/2021			05/18/2021 17:01	Sarah A Nixon	2247896
	05/18/2021			05/18/2021 17:02	Sarah A Nixon	2247902
SM 2320 B-2011	05/18/2021			05/20/2021 02:10	Dale L. Simmons	2247895
	05/18/2021			05/20/2021 02:22	Dale L. Simmons	2247896

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-2011	05/18/2021			05/20/2021 02:32	Dale L. Simmons	2247901
	05/18/2021			05/20/2021 02:40	Dale L. Simmons	2247902
SM 2340B	05/18/2021			05/25/2021 13:38	Betina Topolski	2247917
	05/18/2021			05/25/2021 13:44	Betina Topolski	2247918
	05/18/2021			05/25/2021 13:50	Betina Topolski	2247919
SM 2540 C-2011	05/18/2021			05/20/2021 15:22	Yijie Li	2247895, 2247896, 2247901, 2247902
SM 2540 D-2011	05/18/2021			05/20/2021 15:22	Yijie Li	2247895, 2247896, 2247901, 2247902
SM 4500 F-C-2011	05/18/2021			05/20/2021 02:10	Dale L. Simmons	2247895
	05/18/2021			05/20/2021 02:22	Dale L. Simmons	2247896
	05/18/2021			05/20/2021 02:32	Dale L. Simmons	2247901
	05/18/2021			05/20/2021 02:40	Dale L. Simmons	2247902
SM 5310 B-2011	05/18/2021			05/20/2021 22:23	Madeline Gruver	2247897
	05/18/2021			05/20/2021 22:38	Madeline Gruver	2247898
	05/18/2021			05/20/2021 22:51	Madeline Gruver	2247903
	05/18/2021			05/20/2021 23:31	Madeline Gruver	2247904