Chemical Analysis Report

NE-DIST-2021-09-16-01

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

Event Description: **Callahan Boat**
Request ID: **RQ-2021-09-13-17**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 07-OCT-2021 10:30

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: Thomas Creek 5 miles Down from Ethel **Collection Date/Time: 09/15/2021 10:10**

Field ID: G4NE0298 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2276294	EPA 200.7 Rev. 4.4	Calcium	8.08		mg/L	P403819	
		Iron	980		ug/L	P403819	
		Magnesium	4.38		mg/L	P403819	
		Manganese	13.2		ug/L	P403819	
		Zinc	6.0	I	ug/L	P403819	
	EPA 200.8 Rev. 5.4	Aluminum	478		ug/L	P403819	
		Antimony	0.061	I	ug/L	P403819	
		Arsenic	0.77		ug/L	P403819	
		Beryllium	0.062		ug/L	P403819	
		Cadmium	0.020	U	ug/L	P403819	
		Chromium	0.83	I	ug/L	P403819	
		Copper	0.61	I	ug/L	P403819	
		Lead	0.61		ug/L	P403819	
		Nickel	0.70	I	ug/L	P403819	
		Selenium	0.20	U	ug/L	P403819	
		Silver	0.010	U	ug/L	P403819	
		Thallium	0.10	U	ug/L	P403819	

Sample Location: THOMAS CR 4 MI BELOW CITY PRISON **Collection Date/Time: 09/15/2021 10:25**

Field ID: 19020033 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2276285	EPA 180.1 Rev. 2.0	Turbidity	3.5	A	NTU	P403846	
	SM 2320 B-2011	Total Alkalinity	15	Y	mg CaCO3/L	P404044	
	SM 2540 D-2011	TSS	4	I	mg/L	P403927	
	SM 4500 F-C-2011	Fluoride	0.056	I	mg F/L	P404045	
2276286	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P403992	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P403936	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P403917	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P404294	
	SM 5310 B-2011	Organic Carbon	41		mg C/L	P403961	
2276287	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.090		mg P/L	P403835	

Ref. Method and Comment:
SM 2320 B-2011: Sample was left out at room temperature overnight, should be stored at 4 degC.
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FB_09152021 **Collection Date/Time: 09/15/2021 10:30**

Field ID: FB_09152021 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2276288	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P403846	
	SM 2320 B-2011	Total Alkalinity	0.65	UY	mg CaCO3/L	P404044	
	SM 2540 D-2011	TSS	2	U	mg/L	P403927	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P404045	
2276289	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P403992	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P403936	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P403916	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P404294	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P403961	
2276290	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P403835	

Ref. Method and Comment:
SM 2320 B-2011: Sample was left out at room temperature overnight, should be stored at 4 degC.
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 9044

Event(s)	Job(s)	Sample(s)	Test(s)
NE-DIST-2021-09-16-01	TLH-2021-09-16-09	2276285	
NE-DIST-2021-09-16-01	TLH-2021-09-16-09	2276288	

NCR Type: CUSTODY **NCR Category: General**

Observation: Sample stored at room temperature for more than 24 hours.Samples were left out at room temperature from 9/17/2021 to 9/20/2021.

Resolution: Results qualified as appropriate for analyses run 9/20/2021 or later.

Authorized by/Date: Irina Carbone 10/6/2021

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: P403846

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P403819

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P403819

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
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 350.1 Rev. 2.0
Batch ID: P403992

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403936

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403916

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403917

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: P404294

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403835

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

Reference Method: SM 2320 B-2011
Batch ID: P404044

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

Reference Method: SM 2540 D-2011
Batch ID: P403927

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P404045

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P403961

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: P403819

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	103		P	85 - 115
Magnesium	105		P	85 - 115
Manganese	100		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P403819

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	105		P	85 - 115
Arsenic	96.2		P	85 - 115
Beryllium	97.6		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	98.8		P	85 - 115
Copper	94.6		P	85 - 115
Lead	98.6		P	85 - 115
Nickel	94.0		P	85 - 115
Selenium	97.2		P	85 - 115
Silver	102		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403992

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403936

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403916

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403917

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404294

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403835

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

Reference Method: SM 2320 B-2011
Batch ID: P404044

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P404045

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P403961

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P403819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276260	Calcium	107	107	P/P	80 - 120
2276260	Iron	107	107	P/P	80 - 120
2276260	Magnesium	109	109	P/P	80 - 120
2276260	Manganese	101	101	P/P	80 - 120
2276260	Zinc	104	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P403819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276260	Aluminum	101	99.6	P/P	80 - 120
2276260	Antimony	105	103	P/P	80 - 120
2276260	Arsenic	97.3	94.6	P/P	80 - 120
2276260	Beryllium	101	97.2	P/P	80 - 120
2276260	Cadmium	103	103	P/P	80 - 120
2276260	Chromium	98.8	96.4	P/P	80 - 120
2276260	Copper	95.9	93.8	P/P	80 - 120
2276260	Lead	100	99.1	P/P	80 - 120
2276260	Nickel	94.0	92.2	P/P	80 - 120
2276260	Selenium	95.0	94.5	P/P	80 - 120
2276260	Silver	100	102	P/P	80 - 120
2276260	Thallium	104	105	P/P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403992

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276348	Ammonia-N	97.0	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403936

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276254	Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276218	NO2NO3-N	104	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276269	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404294

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275143	Total-P	107	105	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403835

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276287	O-Phosphate-P	98.6	98.8	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P404045

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276523	Fluoride	100	98.4	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P403961

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2276269	Organic Carbon	96.2	97.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276285	Turbidity	8.97	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P403819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276260	Calcium	0.233	Spike	P	0 - 20
2276260	Iron	0.0312	Spike	P	0 - 20
2276260	Magnesium	0.131	Spike	P	0 - 20
2276260	Manganese	0.307	Spike	P	0 - 20
2276260	Zinc	0.191	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P403819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276260	Aluminum	1.45	Spike	P	0 - 20
2276260	Antimony	1.47	Spike	P	0 - 20
2276260	Arsenic	2.72	Spike	P	0 - 20
2276260	Beryllium	3.65	Spike	P	0 - 20
2276260	Cadmium	0.152	Spike	P	0 - 20
2276260	Chromium	2.41	Spike	P	0 - 20
2276260	Copper	2.17	Spike	P	0 - 20
2276260	Lead	0.993	Spike	P	0 - 20
2276260	Nickel	1.92	Spike	P	0 - 20
2276260	Selenium	0.562	Spike	P	0 - 20
2276260	Silver	1.38	Spike	P	0 - 20
2276260	Thallium	1.07	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403992

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276348	Ammonia-N	1.13	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403936

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276254	Kjeldahl Nitrogen	1.67	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276218	NO2NO3-N	1.43	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276269	NO2NO3-N	0.943	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275143	Total-P	2.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403835

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276287	O-Phosphate-P	0.139	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P404044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276523	Total Alkalinity	0.236	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P404045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276523	Fluoride	0.953	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P403961

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2276269	Organic Carbon	0.594	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: A107831
Included Lab Sample IDs: 2276287, 2276290

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A107835
Included Lab Sample IDs: 2276285, 2276288

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	102	P/P	95 - 105

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A107874
Included Lab Sample IDs: 2276294

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A107882
Included Lab Sample IDs: 2276286, 2276289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	105	106	P/P	90 - 110
NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A107890
Included Lab Sample IDs: 2276294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.2	101	P/P	90 - 110
Antimony	103	103	P/P	90 - 110
Arsenic	96.1	95.7	P/P	90 - 110
Beryllium	95.2	95.6	P/P	90 - 110
Cadmium	102	103	P/P	90 - 110
Chromium	96.4	96.3	P/P	90 - 110
Copper	91.4	92.4	P/P	90 - 110
Lead	97.4	98.1	P/P	90 - 110
Nickel	90.5	91.4	P/P	90 - 110
Selenium	98.5	99.1	P/P	90 - 110
Silver	95.9	95.9	P/P	90 - 110
Thallium	102	102	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A107898
Included Lab Sample IDs: 2276286, 2276289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-2011
Run ID: A107898
Included Lab Sample IDs: 2276286, 2276289

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A107906
Included Lab Sample IDs: 2276286, 2276289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.0	98.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A107911
Included Lab Sample IDs: 2276286, 2276289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	98.5	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A107928
Included Lab Sample IDs: 2276285, 2276288

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

Reference Method: SM 4500 F-C-2011
Run ID: A107928
Included Lab Sample IDs: 2276285, 2276288

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: A108056
Included Lab Sample IDs: 2276286

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A108075
Included Lab Sample IDs: 2276289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	98.5	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					8.97	
EPA 200.7 Rev. 4.4	Calcium	103	107	107			0.233
	Iron	103	107	107			0.0312
	Magnesium	105	109	109			0.131
	Manganese	100	101	101			0.307
	Zinc	103	104	104			0.191
EPA 200.8 Rev. 5.4	Aluminum	101	101	99.6			1.45
	Antimony	105	105	103			1.47
	Arsenic	96.2	97.3	94.6			2.72
	Beryllium	97.6	101	97.2			3.65
	Cadmium	103	103	103			0.152
	Chromium	98.8	98.8	96.4			2.41
	Copper	94.6	95.9	93.8			2.17
	Lead	98.6	100	99.1			0.993
	Nickel	94.0	94.0	92.2			1.92
	Selenium	97.2	95.0	94.5			0.562
	Silver	102	100	102			1.38
	Thallium	103	104	105			1.07
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	97.0	98.2			1.13
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.8	101	103			1.67
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	106			1.43
	NO2NO3-N	106	106	106			0.943
EPA 365.1 Rev. 2.0	Total-P	106	107	105			2.20
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.6	98.8			0.139
SM 2320 B-2011	Total Alkalinity	103				0.236	
SM 4500 F-C-2011	Fluoride	97.6	100	98.4			0.953
SM 5310 B-2011	Organic Carbon	98.0	96.2	97.3			0.594

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2276285, 2276288
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2276294
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2276294
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2276286, 2276289
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2276286, 2276289
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2276286, 2276289
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2276286, 2276289
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2276287, 2276290
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2276285, 2276288
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2276285, 2276288
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2276285, 2276288
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2276286, 2276289

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	09/16/2021			09/16/2021 15:07	Sarah A Nixon	2276285, 2276288
EPA 200.7 Rev. 4.4	09/16/2021	09/16/2021 13:30	Elliott D. Healy	09/17/2021 16:36	Josef B Mick	2276294
EPA 200.8 Rev. 5.4	09/16/2021	09/16/2021 13:30	Elliott D. Healy	09/20/2021 18:03	Alexander Thompson	2276294
EPA 350.1 Rev. 2.0	09/16/2021			09/21/2021 13:01	Ping Hua	2276286
	09/16/2021			09/21/2021 13:10	Ping Hua	2276289
EPA 351.2 Rev. 2.0	09/16/2021	09/20/2021 17:00	Benjamin T. Nordmann	09/21/2021 13:37	Alexandra J Mattheus	2276286
	09/16/2021	09/20/2021 17:00	Benjamin T. Nordmann	09/21/2021 13:39	Alexandra J Mattheus	2276289
EPA 353.2 Rev. 2.0	09/16/2021			09/20/2021 11:02	Beverly Y. Sanders	2276289
	09/16/2021			09/20/2021 11:19	Beverly Y. Sanders	2276286
EPA 365.1 Rev. 2.0	09/16/2021	09/28/2021 14:14	Simonne.V. Calhoun	09/29/2021 12:47	Lipi Saha	2276286
	09/16/2021	09/28/2021 14:14	Simonne.V. Calhoun	09/30/2021 11:32	Lipi Saha	2276289
EPA 365.1 Rev. 2.0 dissolved	09/16/2021			09/16/2021 14:42	James L Waggerby	2276287
	09/16/2021			09/16/2021 14:45	James L Waggerby	2276290
SM 2320 B-2011	09/16/2021			09/21/2021 16:54	Dale L. Simmons	2276285
	09/16/2021			09/21/2021 17:03	Dale L. Simmons	2276288
SM 2540 D-2011	09/16/2021			09/17/2021 13:46	Simonne.V. Calhoun	2276285, 2276288
SM 4500 F-C-2011	09/16/2021			09/21/2021 16:54	Dale L. Simmons	2276285
	09/16/2021			09/21/2021 17:03	Dale L. Simmons	2276288
SM 5310 B-2011	09/16/2021			09/20/2021 21:06	Madeline Gruver	2276286
	09/16/2021			09/20/2021 21:19	Madeline Gruver	2276289