

Chemical Analysis Report

SO-DIST-2018-06-14-03

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

Event Description: **CALOOSA LT 3240BC**
Request ID: **RQ-2018-06-11-07**
Customer: **SO-DIST**
Project ID: **BMAP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: John Barrington

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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 09-JUL-2018 11:00

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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 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: US 41, Marker # 38

Collection Date/Time: 06/13/2018 14:06

Field ID: G3SD0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000851	SM 5310 B-00 dissolved	Organic Carbon	17		mg C/L	P347186	
2000855	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P347968	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P347510	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P347187	
2000859	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.15		mg P/L	P346928	
2000871	EPA 200.7 Rev. 4.4	Iron	400		ug/L	P347060	
		Zinc	5.0	U	ug/L	P347060	
	EPA 200.8 Rev. 5.4	Arsenic	1.91		ug/L	P347060	
		Cadmium	0.020	U	ug/L	P347060	
		Chromium	0.46	I	ug/L	P347060	
		Copper	1.13		ug/L	P347060	
		Lead	0.21		ug/L	P347060	
		Nickel	0.58	I	ug/L	P347060	
		Silver	0.010	U	ug/L	P347060	

Sample Location: Marker # 28

Collection Date/Time: 06/13/2018 14:20

Field ID: G3SD0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000852	SM 5310 B-00 dissolved	Organic Carbon	18		mg C/L	P347187	
2000856	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P347666	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P347510	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P347187	
2000860	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.15		mg P/L	P346928	
2000872	EPA 200.7 Rev. 4.4	Iron	380		ug/L	P347060	
		Zinc	5.0	U	ug/L	P347060	
	EPA 200.8 Rev. 5.4	Arsenic	1.97		ug/L	P347060	
		Cadmium	0.020	U	ug/L	P347060	
		Chromium	0.46	I	ug/L	P347060	
		Copper	1.05		ug/L	P347060	
		Lead	0.19	I	ug/L	P347060	
		Nickel	0.61	I	ug/L	P347060	
		Silver	0.010	U	ug/L	P347060	

Sample Location: Marker # 22

Collection Date/Time: 06/13/2018 14:40

Field ID: G3SD0114

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000853	SM 5310 B-00 dissolved	Organic Carbon	18		mg C/L	P347187	
2000857	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P347666	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P347510	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P347187	
2000861	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.15		mg P/L	P346928	
2000873	EPA 200.7 Rev. 4.4	Iron	400		ug/L	P347060	
		Zinc	5.0	U	ug/L	P347060	
	EPA 200.8 Rev. 5.4	Arsenic	2.08		ug/L	P347060	
		Cadmium	0.020	U	ug/L	P347060	
		Chromium	0.51	I	ug/L	P347060	
		Copper	1.09		ug/L	P347060	
		Lead	0.20	I	ug/L	P347060	
		Nickel	0.63	I	ug/L	P347060	
		Silver	0.010	U	ug/L	P347060	

Sample Location: Old Swing Bridge

Collection Date/Time: 06/13/2018 14:52

Field ID: G3SD0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2000854	SM 5310 B-00 dissolved	Organic Carbon	18		mg C/L	P347187	
2000858	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P347666	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P347510	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P347187	
2000862	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P346928	
2000874	EPA 200.7 Rev. 4.4	Iron	370		ug/L	P347060	
		Zinc	5.0	U	ug/L	P347060	
	EPA 200.8 Rev. 5.4	Arsenic	2.04		ug/L	P347060	
		Cadmium	0.020	U	ug/L	P347060	
		Chromium	0.46	I	ug/L	P347060	
		Copper	1.03		ug/L	P347060	
		Lead	0.17	I	ug/L	P347060	
		Nickel	0.61	I	ug/L	P347060	
		Silver	0.010	U	ug/L	P347060	

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P347060

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347060

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347666

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347968

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347510

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346928

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

Reference Method: SM 5310 B-00
Batch ID: P347187

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P347186

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-00 dissolved
Batch ID: P347187

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: P347060

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	106		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347060

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.0		P	85 - 115
Cadmium	99.5		P	85 - 115
Chromium	96.0		P	85 - 115
Copper	96.6		P	85 - 115
Lead	96.2		P	85 - 115
Nickel	98.3		P	85 - 115
Silver	101		P	85 - 115

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347666

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347968

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347510

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346928

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

Reference Method: SM 5310 B-00
Batch ID: P347187

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P347186

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.2		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00 dissolved
Batch ID: P347187

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P347060

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000558	Iron	109		P	80 - 120
2000558	Zinc	106		P	80 - 120
2000941	Iron	106	105	P/P	80 - 120
2000941	Zinc	107	105	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P347060

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000558	Arsenic	96.8		P	80 - 120
2000558	Cadmium	97.7		P	80 - 120
2000558	Chromium	93.7		P	80 - 120
2000558	Copper	93.9		P	80 - 120
2000558	Lead	94.0		P	80 - 120
2000558	Nickel	95.2		P	80 - 120
2000558	Silver	96.3		P	80 - 120
2000941	Arsenic	101	99.0	P/P	80 - 120
2000941	Cadmium	103	99.6	P/P	80 - 120
2000941	Chromium	93.6	95.3	P/P	80 - 120
2000941	Copper	98.8	98.2	P/P	80 - 120
2000941	Lead	99.5	99.3	P/P	80 - 120
2000941	Nickel	99.5	99.0	P/P	80 - 120
2000941	Silver	101	99.6	P/P	80 - 120

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P347666

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2001115	Kjeldahl Nitrogen	107	111	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P347968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000667	Kjeldahl Nitrogen	110	105	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P347510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000773	NO2NO3-N	96.2	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P346928

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000978	O-Phosphate-P	99.9	100	P/P	90 - 110

Reference Method: SM 5310 B-00
 Batch ID: P347187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
---------------	-----------	---------	---------	-----------	----------------

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P347187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000852	Organic Carbon	94.6	93.0	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P347186

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000492	Organic Carbon	112	102	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P347187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000852	Organic Carbon	94.6	93.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P347060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000941	Iron	1.21	Spike	P	0 - 20
2000941	Zinc	2.06	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000941	Arsenic	1.99	Spike	P	0 - 20
2000941	Cadmium	3.63	Spike	P	0 - 20
2000941	Chromium	1.70	Spike	P	0 - 20
2000941	Copper	0.564	Spike	P	0 - 20
2000941	Lead	0.198	Spike	P	0 - 20
2000941	Nickel	0.434	Spike	P	0 - 20
2000941	Silver	1.28	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347666

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2001115	Kjeldahl Nitrogen	3.34	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000667	Kjeldahl Nitrogen	4.11	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000773	NO2NO3-N	1.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346928

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000978	O-Phosphate-P	0.599	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P347187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000852	Organic Carbon	0.837	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00 dissolved
Batch ID: P347186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000492	Organic Carbon	6.60	Spike	P	0 - 20

Reference Method: SM 5310 B-00 dissolved
Batch ID: P347187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000852	Organic Carbon	0.837	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A84591

Included Lab Sample IDs: 2000859, 2000860, 2000861, 2000862

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A84686

Included Lab Sample IDs: 2000871, 2000872, 2000873, 2000874

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	104	P/P	90 - 110
Zinc	101	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A84687

Included Lab Sample IDs: 2000871, 2000872, 2000873, 2000874

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.6	100	P/P	90 - 110
Arsenic	99.1	98.6	P/P	90 - 110
Cadmium	98.8	99.0	P/P	90 - 110
Cadmium	99.0	99.9	P/P	90 - 110
Copper	101	101	P/P	90 - 110
Copper	99.9	101	P/P	90 - 110
Lead	100	99.8	P/P	90 - 110
Lead	99.8	99.4	P/P	90 - 110
Nickel	98.8	99.7	P/P	90 - 110
Nickel	99.7	99.5	P/P	90 - 110
Silver	98.7	99.9	P/P	90 - 110
Silver	99.7	98.7	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A84709

Included Lab Sample IDs: 2000855, 2000856, 2000857, 2000858

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	93.2	P/P	90 - 110
Organic Carbon	95.8	95.8	P/P	90 - 110

Reference Method: SM 5310 B-00 dissolved

Run ID: A84709

Included Lab Sample IDs: 2000851, 2000852, 2000853, 2000854

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A84763

Included Lab Sample IDs: 2000871, 2000872, 2000873, 2000874

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	93.6	95.6	P/P	90 - 110
Chromium	95.6	97.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A84842

Included Lab Sample IDs: 2000855, 2000856, 2000857, 2000858

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84950

Included Lab Sample IDs: 2000856, 2000857, 2000858

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.6	95.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A85040

Included Lab Sample IDs: 2000855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	97.8	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 SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Iron	106	109	106	105		1.21
	Zinc	103	106	107	105		2.06
EPA 200.8 Rev. 5.4	Arsenic	98.0	96.8	101	99.0		1.99
	Cadmium	99.5	97.7	103	99.6		3.63
	Chromium	96.0	93.7	93.6	95.3		1.70
	Copper	96.6	93.9	98.8	98.2		0.564
	Lead	96.2	94.0	99.5	99.3		0.198
	Nickel	98.3	95.2	99.5	99.0		0.434
	Silver	101	96.3	101	99.6		1.28
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.1	107	111			3.34
	Kjeldahl Nitrogen	103	110	105			4.11
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.2	97.8			1.16
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.9	100			0.599
SM 5310 B-00	Organic Carbon	95.9	94.6	93.0			0.837
SM 5310 B-00 dissolved	Organic Carbon	97.2	112	102			6.60
	Organic Carbon	95.9	94.6	93.0			0.837

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2000871, 2000872, 2000873, 2000874
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2000871, 2000872, 2000873, 2000874
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2000855, 2000856, 2000857, 2000858
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2000855, 2000856, 2000857, 2000858
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2000859, 2000860, 2000861, 2000862
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2000855, 2000856, 2000857, 2000858
SM 5310 B-00 dissolved / E31780	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	2000851, 2000852, 2000853, 2000854

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/19/2018 15:14	Betina Topolski	2000871
	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/19/2018 15:22	Betina Topolski	2000872
	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/19/2018 15:29	Betina Topolski	2000873
	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/19/2018 15:37	Betina Topolski	2000874
EPA 200.8 Rev. 5.4	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/19/2018 21:04	Robert K Palmer	2000871
	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/19/2018 21:13	Robert K Palmer	2000872
	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/19/2018 21:43	Robert K Palmer	2000873
	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/19/2018 21:53	Robert K Palmer	2000874
	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/21/2018 18:35	Robert K Palmer	2000871
	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/21/2018 18:54	Robert K Palmer	2000872
	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/21/2018 19:01	Robert K Palmer	2000873
	06/14/2018	06/18/2018 14:45	Elliott D. Healy	06/21/2018 19:07	Robert K Palmer	2000874
	06/14/2018	06/28/2018 10:50	Adrian Shelby	06/29/2018 15:03	Joseph Suarez	2000856
EPA 351.2 Rev. 2.0	06/14/2018	06/28/2018 10:50	Adrian Shelby	06/29/2018 15:04	Joseph Suarez	2000857
	06/14/2018	06/28/2018 10:50	Adrian Shelby	06/29/2018 15:06	Joseph Suarez	2000858
	06/14/2018	07/05/2018 09:15	Adrian Shelby	07/05/2018 16:45	Tanya Welborn	2000855
	06/14/2018			06/26/2018 12:29	Lauren Bottorf	2000855
EPA 353.2 Rev. 2.0	06/14/2018			06/26/2018 12:30	Lauren Bottorf	2000856
	06/14/2018			06/26/2018 12:31	Lauren Bottorf	2000857
	06/14/2018			06/26/2018 12:32	Lauren Bottorf	2000858
	06/14/2018			06/14/2018 15:33	Megan Treadwell	2000859
EPA 365.1 Rev. 2.0 dissolved	06/14/2018			06/14/2018 15:34	Megan Treadwell	2000860
	06/14/2018			06/14/2018 15:35	Megan Treadwell	2000861
	06/14/2018			06/14/2018 15:36	Megan Treadwell	2000862
	06/14/2018			06/19/2018 10:54	Megan Treadwell	2000855
SM 5310 B-00	06/14/2018			06/19/2018 11:53	Megan Treadwell	2000856
	06/14/2018			06/19/2018 12:11	Megan Treadwell	2000857
	06/14/2018			06/19/2018 12:29	Megan Treadwell	2000858
	06/14/2018			06/19/2018 08:22	Megan Treadwell	2000851
SM 5310 B-00 dissolved	06/14/2018			06/19/2018 09:14	Megan Treadwell	2000852
	06/14/2018			06/19/2018 10:20	Megan Treadwell	2000853
	06/14/2018			06/19/2018 10:36	Megan Treadwell	2000854