Chemical Analysis Report

SO-DIST-2018-04-12-04

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-2018-04-09-04**
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
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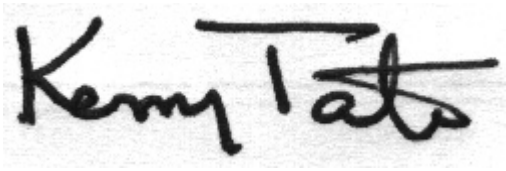
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 07-JUN-2018 13:26



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: 04/11/2018 11:42**

Field ID: G3SD0112 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983926	SM 5310 B-00 dissolved	Organic Carbon	14		mg C/L	P343574	
1983934	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P343881	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P343391	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P343562	
1983942	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.099		mg P/L	P343294	
1983970	EPA 200.7 Rev. 4.4	Iron	200	I	ug/L	P343536	
	EPA 200.8 Rev. 5.4	Arsenic	2.41		ug/L	P343536	
		Cadmium	0.060	U	ug/L	P343536	
		Chromium	2.2	I	ug/L	P343536	
		Copper	1.7	I	ug/L	P343536	
		Lead	0.18	I	ug/L	P343536	
		Nickel	1.3	I	ug/L	P343536	
		Silver	0.030	U	ug/L	P343536	
		Zinc	3.0	U	ug/L	P343536	

Sample Location: Marker # 28 **Collection Date/Time: 04/11/2018 12:05**

Field ID: G3SD0113 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983927	SM 5310 B-00 dissolved	Organic Carbon	14		mg C/L	P343737	
1983935	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P343881	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.042		mg N/L	P343391	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P343737	
1983943	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P343294	
1983971	EPA 200.7 Rev. 4.4	Iron	300		ug/L	P346389	
	EPA 200.8 Rev. 5.4	Arsenic	2.28		ug/L	P343536	
		Cadmium	0.060	U	ug/L	P343536	
		Chromium	1.2	U	ug/L	P344496	
		Copper	3.0		ug/L	P343536	
		Lead	0.20	I	ug/L	P343536	
		Nickel	0.60	U	ug/L	P344496	
		Silver	0.030	U	ug/L	P343536	
		Zinc	3.0	U	ug/L	P343536	

Sample Location: Marker # 22 **Collection Date/Time: 04/11/2018 12:18**

Field ID: G3SD0114 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983928	SM 5310 B-00 dissolved	Organic Carbon	14		mg C/L	P343737	
1983936	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P343881	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.064		mg N/L	P343391	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P343737	
1983944	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P343294	

Field ID: G3SD0114 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983972	EPA 200.7 Rev. 4.4	Iron	170		ug/L	P343463	
		Zinc	5.0	U	ug/L	P343463	
	EPA 200.8 Rev. 5.4	Arsenic	1.95		ug/L	P343463	
		Cadmium	0.020	U	ug/L	P343463	
		Chromium	0.40	U	ug/L	P343463	
		Copper	1.38		ug/L	P343463	
		Lead	0.25	U	ug/L	P343463	
		Nickel	0.52	I	ug/L	P343463	
		Silver	0.010	U	ug/L	P343463	

Sample Location: Old Swing Bridge **Collection Date/Time: 04/11/2018 12:31**

Field ID: G3SD0115 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983929	SM 5310 B-00 dissolved	Organic Carbon	14		mg C/L	P343737	
1983937	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P343881	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.065		mg N/L	P343391	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P343737	
1983945	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P343294	
1983973	EPA 200.7 Rev. 4.4	Iron	140		ug/L	P343463	
		Zinc	5.0	U	ug/L	P343463	
	EPA 200.8 Rev. 5.4	Arsenic	2.05		ug/L	P343463	
		Cadmium	0.020	U	ug/L	P343463	
		Chromium	0.40	U	ug/L	P343463	
		Copper	1.33		ug/L	P343463	
		Lead	0.25	U	ug/L	P343463	
		Nickel	0.53	I	ug/L	P343463	
		Silver	0.010	U	ug/L	P343463	

Sample Location: MidChannel@OrangeRiver **Collection Date/Time: 04/11/2018 12:48**

Field ID: G3SD0116 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983930	SM 5310 B-00 dissolved	Organic Carbon	14		mg C/L	P343737	
1983938	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P343881	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.090		mg N/L	P343391	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P343737	
1983946	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P343294	
1983974	EPA 200.7 Rev. 4.4	Iron	160		ug/L	P343463	
		Zinc	5.0	U	ug/L	P343463	
	EPA 200.8 Rev. 5.4	Arsenic	1.91		ug/L	P343463	
		Cadmium	0.020	U	ug/L	P343463	
		Chromium	0.40	U	ug/L	P343463	
		Copper	1.30		ug/L	P343463	
		Lead	0.10	I	ug/L	P343463	

Field ID: G3SD0116 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983974	EPA 200.8 Rev. 5.4	Nickel	0.48	I	ug/L	P343463	
		Silver	0.010	U	ug/L	P343463	

Sample Location: Upstream of Power Plant **Collection Date/Time: 04/11/2018 13:04**

Field ID: G3SD0117 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983931	SM 5310 B-00 dissolved	Organic Carbon	14		mg C/L	P343737	
1983939	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P343881	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.089		mg N/L	P343391	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P343737	
1983947	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.093		mg P/L	P343294	
1983975	EPA 200.7 Rev. 4.4	Iron	120		ug/L	P343463	
		Zinc	5.0	U	ug/L	P343463	
	EPA 200.8 Rev. 5.4	Arsenic	1.91		ug/L	P343463	
		Cadmium	0.020	U	ug/L	P343463	
		Chromium	0.49	I	ug/L	P343463	
		Copper	1.30		ug/L	P343463	
		Lead	0.079	I	ug/L	P343463	
		Nickel	0.56	I	ug/L	P343463	
		Silver	0.010	U	ug/L	P343463	

Sample Location: Mid Channel off Oxbow **Collection Date/Time: 04/11/2018 13:21**

Field ID: G3SD0118 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983932	SM 5310 B-00 dissolved	Organic Carbon	14		mg C/L	P343737	
1983940	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P343634	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P343571	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P343737	
1983948	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.094		mg P/L	P343295	
1983976	EPA 200.7 Rev. 4.4	Iron	140		ug/L	P343463	
		Zinc	5.0	U	ug/L	P343463	
	EPA 200.8 Rev. 5.4	Arsenic	1.81		ug/L	P343463	
		Cadmium	0.020	U	ug/L	P343463	
		Chromium	0.40	U	ug/L	P345682	
		Copper	1.20		ug/L	P343463	
		Lead	0.075	I	ug/L	P343463	
		Nickel	0.39	I	ug/L	P345682	
		Silver	0.010	U	ug/L	P343463	

Sample Location: Mid channel off point **Collection Date/Time: 04/11/2018 13:35**

Field ID: G3SD0119 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes

Field ID: G3SD0119 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1983933	SM 5310 B-00 dissolved	Organic Carbon	14		mg C/L	P343737	
1983941	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P343634	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P343571	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P343737	
1983949	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.093		mg P/L	P343296	
1983977	EPA 200.7 Rev. 4.4	Iron	270		ug/L	P343463	
		Zinc	5.0	U	ug/L	P343463	
	EPA 200.8 Rev. 5.4	Arsenic	1.91		ug/L	P343463	
		Cadmium	0.020	U	ug/L	P343463	
		Chromium	0.40	U	ug/L	P344319	
		Copper	1.07		ug/L	P345682	
		Lead	0.084	I	ug/L	P343463	
		Nickel	0.39	I	ug/L	P344319	
		Silver	0.010	U	ug/L	P343463	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343463

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343536

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P346389

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343463

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

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
Zinc	1.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344319

Component	Result	Code	Units
Chromium	0.40	U	ug/L
Nickel	0.20	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344496

Component	Result	Code	Units
Chromium	0.40	U	ug/L
Nickel	0.20	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345682

Component	Result	Code	Units
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Nickel	0.20	U	ug/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343634

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343881

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343391

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343571

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343294

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343295

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343296

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

Reference Method: SM 5310 B-00
Batch ID: P343562

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

Reference Method: SM 5310 B-00
Batch ID: P343737

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343574

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343737

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: P343463

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343463

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	102		P	85 - 115
Zinc	98.3		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343536

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	100		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P346389

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	98.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343463

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	104		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	97.7		P	85 - 115
Copper	104		P	85 - 115
Lead	98.3		P	85 - 115
Nickel	104		P	85 - 115
Silver	99.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	80 - 120
Cadmium	98.8		P	80 - 120
Chromium	94.3		P	80 - 120
Copper	98.3		P	80 - 120
Lead	95.1		P	80 - 120
Nickel	100		P	80 - 120
Silver	97.9		P	80 - 120
Zinc	100		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344319

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	95.6		P	85 - 115
Nickel	95.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344496

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	95.7		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344496

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Nickel	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345682

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	99.9		P	85 - 115
Copper	96.8		P	85 - 115
Nickel	101		P	85 - 115

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343634

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343881

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343391

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343571

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343294

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343295

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343296

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.9		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P343562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P343737

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343574

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343737

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343463

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983715	Iron	106	99.9	P/P	80 - 120
1983715	Zinc	94.7	95.1	P/P	80 - 120
1983965	Iron	103		P	80 - 120
1983965	Zinc	99.3		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983873	Iron	100	102	P/P	70 - 130

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P346389

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996179	Iron	96.7	98.9	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343463

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983715	Arsenic	103	104	P/P	80 - 120
1983715	Cadmium	99.4	99.4	P/P	80 - 120
1983715	Chromium	97.2	98.0	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343463

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983715	Copper	102	103	P/P	80 - 120
1983715	Lead	96.9	97.7	P/P	80 - 120
1983715	Nickel	103	104	P/P	80 - 120
1983715	Silver	99.6	99.5	P/P	80 - 120
1983965	Arsenic	108		P	80 - 120
1983965	Cadmium	99.7		P	80 - 120
1983965	Chromium	94.0		P	80 - 120
1983965	Copper	100		P	80 - 120
1983965	Lead	100		P	80 - 120
1983965	Nickel	102		P	80 - 120
1983965	Silver	97.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983873	Arsenic	105	110	P/P	70 - 130
1983873	Cadmium	84.8	84.1	P/P	70 - 130
1983873	Chromium	82.5	85.8	P/P	70 - 130
1983873	Copper	97.2	101	P/P	70 - 130
1983873	Lead	103	106	P/P	70 - 130
1983873	Nickel	106	113	P/P	70 - 130
1983873	Silver	86.9	89.1	P/P	70 - 130
1983873	Zinc	85.4	88.1	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344319

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987474	Chromium	89.5	89.9	P/P	75 - 125
1987474	Nickel	90.6	91.4	P/P	75 - 125

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344496

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1987134	Chromium	89.8	91.2	P/P	70 - 130
1987134	Nickel	105	108	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345682

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989186	Chromium	99.9	102	P/P	80 - 120
1989186	Copper	95.2	97.7	P/P	80 - 120
1989186	Nickel	97.7	99.7	P/P	80 - 120
1990489	Chromium	97.0		P	80 - 120
1990489	Copper	93.3		P	80 - 120
1990489	Nickel	95.5		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983940	Kjeldahl Nitrogen	98.5	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983836	Kjeldahl Nitrogen	104	111	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343391

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983934	NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343571

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1984047	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343294

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983839	O-Phosphate-P	98.8	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983723	O-Phosphate-P	97.9	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343296

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983949	O-Phosphate-P	99.0	100	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P343562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983934	Organic Carbon	90.4	92.0	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P343737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983923	Organic Carbon	95.6	96.2	P/P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343574

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1982916	Organic Carbon	96.8	97.2	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1983923	Organic Carbon	95.6	96.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343463

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983715	Iron	6.00	Spike	P	0 - 20
1983715	Zinc	0.436	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P343536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983873	Iron	1.15	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P346389

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996179	Iron	2.19	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343463

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983715	Arsenic	0.465	Spike	P	0 - 20
1983715	Cadmium	0.0154	Spike	P	0 - 20
1983715	Chromium	0.855	Spike	P	0 - 20
1983715	Copper	0.639	Spike	P	0 - 20
1983715	Lead	0.824	Spike	P	0 - 20
1983715	Nickel	0.929	Spike	P	0 - 20
1983715	Silver	0.0950	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983873	Arsenic	4.36	Spike	P	0 - 20
1983873	Cadmium	0.845	Spike	P	0 - 20
1983873	Chromium	4.02	Spike	P	0 - 20
1983873	Copper	4.00	Spike	P	0 - 20
1983873	Lead	2.54	Spike	P	0 - 20
1983873	Nickel	5.94	Spike	P	0 - 20
1983873	Silver	2.52	Spike	P	0 - 20
1983873	Zinc	3.10	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987474	Chromium	0.349	Spike	P	0 - 20
1987474	Nickel	0.720	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1987134	Chromium	1.48	Spike	P	0 - 20
1987134	Nickel	2.72	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989186	Chromium	2.38	Spike	P	0 - 20
1989186	Copper	2.53	Spike	P	0 - 20
1989186	Nickel	1.95	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983940	Kjeldahl Nitrogen	3.87	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P343881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983836	Kjeldahl Nitrogen	5.30	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983934	NO2NO3-N	0.972	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P343571

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1984047	NO2NO3-N	0.388	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983839	O-Phosphate-P	0.0733	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983723	O-Phosphate-P	0.821	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P343296

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983949	O-Phosphate-P	0.623	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P343562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983934	Organic Carbon	1.28	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P343737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983923	Organic Carbon	0.371	Spike	P	0 - 20

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1982916	Organic Carbon	0.342	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00 dissolved
Batch ID: P343737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983923	Organic Carbon	0.371	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: A83196
Included Lab Sample IDs: 1983942, 1983943, 1983944, 1983945, 1983946, 1983947, 1983948, 1983949

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.7	P/P	90 - 110
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	99.7	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83233
Included Lab Sample IDs: 1983934, 1983935, 1983936, 1983937, 1983938, 1983939

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

Reference Method: SM 5310 B-00
Run ID: A83286
Included Lab Sample IDs: 1983934

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.7	93.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83287
Included Lab Sample IDs: 1983940, 1983941

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

Reference Method: SM 5310 B-00 dissolved
Run ID: A83288
Included Lab Sample IDs: 1983926

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	98.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A83296
Included Lab Sample IDs: 1983972, 1983973, 1983974, 1983975, 1983976, 1983977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	98.5	102	P/P	90 - 110
Zinc	102	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A83317
Included Lab Sample IDs: 1983970

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	99.6	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83334
Included Lab Sample IDs: 1983940, 1983941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	99.5	P/P	90 - 110
Kjeldahl Nitrogen	99.5	102	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A83342
Included Lab Sample IDs: 1983935, 1983936, 1983937, 1983938, 1983939, 1983940, 1983941

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.5	98.0	P/P	90 - 110
Organic Carbon	97.2	96.5	P/P	90 - 110

Reference Method: SM 5310 B-00 dissolved
Run ID: A83342
Included Lab Sample IDs: 1983927, 1983928, 1983929, 1983930, 1983931, 1983932, 1983933

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.5	97.2	P/P	90 - 110
Organic Carbon	97.2	96.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A83389
Included Lab Sample IDs: 1983970, 1983971, 1983972, 1983973, 1983974, 1983975, 1983976, 1983977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	104	106	P/P	90 - 110
Arsenic	108	108	P/P	90 - 110
Cadmium	102	103	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	100	97.6	P/P	90 - 110
Chromium	97.2	97.5	P/P	90 - 110
Copper	102	102	P/P	90 - 110
Copper	105	104	P/P	90 - 110
Lead	102	101	P/P	90 - 110
Lead	102	102	P/P	90 - 110
Nickel	102	102	P/P	90 - 110
Nickel	104	104	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A83389
Included Lab Sample IDs: 1983970, 1983971, 1983972, 1983973, 1983974, 1983975, 1983976, 1983977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	101	101	P/P	90 - 110
Silver	102	102	P/P	90 - 110
Zinc	104	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A83412
Included Lab Sample IDs: 1983972, 1983973

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	97.7	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83417
Included Lab Sample IDs: 1983934, 1983935, 1983936, 1983937, 1983938, 1983939

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	99.4	P/P	90 - 110
Kjeldahl Nitrogen	99.4	99.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A83582
Included Lab Sample IDs: 1983977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	97.2	98.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A83609
Included Lab Sample IDs: 1983977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	103	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A83643
Included Lab Sample IDs: 1983971

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	95.8	93.9	P/P	90 - 110
Nickel	101	99.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84121
Included Lab Sample IDs: 1983976, 1983977

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	104	102	P/P	90 - 110
Copper	99.2	97.0	P/P	90 - 110
Nickel	98.9	97.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A84405
Included Lab Sample IDs: 1983971

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	95.7	95.1	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 200.7 Rev. 4.4	Iron	102	106	99.9	103			6.00
	Iron	100	100	102				1.15
	Iron	98.8	96.7	98.9				2.19
	Zinc	98.3	94.7	95.1	99.3			0.436
EPA 200.8 Rev. 5.4	Arsenic	104	103	104	108			0.465
	Arsenic	102	105	110				4.36
	Cadmium	100	99.4	99.4	99.7			0.0154
	Cadmium	98.8	84.8	84.1				0.845
	Chromium	97.7	97.2	98.0	94.0			0.855
	Chromium	94.3	82.5	85.8				4.02
	Chromium	95.6	89.5	89.9				0.349
	Chromium	95.7	89.8	91.2				1.48
	Chromium	99.9	99.9	102	97.0			2.38
	Copper	104	102	103	100			0.639
	Copper	98.3	97.2	101				4.00
	Copper	96.8	95.2	97.7	93.3			2.53
	Lead	98.3	96.9	97.7	100			0.824
	Lead	95.1	103	106				2.54
	Nickel	104	103	104	102			0.929
	Nickel	100	106	113				5.94
	Nickel	95.8	90.6	91.4				0.720
	Nickel	102	105	108				2.72
	Nickel	101	97.7	99.7	95.5			1.95
	Silver	99.7	99.6	99.5	97.4			0.0950
	Silver	97.9	86.9	89.1				2.52
	Zinc	100	85.4	88.1				3.10
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	98.5	104				3.87
	Kjeldahl Nitrogen	102	104	111				5.30
EPA 353.2 Rev. 2.0	NO2NO3-N	102	99.5	100				0.972
	NO2NO3-N	101	102	102				0.388
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.8	98.7				0.0733
	O-Phosphate-P	100	97.9	97.1				0.821
	O-Phosphate-P	98.9	99.0	100				0.623
SM 5310 B-00	Organic Carbon	96.0	90.4	92.0				1.28
	Organic Carbon	94.4	95.6	96.2				0.371
SM 5310 B-00 dissolved	Organic Carbon	99.8	96.8	97.2				0.342
	Organic Carbon	94.4	95.6	96.2				0.371

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	1983970, 1983971, 1983972, 1983973, 1983974, 1983975, 1983976, 1983977
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1983970, 1983971, 1983972, 1983973, 1983974, 1983975, 1983976, 1983977
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1983934, 1983935, 1983936, 1983937, 1983938, 1983939, 1983940, 1983941
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1983934, 1983935, 1983936, 1983937, 1983938, 1983939, 1983940, 1983941
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1983942, 1983943, 1983944, 1983945, 1983946, 1983947, 1983948, 1983949
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1983934, 1983935, 1983936, 1983937, 1983938, 1983939, 1983940, 1983941
SM 5310 B-00 dissolved / E31780	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	1983926, 1983927, 1983928, 1983929, 1983930, 1983931, 1983932, 1983933

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	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/17/2018 16:56	Betina Topolski	1983972
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/17/2018 17:08	Betina Topolski	1983973
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/17/2018 17:20	Betina Topolski	1983974
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/17/2018 17:31	Betina Topolski	1983975
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/17/2018 17:43	Betina Topolski	1983976
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/17/2018 17:54	Betina Topolski	1983977
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/18/2018 13:14	Betina Topolski	1983970
	04/12/2018	06/05/2018 13:45	Elliott D. Healy	06/06/2018 19:15	Betina Topolski	1983971
EPA 200.8 Rev. 5.4	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/20/2018 20:07	Nadine Brooks	1983972
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/20/2018 20:17	Nadine Brooks	1983973
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/20/2018 20:36	Nadine Brooks	1983974
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/20/2018 20:46	Nadine Brooks	1983975
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/20/2018 21:05	Nadine Brooks	1983976
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/20/2018 21:14	Nadine Brooks	1983977
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/23/2018 21:18	Nadine Brooks	1983973
	04/12/2018	04/16/2018 13:30	Elliott D. Healy	04/23/2018 21:24	Nadine Brooks	1983972
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/21/2018 03:30	Nadine Brooks	1983971
	04/12/2018	04/17/2018 14:05	Elliott D. Healy	04/21/2018 03:40	Nadine Brooks	1983970
	04/12/2018	04/30/2018 15:15	Elliott D. Healy	05/01/2018 19:13	Robert K Palmer	1983977
	04/12/2018	04/30/2018 15:15	Elliott D. Healy	05/02/2018 10:15	Robert K Palmer	1983977
	04/12/2018	05/02/2018 17:25	Elliott D. Healy	05/03/2018 21:05	Nadine Brooks	1983971
	04/12/2018	05/22/2018 11:53	Allison Taylor	05/23/2018 14:59	Nadine Brooks	1983976
	04/12/2018	05/22/2018 11:53	Allison Taylor	05/23/2018 15:06	Nadine Brooks	1983977
EPA 351.2 Rev. 2.0	04/12/2018	04/18/2018 10:10	Adrian Shelby	04/19/2018 08:49	Joseph Suarez	1983940
	04/12/2018	04/18/2018 10:10	Adrian Shelby	04/19/2018 08:57	Joseph Suarez	1983941
	04/12/2018	04/23/2018 11:15	Adrian Shelby	04/24/2018 11:28	Joseph Suarez	1983934
	04/12/2018	04/23/2018 11:15	Adrian Shelby	04/24/2018 11:32	Joseph Suarez	1983935
	04/12/2018	04/23/2018 11:15	Adrian Shelby	04/24/2018 11:34	Joseph Suarez	1983936
	04/12/2018	04/23/2018 11:15	Adrian Shelby	04/24/2018 11:35	Joseph Suarez	1983937
	04/12/2018	04/23/2018 11:15	Adrian Shelby	04/24/2018 11:37	Joseph Suarez	1983938
	04/12/2018	04/23/2018 11:15	Adrian Shelby	04/24/2018 11:38	Joseph Suarez	1983939
EPA 353.2 Rev. 2.0	04/12/2018			04/13/2018 13:21	Lauren Bottorf	1983934
	04/12/2018			04/13/2018 13:29	Lauren Bottorf	1983935
	04/12/2018			04/13/2018 13:30	Lauren Bottorf	1983936
	04/12/2018			04/13/2018 13:31	Lauren Bottorf	1983937
	04/12/2018			04/13/2018 13:33	Lauren Bottorf	1983938
	04/12/2018			04/13/2018 13:34	Lauren Bottorf	1983939
	04/12/2018			04/17/2018 14:40	Lauren Bottorf	1983940
	04/12/2018			04/17/2018 14:41	Lauren Bottorf	1983941
EPA 365.1 Rev. 2.0 dissolved	04/12/2018			04/12/2018 14:05	Megan Treadwell	1983942

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	04/12/2018			04/12/2018 14:06	Megan Treadwell	1983943
	04/12/2018			04/12/2018 14:07	Megan Treadwell	1983944
	04/12/2018			04/12/2018 14:08	Megan Treadwell	1983945, 1983946
	04/12/2018			04/12/2018 14:19	Megan Treadwell	1983949
	04/12/2018			04/12/2018 14:34	Megan Treadwell	1983948
	04/12/2018			04/12/2018 14:44	Megan Treadwell	1983947
SM 5310 B-00	04/12/2018			04/17/2018 05:57	Megan Treadwell	1983934
	04/12/2018			04/18/2018 18:36	Megan Treadwell	1983935
	04/12/2018			04/18/2018 18:51	Megan Treadwell	1983936
	04/12/2018			04/18/2018 19:07	Megan Treadwell	1983937
	04/12/2018			04/18/2018 19:23	Megan Treadwell	1983938
	04/12/2018			04/18/2018 20:07	Megan Treadwell	1983939
	04/12/2018			04/18/2018 20:23	Megan Treadwell	1983940
	04/12/2018			04/18/2018 20:38	Megan Treadwell	1983941
SM 5310 B-00 dissolved	04/12/2018			04/17/2018 09:23	Megan Treadwell	1983926
	04/12/2018			04/18/2018 15:48	Megan Treadwell	1983927
	04/12/2018			04/18/2018 17:04	Megan Treadwell	1983928
	04/12/2018			04/18/2018 17:20	Megan Treadwell	1983929
	04/12/2018			04/18/2018 17:35	Megan Treadwell	1983930
	04/12/2018			04/18/2018 17:50	Megan Treadwell	1983931
	04/12/2018			04/18/2018 18:05	Megan Treadwell	1983932
	04/12/2018			04/18/2018 18:20	Megan Treadwell	1983933