

Chemical Analysis Report

NE-DIST-2019-06-06-01

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

Event Description: **LSJR South West Boat**

Request ID: **RQ-2019-05-27-15**

Customer: **NE-DIST**

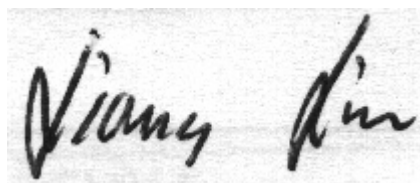
Project ID: **SMP**

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 26-JUN-2019 10:10

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

Case Narrative

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

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

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: Mill Log Cr Downstream of Test Site

Collection Date/Time: 06/05/2019 09:50

Field ID: 20030304

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2092479	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P365229	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P365525	
		Sulfate	8.2		mg SO4/L	P365527	
	SM 2120 B	Color (true)	110		PCU	P365223	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P365560	
	SM 2540 C-97	TDS	99		mg/L	P365534	
	SM 2540 D-97	TSS	2	I	mg/L	P365372	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P365566	
2092482	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P365730	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P365522	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P365580	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P365489	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P365505	
2092485	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P365247	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Black Cr @ RR Bridge Below Mill Log Cr

Collection Date/Time: 06/05/2019 10:00

Field ID: 20030204

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2092480	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P365229	
	EPA 300.0 Rev. 2.1	Chloride	17	A	mg Cl/L	P365638	
		Sulfate	7.0	A	mg SO4/L	P365639	
	SM 2120 B	Color (true)	120		PCU	P365223	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P365560	
	SM 2540 C-97	TDS	84		mg/L	P365534	
	SM 2540 D-97	TSS	2	I	mg/L	P365372	
	SM 4500 F-C-97	Fluoride	0.084	I	mg F/L	P365566	
2092483	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P365730	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P365813	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.064		mg N/L	P365580	
	EPA 365.1 Rev. 2.0	Total-P	0.090		mg P/L	P365489	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P365505	
2092486	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.060		mg P/L	P365247	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Little Black Creek 200m above mouth

Collection Date/Time: 06/05/2019 10:15

Field ID: G2NE1184

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2092473	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P365229	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P365525	
		Sulfate	6.1		mg SO4/L	P365527	
	SM 2120 B	Color (true)	120		PCU	P365223	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P365561	
	SM 2540 C-97	TDS	76		mg/L	P365534	
	SM 2540 D-97	TSS	2	I	mg/L	P365372	
	SM 4500 F-C-97	Fluoride	0.085	I	mg F/L	P365567	
2092475	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P365730	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P365522	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.058		mg N/L	P365580	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P365489	
	SM 5310 B-00	Organic Carbon	8.8		mg C/L	P365505	
2092477	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.066		mg P/L	P365247	
2092493	EPA 200.7 Rev. 4.4	Barium	13.4		ug/L	P365364	
		Calcium	8.67		mg/L	P365364	
		Iron	510		ug/L	P365364	
		Magnesium	2.57		mg/L	P365364	
		Potassium	0.67	I	mg/L	P365364	
		Sodium	7.5		mg/L	P365364	
		Zinc	5.0	U	ug/L	P365364	
	EPA 200.8 Rev. 5.4	Aluminum	167		ug/L	P365364	
		Antimony	0.050	U	ug/L	P365364	
		Arsenic	1.86		ug/L	P365364	
		Boron**	16.6		ug/L	P365364	
		Cadmium	0.020	U	ug/L	P365364	
		Chromium	0.48	I	ug/L	P365364	
		Copper	0.59	I	ug/L	P365364	
		Lead	0.33	I	ug/L	P365364	
		Nickel	0.50	U	ug/L	P365364	
		Selenium	0.20	U	ug/L	P365364	
		Silver	0.010	U	ug/L	P365364	
		Thallium	0.10	U	ug/L	P365364	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Grog Branch 150m above mouth

Collection Date/Time: 06/05/2019 10:45

Field ID: G2NE1185

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2092474	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P365229	
	EPA 300.0 Rev. 2.1	Chloride	8.6		mg Cl/L	P365525	
		Sulfate	5.2		mg SO4/L	P365527	
		Color (true)	110		PCU	P365223	
	SM 2320 B-97	Total Alkalinity	18		mg CaCO3/L	P365560	
	SM 2540 C-97	TDS	64		mg/L	P365534	
	SM 2540 D-97	TSS	2	U	mg/L	P365372	
	SM 4500 F-C-97	Fluoride	0.085	I	mg F/L	P365566	
2092476	EPA 350.1 Rev. 2.0	Ammonia-N	0.043		mg N/L	P365730	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P365522	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.041		mg N/L	P365580	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P365489	
	SM 5310 B-00	Organic Carbon	8.5		mg C/L	P365505	
2092478	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.085		mg P/L	P365247	
2092494	EPA 200.7 Rev. 4.4	Barium	11.8		ug/L	P365364	
		Calcium	7.90		mg/L	P365364	
		Iron	480		ug/L	P365364	
		Magnesium	2.23		mg/L	P365364	
		Potassium	0.47	I	mg/L	P365364	
		Sodium	5.3		mg/L	P365364	
		Zinc	5.0	U	ug/L	P365364	
	EPA 200.8 Rev. 5.4	Aluminum	139		ug/L	P365364	
		Antimony	0.050	U	ug/L	P365364	
		Arsenic	1.06		ug/L	P365364	
		Boron**	13.5		ug/L	P365364	
		Cadmium	0.020	U	ug/L	P365364	
		Chromium	0.41	I	ug/L	P365364	
		Copper	0.45	I	ug/L	P365364	
		Lead	0.25	I	ug/L	P365364	
		Nickel	0.50	U	ug/L	P365364	
		Selenium	0.20	U	ug/L	P365364	
		Silver	0.010	U	ug/L	P365364	
		Thallium	0.10	U	ug/L	P365364	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: South fork Black Creek upstream of North Fork Black Cr **Collection Date/Time: 06/05/2019 11:05**

Field ID: G2NE1127

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2092481	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P365229	
	EPA 300.0 Rev. 2.1	Chloride	7.0		mg Cl/L	P365638	
		Sulfate	4.2		mg SO4/L	P365639	
	SM 2120 B	Color (true)	88		PCU	P365223	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P365796	
	SM 2540 C-97	TDS	51		mg/L	P365534	
	SM 2540 D-97	TSS	2	I	mg/L	P365372	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P365670	
2092484	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P365730	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32		mg N/L	P365813	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.041		mg N/L	P365580	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P365489	
	SM 5310 B-00	Organic Carbon	6.7		mg C/L	P365505	
2092487	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.13		mg P/L	P365247	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P365229

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P365364

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
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: P365364

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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: P365525

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365527

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365638

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365639

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365730

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365522

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365813

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365580

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365489

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365247

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

Reference Method: SM 2120 B
Batch ID: P365223

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P365560

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P365561

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

Reference Method: SM 2320 B-97
Batch ID: P365796

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

Reference Method: SM 2540 C-97
Batch ID: P365534

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P365372

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P365566

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P365567

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P365670

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P365505

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: P365364

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	98.7		P	85 - 115
Calcium	101		P	85 - 115
Iron	104		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	101		P	85 - 115
Sodium	98.9		P	85 - 115
Zinc	96.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P365364

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.0		P	85 - 115
Antimony	93.7		P	85 - 115
Arsenic	98.2		P	85 - 115
Boron	97.5		P	85 - 115
Cadmium	96.4		P	85 - 115
Chromium	103		P	85 - 115
Copper	102		P	85 - 115
Lead	90.3		P	85 - 115
Nickel	95.5		P	85 - 115
Selenium	101		P	85 - 115
Silver	92.8		P	85 - 115
Thallium	94.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365525

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365527

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365638

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365639

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365730

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365522

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365813

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365580

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365489

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: P365247

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

Reference Method: SM 2120 B
Batch ID: P365223

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P365560

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 2320 B-97
Batch ID: P365561

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P365796

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P365566

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P365567

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P365670

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P365505

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P365364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092808	Barium	99.0	102	P/P	80 - 120
2092808	Calcium	107		P	80 - 120
2092808	Iron	105	107	P/P	80 - 120
2092808	Magnesium	103		P	80 - 120
2092808	Potassium	103	105	P/P	80 - 120
2092808	Sodium	104		P	80 - 120
2092808	Zinc	96.7	99.3	P/P	80 - 120
2092809	Barium	99.8		P	80 - 120
2092809	Calcium	101		P	80 - 120
2092809	Iron	105		P	80 - 120
2092809	Magnesium	101		P	80 - 120
2092809	Potassium	101		P	80 - 120
2092809	Sodium	101		P	80 - 120
2092809	Zinc	97.6		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P365364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092808	Aluminum	91.5	92.5	P/P	80 - 120
2092808	Antimony	95.9	96.4	P/P	80 - 120
2092808	Arsenic	94.9	95.5	P/P	80 - 120
2092808	Boron	96.1	96.6	P/P	80 - 120
2092808	Cadmium	97.9	97.5	P/P	80 - 120
2092808	Chromium	103	103	P/P	80 - 120
2092808	Copper	100	99.5	P/P	80 - 120
2092808	Lead	90.0	92.3	P/P	80 - 120
2092808	Nickel	90.9	91.2	P/P	80 - 120
2092808	Selenium	104	104	P/P	80 - 120
2092808	Silver	92.6	93.3	P/P	80 - 120
2092808	Thallium	95.7	99.5	P/P	80 - 120
2092809	Aluminum	90.8		P	80 - 120
2092809	Antimony	94.7		P	80 - 120
2092809	Arsenic	94.9		P	80 - 120
2092809	Boron	96.8		P	80 - 120
2092809	Cadmium	95.8		P	80 - 120
2092809	Chromium	103		P	80 - 120
2092809	Copper	102		P	80 - 120
2092809	Lead	92.9		P	80 - 120
2092809	Nickel	90.3		P	80 - 120
2092809	Selenium	104		P	80 - 120
2092809	Silver	92.1		P	80 - 120
2092809	Thallium	98.0		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092134	Chloride	100		P	90 - 110
2092252	Chloride	100		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365527

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092134	Sulfate	102		P	90 - 110
2092252	Sulfate	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365638

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092480	Chloride	98.6		P	90 - 110
2092785	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365639

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092480	Sulfate	101		P	90 - 110
2092785	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365730

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092549	Ammonia-N	105	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365522

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092229	Kjeldahl Nitrogen	111	102	F/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365813

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092549	Kjeldahl Nitrogen	91.5	90.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365580

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092475	NO2NO3-N	96.8	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365489

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092255	Total-P	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092231	O-Phosphate-P	97.0	97.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P365566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092079	Fluoride	98.0	97.3	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P365567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092187	Fluoride	97.2	96.7	P/P	89 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P365670

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092789	Fluoride	98.9	98.3	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P365505

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2092553	Organic Carbon	95.6	96.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P365229

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092252	Turbidity	2.48	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P365364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092808	Barium	3.02	Spike	P	0 - 20
2092808	Calcium	2.14	Spike	P	0 - 20
2092808	Iron	1.64	Spike	P	0 - 20
2092808	Magnesium	0.424	Spike	P	0 - 20
2092808	Potassium	1.49	Spike	P	0 - 20
2092808	Sodium	1.90	Spike	P	0 - 20
2092808	Zinc	2.71	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P365364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092808	Aluminum	1.10	Spike	P	0 - 20
2092808	Antimony	0.487	Spike	P	0 - 20
2092808	Arsenic	0.607	Spike	P	0 - 20
2092808	Boron	0.433	Spike	P	0 - 20
2092808	Cadmium	0.424	Spike	P	0 - 20
2092808	Chromium	0.318	Spike	P	0 - 20
2092808	Copper	0.428	Spike	P	0 - 20
2092808	Lead	2.53	Spike	P	0 - 20
2092808	Nickel	0.297	Spike	P	0 - 20
2092808	Selenium	0.587	Spike	P	0 - 20
2092808	Silver	0.798	Spike	P	0 - 20
2092808	Thallium	3.92	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092134	Chloride	0.119	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092134	Sulfate	0.312	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092480	Chloride	0.155	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365639

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092480	Sulfate	0.886	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092549	Ammonia-N	0.684	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092229	Kjeldahl Nitrogen	4.75	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092549	Kjeldahl Nitrogen	0.486	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092475	NO2NO3-N	1.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092255	Total-P	0.500	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092231	O-Phosphate-P	0.514	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P365223

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092569	Color (true)	1.35	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P365560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092079	Total Alkalinity	0.664	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P365561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092187	Total Alkalinity	0.616	Sample	P	0 - 2.8

Reference Method: SM 2320 B-97
Batch ID: P365796

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092789	Total Alkalinity	0.831	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P365534

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092551	TDS	0.988	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P365566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092079	Fluoride	0.476	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
Batch ID: P365567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092187	Fluoride	0.482	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
Batch ID: P365670

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092789	Fluoride	0.473	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P365505

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2092553	Organic Carbon	0.812	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: SM 2120 B

Run ID: A91919

Included Lab Sample IDs: 2092473, 2092474, 2092479, 2092480, 2092481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91921

Included Lab Sample IDs: 2092473, 2092474, 2092479, 2092480, 2092481

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91928

Included Lab Sample IDs: 2092477, 2092478, 2092485, 2092486, 2092487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	99.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A92026

Included Lab Sample IDs: 2092473, 2092474, 2092479, 2092480, 2092481

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

Reference Method: SM 5310 B-00

Run ID: A92051

Included Lab Sample IDs: 2092475, 2092476, 2092482, 2092483, 2092484

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.3	95.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A92072

Included Lab Sample IDs: 2092473, 2092474, 2092479, 2092480

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110
Total Alkalinity	109	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A92072

Included Lab Sample IDs: 2092473, 2092474, 2092479, 2092480

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	98.6	P/P	90 - 110
Fluoride	99.5	99.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A92073

Included Lab Sample IDs: 2092475, 2092476, 2092482, 2092483, 2092484

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	97.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A92095

Included Lab Sample IDs: 2092493, 2092494

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	103	P/P	90 - 110
Calcium	102	104	P/P	90 - 110
Iron	102	104	P/P	90 - 110
Magnesium	101	104	P/P	90 - 110
Potassium	102	103	P/P	90 - 110
Sodium	100	103	P/P	90 - 110
Zinc	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92110

Included Lab Sample IDs: 2092475, 2092476, 2092482, 2092483, 2092484

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	103	P/P	90 - 110
Total-P	102	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A92113

Included Lab Sample IDs: 2092481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A92132

Included Lab Sample IDs: 2092475, 2092476, 2092482, 2092483, 2092484

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92133

Included Lab Sample IDs: 2092475, 2092476, 2092482

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.9	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A92164

Included Lab Sample IDs: 2092481

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	106	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92190

Included Lab Sample IDs: 2092493, 2092494

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.3	97.7	P/P	90 - 110
Aluminum	97.7	97.5	P/P	90 - 110
Antimony	94.5	94.5	P/P	90 - 110
Antimony	95.1	94.5	P/P	90 - 110
Arsenic	96.3	97.2	P/P	90 - 110
Arsenic	98.1	96.3	P/P	90 - 110
Boron	102	100	P/P	90 - 110
Boron	98.7	102	P/P	90 - 110
Cadmium	97.7	97.9	P/P	90 - 110
Cadmium	97.9	97.8	P/P	90 - 110
Lead	91.6	93.4	P/P	90 - 110
Lead	93.4	93.3	P/P	90 - 110
Nickel	96.4	96.4	P/P	90 - 110
Nickel	98.6	96.4	P/P	90 - 110
Silver	94.0	94.0	P/P	90 - 110
Silver	94.0	93.8	P/P	90 - 110
Thallium	90.6	93.2	P/P	90 - 110
Thallium	93.2	91.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92208

Included Lab Sample IDs: 2092483, 2092484

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92282

Included Lab Sample IDs: 2092493, 2092494

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	99.6	99.1	P/P	90 - 110
Copper	98.4	99.4	P/P	90 - 110
Selenium	97.1	99.5	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			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						2.48	
EPA 200.7 Rev. 4.4	Barium	98.7	99.0	102	99.8			3.02
	Calcium	101	107	101				2.14
	Iron	104	105	107	105			1.64
	Magnesium	101	103	101				0.424
	Potassium	101	103	105	101			1.49
	Sodium	98.9	104	101				1.90
	Zinc	96.7	96.7	99.3	97.6			2.71
EPA 200.8 Rev. 5.4	Aluminum	96.0	91.5	92.5	90.8			1.10
	Antimony	93.7	95.9	96.4	94.7			0.487
	Arsenic	98.2	94.9	95.5	94.9			0.607
	Boron	97.5	96.1	96.6	96.8			0.433
	Cadmium	96.4	97.9	97.5	95.8			0.424
	Chromium	103	103	103	103			0.318
	Copper	102	102	100	99.5			0.428
	Lead	90.3	90.0	92.3	92.9			2.53
	Nickel	95.5	90.9	91.2	90.3			0.297
	Selenium	101	104	104	104			0.587
	Silver	92.8	92.6	93.3	92.1			0.798
	Thallium	94.4	95.7	99.5	98.0			3.92
EPA 300.0 Rev. 2.1	Chloride	100	100	100			0.119	
	Chloride	99.1	98.6	99.7			0.155	
	Sulfate	101	102	102			0.312	
	Sulfate	100	101	101			0.886	
EPA 350.1 Rev. 2.0	Ammonia-N	104	105	104				0.684
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	111	102				4.75
	Kjeldahl Nitrogen	96.2	91.5	90.9				0.486
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	96.8	95.2				1.20
EPA 365.1 Rev. 2.0	Total-P	106	105	104				0.500
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	97.0	97.5				0.514
SM 2120 B	Color (true)	100					1.35	
SM 2320 B-97	Total Alkalinity	104					0.664	
	Total Alkalinity	104					0.616	
	Total Alkalinity	104					0.831	
SM 2540 C-97	TDS						0.988	
SM 4500 F-C-97	Fluoride	97.4	98.0	97.3				0.476
	Fluoride	96.9	97.2	96.7				0.482
	Fluoride	97.5	98.9	98.3				0.473
SM 5310 B-00	Organic Carbon	95.6	95.6	96.6				0.812

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2092473, 2092474, 2092479, 2092480, 2092481
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2092493, 2092494
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2092493, 2092494
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2092473, 2092474, 2092479, 2092480, 2092481
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2092473, 2092474, 2092479, 2092480, 2092481

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2092475, 2092476, 2092482, 2092483, 2092484
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2092475, 2092476, 2092482, 2092483, 2092484
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2092475, 2092476, 2092482, 2092483, 2092484
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2092475, 2092476, 2092482, 2092483, 2092484
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2092477, 2092478, 2092485, 2092486, 2092487
SM 2120 B / E31780	True Color measured at 450 nm	2092473, 2092474, 2092479, 2092480, 2092481
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2092473, 2092474, 2092479, 2092480, 2092481
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2092473, 2092474, 2092479, 2092480, 2092481
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2092473, 2092474, 2092479, 2092480, 2092481
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2092473, 2092474, 2092479, 2092480, 2092481
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2092475, 2092476, 2092482, 2092483, 2092484

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	06/06/2019			06/06/2019 18:53	Julia Storbeck	2092473, 2092474, 2092479, 2092480, 2092481
EPA 200.7 Rev. 4.4	06/06/2019	06/11/2019 11:00	Alexander Thompson	06/12/2019 17:58	Betina Topolski	2092493
	06/06/2019	06/11/2019 11:00	Alexander Thompson	06/12/2019 18:06	Betina Topolski	2092494
EPA 200.8 Rev. 5.4	06/06/2019	06/11/2019 11:00	Alexander Thompson	06/18/2019 19:22	Robert K Palmer	2092493
	06/06/2019	06/11/2019 11:00	Alexander Thompson	06/18/2019 20:31	Robert K Palmer	2092494
	06/06/2019	06/11/2019 11:00	Alexander Thompson	06/21/2019 15:31	Robert K Palmer	2092493
	06/06/2019	06/11/2019 11:00	Alexander Thompson	06/21/2019 15:37	Robert K Palmer	2092494
EPA 300.0 Rev. 2.1	06/06/2019			06/13/2019 02:46	Lipi Saha	2092473
	06/06/2019			06/13/2019 02:58	Lipi Saha	2092474
	06/06/2019			06/13/2019 03:11	Lipi Saha	2092479
	06/06/2019			06/13/2019 14:29	Lipi Saha	2092480
	06/06/2019			06/13/2019 15:17	Lipi Saha	2092481
EPA 350.1 Rev. 2.0	06/06/2019			06/13/2019 13:39	Ping Hua	2092476
	06/06/2019			06/13/2019 13:41	Ping Hua	2092482
	06/06/2019			06/13/2019 13:50	Ping Hua	2092483
	06/06/2019			06/13/2019 13:51	Ping Hua	2092484
	06/06/2019			06/13/2019 13:53	Ping Hua	2092475
EPA 351.2 Rev. 2.0	06/06/2019	06/13/2019 11:45	Sima Feizi	06/17/2019 10:20	Joseph Suarez	2092475
	06/06/2019	06/13/2019 11:45	Sima Feizi	06/17/2019 10:21	Joseph Suarez	2092476
	06/06/2019	06/13/2019 11:45	Sima Feizi	06/17/2019 10:23	Joseph Suarez	2092482
	06/06/2019	06/18/2019 13:00	Adrian Shelby	06/19/2019 11:16	Joseph Suarez	2092483
	06/06/2019	06/18/2019 13:00	Adrian Shelby	06/19/2019 11:18	Joseph Suarez	2092484
EPA 353.2 Rev. 2.0	06/06/2019			06/13/2019 10:49	Beverly Y. Sanders	2092475
	06/06/2019			06/13/2019 10:58	Beverly Y. Sanders	2092476
	06/06/2019			06/13/2019 10:59	Beverly Y. Sanders	2092482
	06/06/2019			06/13/2019 11:00	Beverly Y. Sanders	2092483
	06/06/2019			06/13/2019 11:01	Beverly Y. Sanders	2092484
EPA 365.1 Rev. 2.0	06/06/2019	06/12/2019 14:05	Sima Feizi	06/13/2019 17:30	Julia Storbeck	2092475
	06/06/2019	06/12/2019 14:05	Sima Feizi	06/13/2019 17:32	Julia Storbeck	2092476
	06/06/2019	06/12/2019 14:05	Sima Feizi	06/13/2019 17:35	Julia Storbeck	2092482
	06/06/2019	06/12/2019 14:05	Sima Feizi	06/13/2019 17:36	Julia Storbeck	2092483
	06/06/2019	06/12/2019 14:05	Sima Feizi	06/13/2019 17:37	Julia Storbeck	2092484
EPA 365.1 Rev. 2.0 dissolved	06/06/2019			06/06/2019 15:29	Jhamieka S. Greenwood	2092487
	06/06/2019			06/06/2019 15:32	Jhamieka S. Greenwood	2092477
	06/06/2019			06/06/2019 15:33	Jhamieka S. Greenwood	2092485
	06/06/2019			06/06/2019 15:34	Jhamieka S. Greenwood	2092478, 2092486
SM 2120 B	06/06/2019			06/06/2019 16:12	Madeline Funaro	2092473
	06/06/2019			06/06/2019 16:13	Madeline Funaro	2092474
	06/06/2019			06/06/2019 16:14	Madeline Funaro	2092479

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	06/06/2019			06/06/2019 16:15	Madeline Funaro	2092480, 2092481
SM 2320 B-97	06/06/2019			06/13/2019 00:02	Dale L. Simmons	2092474
	06/06/2019			06/13/2019 00:13	Dale L. Simmons	2092479
	06/06/2019			06/13/2019 00:25	Dale L. Simmons	2092480
	06/06/2019			06/13/2019 06:24	Dale L. Simmons	2092473
	06/06/2019			06/18/2019 00:09	Dale L. Simmons	2092481
SM 2540 C-97	06/06/2019			06/07/2019 16:20	Mariam Hanna	2092473, 2092474, 2092479, 2092480, 2092481
SM 2540 D-97	06/06/2019			06/07/2019 16:27	Mariam Hanna	2092473, 2092474, 2092479, 2092480, 2092481
SM 4500 F-C-97	06/06/2019			06/13/2019 00:02	Dale L. Simmons	2092474
	06/06/2019			06/13/2019 00:13	Dale L. Simmons	2092479
	06/06/2019			06/13/2019 00:25	Dale L. Simmons	2092480
	06/06/2019			06/13/2019 06:24	Dale L. Simmons	2092473
	06/06/2019			06/13/2019 22:22	Dale L. Simmons	2092481
SM 5310 B-00	06/06/2019			06/11/2019 10:08	Madeline Funaro	2092475
	06/06/2019			06/11/2019 10:21	Madeline Funaro	2092476
	06/06/2019			06/11/2019 10:36	Madeline Funaro	2092482
	06/06/2019			06/11/2019 10:52	Madeline Funaro	2092483
	06/06/2019			06/11/2019 11:05	Madeline Funaro	2092484