

Chemical Analysis Report

NE-DIST-2019-11-01-01

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

Event Description: **Interlachen 1, 2 and Melrose**
Request ID: **RQ-2019-10-28-20**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-NOV-2019 16:36

A handwritten signature in black ink, appearing to read "Liang Lin", 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: Smith Lake Center

Collection Date/Time: 10/31/2019 12:35

Field ID: G2NE1156

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2133080	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P373603	
	EPA 300.0 Rev. 2.1	Chloride	5.4		mg Cl/L	P374076	
		Sulfate	0.43	I	mg SO4/L	P374081	
	SM 2120 B	Color (true)	23	A	PCU	P373615	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P374097	
	SM 2540 C-97	TDS	29		mg/L	P374057	
	SM 2540 D-97	TSS	6	I	mg/L	P374028	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P374099	
2133084	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P373781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P373855	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P373630	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P373922	
	SM 5310 B-00	Organic Carbon	7.6		mg C/L	P373993	
2133088	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P373623	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Ross Lake Center

Collection Date/Time: 10/31/2019 10:10

Field ID: 20030454

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2133077	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P373603	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P374076	
		Sulfate	0.52	I	mg SO4/L	P374081	
	SM 2120 B	Color (true)	510		PCU	P373615	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P374097	
	SM 2540 C-97	TDS	100		mg/L	P374057	
	SM 2540 D-97	TSS	2	I	mg/L	P374028	
	SM 4500 F-C-97	Fluoride	0.053	I	mg F/L	P374099	
2133078	EPA 350.1 Rev. 2.0	Ammonia-N	0.29		mg N/L	P373781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P373855	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.048		mg N/L	P373630	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P373790	
	SM 5310 B-00	Organic Carbon	31		mg C/L	P373993	
2133079	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.21		mg P/L	P373623	
2133097	EPA 200.7 Rev. 4.4	Barium	10.0		ug/L	P373660	
		Calcium	2.29		mg/L	P373660	
		Iron	790		ug/L	P373660	
		Magnesium	1.62		mg/L	P373660	
		Potassium	1.8		mg/L	P373660	
		Sodium	6.5		mg/L	P373660	
		Zinc	5.0	U	ug/L	P373660	
	EPA 200.8 Rev. 5.4	Aluminum	381		ug/L	P373660	
		Antimony	0.050	U	ug/L	P373660	
		Arsenic	0.87		ug/L	P373660	
		Boron**	17.8		ug/L	P373660	
		Cadmium	0.020	U	ug/L	P373660	
		Chromium	0.71	I	ug/L	P373660	
		Copper	0.40	U	ug/L	P373660	
		Lead	0.41		ug/L	P373660	
		Nickel	0.50	U	ug/L	P373660	
		Selenium	0.20	U	ug/L	P373660	
		Silver	0.010	U	ug/L	P373660	
		Thallium	0.10	U	ug/L	P373660	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Hardesty Lake Center

Collection Date/Time: 10/31/2019 10:25

Field ID: G1NE0869

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2133081	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P373603	
	EPA 300.0 Rev. 2.1	Chloride	7.7		mg Cl/L	P374076	
		Sulfate	0.67		mg SO4/L	P374081	
	SM 2120 B	Color (true)	160		PCU	P373615	
	SM 2320 B-97	Total Alkalinity	4.1		mg CaCO3/L	P374097	
	SM 2540 C-97	TDS	45		mg/L	P374057	
	SM 2540 D-97	TSS	2	I	mg/L	P374028	
	SM 4500 F-C-97	Fluoride	0.037	I	mg F/L	P374099	
2133085	EPA 350.1 Rev. 2.0	Ammonia-N	0.055		mg N/L	P373781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P373855	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P373630	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P373790	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P373993	
2133089	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P373625	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Church Lake Center

Collection Date/Time: 10/31/2019 12:50

Field ID: G1NE0867

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2133082	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P373603	
	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P374076	
		Sulfate	2.9		mg SO4/L	P374081	
	SM 2120 B	Color (true)	10		PCU	P373615	
	SM 2320 B-97	Total Alkalinity	4.1		mg CaCO3/L	P374097	
	SM 2540 C-97	TDS	17	I	mg/L	P374057	
	SM 2540 D-97	TSS	2	U	mg/L	P374028	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P374099	
2133086	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P373781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P373855	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P373630	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P373790	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P373993	
2133090	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P373625	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Gillis Pond Center

Collection Date/Time: 10/31/2019 11:55

Field ID: G1NE0863

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2133083	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P373603	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P374076	
		Sulfate	2.9		mg SO4/L	P374081	
	SM 2120 B	Color (true)	120		PCU	P373615	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P374097	
	SM 2540 C-97	TDS	38		mg/L	P374057	
	SM 2540 D-97	TSS	2	I	mg/L	P374028	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P374099	
2133087	EPA 350.1 Rev. 2.0	Ammonia-N	0.32		mg N/L	P373781	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P373855	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P373630	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P373790	
	SM 5310 B-00	Organic Carbon	9.5		mg C/L	P373993	
2133091	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P373625	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P373603

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P373660

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: P373660

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: P374076

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374081

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373781

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373855

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373630

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373790

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373922

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373623

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373625

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

Reference Method: SM 2120 B
Batch ID: P373615

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P374097

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

Reference Method: SM 2540 C-97
Batch ID: P374057

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P374028

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P374099

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P373993

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: P373660

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	80 - 120
Calcium	108		P	80 - 120
Iron	103		P	80 - 120
Magnesium	111		P	80 - 120
Potassium	111		P	80 - 120
Sodium	97.8		P	80 - 120
Zinc	99.1		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P373660

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	92.5		P	85 - 115
Antimony	98.6		P	85 - 115
Arsenic	97.9		P	85 - 115
Boron	90.9		P	85 - 115
Cadmium	95.4		P	85 - 115
Chromium	95.9		P	85 - 115
Copper	95.4		P	85 - 115
Lead	97.6		P	85 - 115
Nickel	95.5		P	85 - 115
Selenium	92.4		P	85 - 115
Silver	99.1		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374076

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374081

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373781

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373855

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.7		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373630

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373790

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373922

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373623

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373625

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

Reference Method: SM 2120 B
Batch ID: P373615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P374097

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P374099

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P373993

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P373660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2132928	Barium	102		P	80 - 120
2132928	Calcium	95.0		P	80 - 120
2132928	Iron	103		P	80 - 120
2132928	Magnesium	97.0		P	80 - 120
2132928	Potassium	109		P	80 - 120
2132928	Sodium	105		P	80 - 120
2132928	Zinc	98.7		P	80 - 120
2132938	Barium	104	102	P/P	80 - 120
2132938	Calcium	108	107	P/P	80 - 120
2132938	Iron	104	104	P/P	80 - 120
2132938	Magnesium	110	110	P/P	80 - 120
2132938	Potassium	108	107	P/P	80 - 120
2132938	Sodium	98.4		P	80 - 120
2132938	Zinc	102	99.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P373660

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2132928	Aluminum	92.3		P	80 - 120
2132928	Antimony	99.8		P	80 - 120
2132928	Arsenic	95.8		P	80 - 120
2132928	Boron	94.1		P	80 - 120
2132928	Cadmium	94.7		P	80 - 120
2132928	Chromium	95.5		P	80 - 120
2132928	Copper	90.9		P	80 - 120
2132928	Lead	97.2		P	80 - 120
2132928	Nickel	91.6		P	80 - 120
2132928	Selenium	90.8		P	80 - 120
2132928	Silver	100		P	80 - 120
2132928	Thallium	101		P	80 - 120
2132938	Aluminum	92.4	95.6	P/P	80 - 120
2132938	Antimony	97.3	101	P/P	80 - 120
2132938	Arsenic	93.8	96.6	P/P	80 - 120
2132938	Boron	92.7	94.6	P/P	80 - 120
2132938	Cadmium	94.2	97.6	P/P	80 - 120
2132938	Chromium	96.6	98.3	P/P	80 - 120
2132938	Copper	93.6	96.0	P/P	80 - 120
2132938	Lead	96.0	99.0	P/P	80 - 120
2132938	Nickel	93.3	95.8	P/P	80 - 120
2132938	Selenium	87.2	89.4	P/P	80 - 120
2132938	Silver	101	103	P/P	80 - 120
2132938	Thallium	99.0	104	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374076

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2132954	Chloride	97.8		P	90 - 110
2133077	Chloride	100		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374081

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2132954	Sulfate	99.2		P	90 - 110
2133077	Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373781

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133086	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133062	NO2NO3-N	97.0	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133025	Total-P	103	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373922

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2132795	Total-P	104	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373623

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133006	O-Phosphate-P	95.4	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133090	O-Phosphate-P	99.7	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P374099

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133214	Fluoride	100	100	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P373993

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133065	Organic Carbon	92.8	92.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P373603

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133038	Turbidity	1.56	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P373660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2132938	Barium	1.65	Spike	P	0 - 20
2132938	Calcium	0.219	Spike	P	0 - 20
2132938	Iron	0.450	Spike	P	0 - 20
2132938	Magnesium	0.295	Spike	P	0 - 20
2132938	Potassium	0.799	Spike	P	0 - 20
2132938	Sodium	1.60	Spike	P	0 - 20
2132938	Zinc	1.67	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P373660

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2132938	Aluminum	2.80	Spike	P	0 - 20
2132938	Antimony	4.18	Spike	P	0 - 20
2132938	Arsenic	2.94	Spike	P	0 - 20
2132938	Boron	1.79	Spike	P	0 - 20
2132938	Cadmium	3.60	Spike	P	0 - 20
2132938	Chromium	1.69	Spike	P	0 - 20
2132938	Copper	2.53	Spike	P	0 - 20
2132938	Lead	3.09	Spike	P	0 - 20
2132938	Nickel	2.66	Spike	P	0 - 20
2132938	Selenium	2.48	Spike	P	0 - 20
2132938	Silver	1.88	Spike	P	0 - 20
2132938	Thallium	4.71	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2132954	Chloride	0.398	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2132954	Sulfate	0.461	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P373781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133086	Ammonia-N	0.707	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P373855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133104	Kjeldahl Nitrogen	1.30	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133062	NO2NO3-N	0.382	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133025	Total-P	4.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P373922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2132795	Total-P	1.91	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133006	O-Phosphate-P	0.780	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133090	O-Phosphate-P	0.400	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P373615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133080	Color (true)	0.146	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P374097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133214	Total Alkalinity	0.0892	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P374057

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133162	TDS	7.06	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P374099

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133214	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P373993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133065	Organic Carbon	0.421	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A95414

Included Lab Sample IDs: 2133077, 2133080, 2133081, 2133082, 2133083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A95426

Included Lab Sample IDs: 2133077, 2133080, 2133081, 2133082, 2133083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	90 - 115
Color (true)	102	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A95427

Included Lab Sample IDs: 2133079, 2133088, 2133089, 2133090, 2133091

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	98.1	P/P	90 - 110
O-Phosphate-P	99.2	99.0	P/P	90 - 110
O-Phosphate-P	99.6	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A95429

Included Lab Sample IDs: 2133078, 2133084, 2133085, 2133086, 2133087

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A95494

Included Lab Sample IDs: 2133097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	102	102	P/P	90 - 110
Calcium	98.7	99.5	P/P	90 - 110
Iron	98.6	98.8	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Sodium	98.0	100	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A95511

Included Lab Sample IDs: 2133077, 2133080, 2133081, 2133082, 2133083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Chloride	99.9	101	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110
Sulfate	101	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A95516

Included Lab Sample IDs: 2133078, 2133084, 2133085, 2133086, 2133087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.6	P/P	90 - 110
Ammonia-N	101	100	P/P	90 - 110
Ammonia-N	99.6	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A95552

Included Lab Sample IDs: 2133078

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A95555

Included Lab Sample IDs: 2133085, 2133086, 2133087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110
Total-P	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A95591

Included Lab Sample IDs: 2133078, 2133084, 2133085, 2133086, 2133087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	99.6	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A95618

Included Lab Sample IDs: 2133078, 2133084, 2133085, 2133086, 2133087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.0	92.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A95662

Included Lab Sample IDs: 2133084

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

Reference Method: SM 2320 B-97

Run ID: A95676

Included Lab Sample IDs: 2133077, 2133080, 2133081, 2133082, 2133083

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A95676

Included Lab Sample IDs: 2133077, 2133080, 2133081, 2133082, 2133083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A95714

Included Lab Sample IDs: 2133097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.5	97.0	P/P	90 - 110
Antimony	101	103	P/P	90 - 110
Arsenic	101	102	P/P	90 - 110
Boron	98.9	99.0	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Chromium	103	108	P/P	90 - 110
Copper	100	102	P/P	90 - 110
Lead	101	102	P/P	90 - 110
Nickel	100	102	P/P	90 - 110
Selenium	98.5	100	P/P	90 - 110
Silver	104	105	P/P	90 - 110
Thallium	98.1	99.1	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					1.56	
EPA 200.7 Rev. 4.4	Barium	102	102	104	102		1.65
	Calcium	108	95.0	108	107		0.219
	Iron	103	103	104	104		0.450
	Magnesium	111	97.0	110	110		0.295
	Potassium	111	109	108	107		0.799
	Sodium	97.8	105	98.4			1.60
	Zinc	99.1	98.7	102	99.9		1.67
EPA 200.8 Rev. 5.4	Aluminum	92.5	92.3	92.4	95.6		2.80
	Antimony	98.6	99.8	97.3	101		4.18
	Arsenic	97.9	95.8	93.8	96.6		2.94
	Boron	90.9	94.1	92.7	94.6		1.79
	Cadmium	95.4	94.7	94.2	97.6		3.60
	Chromium	95.9	95.5	96.6	98.3		1.69
	Copper	95.4	90.9	93.6	96.0		2.53
	Lead	97.6	97.2	96.0	99.0		3.09
	Nickel	95.5	91.6	93.3	95.8		2.66
	Selenium	92.4	90.8	87.2	89.4		2.48
	Silver	99.1	100	101	103		1.88
	Thallium	101	101	99.0	104		4.71
EPA 300.0 Rev. 2.1	Chloride	100	97.8	100		0.398	
	Sulfate	100	99.2	99.7		0.461	
EPA 350.1 Rev. 2.0	Ammonia-N	101	103	104			0.707
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.7					1.30
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	97.0	97.4			0.382
EPA 365.1 Rev. 2.0	Total-P	100	103	97.6			4.77
	Total-P	99.8	104	108			1.91
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	95.4	96.2			0.780
	O-Phosphate-P	99.7	99.7	100			0.400
SM 2120 B	Color (true)	102				0.146	
SM 2320 B-97	Total Alkalinity	101				0.0892	
SM 2540 C-97	TDS					7.06	
SM 4500 F-C-97	Fluoride	98.1	100	100			0.0
SM 5310 B-00	Organic Carbon	99.8	92.8	92.0			0.421

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2133077, 2133080, 2133081, 2133082, 2133083
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2133097
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2133097
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2133077, 2133080, 2133081, 2133082, 2133083
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2133077, 2133080, 2133081, 2133082, 2133083
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2133078, 2133084, 2133085, 2133086, 2133087
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2133078, 2133084, 2133085, 2133086, 2133087
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2133078, 2133084, 2133085, 2133086, 2133087

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2133078, 2133084, 2133085, 2133086, 2133087
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2133079, 2133088, 2133089, 2133090, 2133091
SM 2120 B / E31780	True Color measured at 450 nm	2133077, 2133080, 2133081, 2133082, 2133083
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2133077, 2133080, 2133081, 2133082, 2133083
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2133077, 2133080, 2133081, 2133082, 2133083
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2133077, 2133080, 2133081, 2133082, 2133083
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2133077, 2133080, 2133081, 2133082, 2133083
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2133078, 2133084, 2133085, 2133086, 2133087

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	11/01/2019			11/01/2019 17:05	Rosalyn Ballman	2133077, 2133080, 2133081, 2133082, 2133083
EPA 200.7 Rev. 4.4	11/01/2019	11/04/2019 17:00	Elliott D. Healy	11/05/2019 16:49	Alexander Thompson	2133097
EPA 200.8 Rev. 5.4	11/01/2019	11/04/2019 17:00	Elliott D. Healy	11/13/2019 22:24	Robert K Palmer	2133097
EPA 300.0 Rev. 2.1	11/01/2019			11/07/2019 09:58	Jhamieka S. Greenwood	2133077
	11/01/2019			11/07/2019 12:47	Jhamieka S. Greenwood	2133080
	11/01/2019			11/07/2019 12:59	Jhamieka S. Greenwood	2133081
	11/01/2019			11/07/2019 13:11	Jhamieka S. Greenwood	2133082
	11/01/2019			11/07/2019 13:23	Jhamieka S. Greenwood	2133083
EPA 350.1 Rev. 2.0	11/01/2019			11/04/2019 13:25	Ping Hua	2133086
	11/01/2019			11/04/2019 13:42	Ping Hua	2133084
	11/01/2019			11/04/2019 13:43	Ping Hua	2133085
	11/01/2019			11/04/2019 14:10	Ping Hua	2133078
	11/01/2019			11/04/2019 14:12	Ping Hua	2133087
EPA 351.2 Rev. 2.0	11/01/2019	11/07/2019 12:07	Sima Feizi	11/08/2019 13:05	Virginia P. Brown	2133078
	11/01/2019	11/07/2019 12:07	Sima Feizi	11/08/2019 13:06	Virginia P. Brown	2133084
	11/01/2019	11/07/2019 12:07	Sima Feizi	11/08/2019 13:08	Virginia P. Brown	2133085
	11/01/2019	11/07/2019 12:07	Sima Feizi	11/08/2019 13:09	Virginia P. Brown	2133086
	11/01/2019	11/07/2019 12:07	Sima Feizi	11/08/2019 13:11	Virginia P. Brown	2133087
EPA 353.2 Rev. 2.0	11/01/2019			11/04/2019 10:08	Beverly Y. Sanders	2133078
	11/01/2019			11/04/2019 10:09	Beverly Y. Sanders	2133084
	11/01/2019			11/04/2019 10:10	Beverly Y. Sanders	2133085
	11/01/2019			11/04/2019 10:11	Beverly Y. Sanders	2133086
	11/01/2019			11/04/2019 10:12	Beverly Y. Sanders	2133087
EPA 365.1 Rev. 2.0	11/01/2019	11/06/2019 15:02	Yen Ta	11/07/2019 12:03	Benjamin T. Nordmann	2133078
	11/01/2019	11/06/2019 15:02	Yen Ta	11/07/2019 14:17	Benjamin T. Nordmann	2133085
	11/01/2019	11/06/2019 15:02	Yen Ta	11/07/2019 14:24	Benjamin T. Nordmann	2133086
	11/01/2019	11/06/2019 15:02	Yen Ta	11/07/2019 14:25	Benjamin T. Nordmann	2133087
	11/01/2019	11/08/2019 13:00	Lipi Saha	11/12/2019 16:07	Benjamin T. Nordmann	2133084
EPA 365.1 Rev. 2.0 dissolved	11/01/2019			11/01/2019 16:48	Samantha Davila	2133090
	11/01/2019			11/01/2019 17:02	Samantha Davila	2133088
	11/01/2019			11/01/2019 17:03	Samantha Davila	2133089
	11/01/2019			11/01/2019 17:04	Samantha Davila	2133091
	11/01/2019			11/01/2019 17:13	Samantha Davila	2133079
SM 2120 B	11/01/2019			11/01/2019 17:33	Madeline Funaro	2133080
	11/01/2019			11/01/2019 17:35	Madeline Funaro	2133082
	11/01/2019			11/01/2019 17:36	Madeline Funaro	2133083
	11/01/2019			11/01/2019 18:05	Madeline Funaro	2133077
	11/01/2019			11/01/2019 18:06	Madeline Funaro	2133081
SM 2320 B-97	11/01/2019			11/13/2019 02:32	Dale L. Simmons	2133077

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	11/01/2019			11/13/2019 02:41	Dale L. Simmons	2133080
	11/01/2019			11/13/2019 02:53	Dale L. Simmons	2133081
	11/01/2019			11/13/2019 03:05	Dale L. Simmons	2133082
	11/01/2019			11/13/2019 03:13	Dale L. Simmons	2133083
SM 2540 C-97	11/01/2019			11/06/2019 14:36	Yijie Li	2133077, 2133080, 2133081, 2133082, 2133083
SM 2540 D-97	11/01/2019			11/06/2019 14:36	Yijie Li	2133077, 2133080, 2133081, 2133082, 2133083
SM 4500 F-C-97	11/01/2019			11/13/2019 02:32	Dale L. Simmons	2133077
	11/01/2019			11/13/2019 02:41	Dale L. Simmons	2133080
	11/01/2019			11/13/2019 02:53	Dale L. Simmons	2133081
	11/01/2019			11/13/2019 03:05	Dale L. Simmons	2133082
	11/01/2019			11/13/2019 03:13	Dale L. Simmons	2133083
SM 5310 B-00	11/01/2019			11/08/2019 04:52	Madeline Funaro	2133078
	11/01/2019			11/08/2019 05:11	Madeline Funaro	2133084
	11/01/2019			11/08/2019 05:28	Madeline Funaro	2133085
	11/01/2019			11/08/2019 05:44	Madeline Funaro	2133086
	11/01/2019			11/08/2019 06:01	Madeline Funaro	2133087