

Chemical Analysis Report

NE-DIST-2019-03-13-01

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

Event Description: **Melrose Lakes**
Request ID: **RQ-2019-03-11-15**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 01-APR-2019 16:21



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: Ross Lake Center

Collection Date/Time: 03/12/2019 11:40

Field ID: 20030454

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069127	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P360384	
	EPA 300.0 Rev. 2.1	Chloride	9.2		mg Cl/L	P360617	
		Sulfate	0.68		mg SO4/L	P360619	
		Color (true)	470		PCU	P360403	
	SM 2120 B	Total Alkalinity	0.65	U	mg CaCO3/L	P360896	
	SM 2540 C-97	TDS	80		mg/L	P360930	
	SM 2540 D-97	TSS	2	U	mg/L	P360832	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P360903	
2069129	EPA 350.1 Rev. 2.0	Ammonia-N	0.27		mg N/L	P360575	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P360539	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.051		mg N/L	P360693	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P360563	
	SM 5310 B-00	Organic Carbon	33		mg C/L	P360753	
2069131	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P360379	
2069143	EPA 200.7 Rev. 4.4	Barium	7.6		ug/L	P360652	
		Calcium	2.07		mg/L	P360652	
		Iron	650		ug/L	P360652	
		Magnesium	1.39		mg/L	P360652	
		Potassium	1.5		mg/L	P360652	
		Sodium	5.0		mg/L	P360652	
		Zinc	5.0	U	ug/L	P360652	
	EPA 200.8 Rev. 5.4	Aluminum	419		ug/L	P360652	
		Antimony	0.050	U	ug/L	P360652	
		Arsenic	0.71		ug/L	P360652	
		Boron**	14.3		ug/L	P360652	
		Cadmium	0.020	U	ug/L	P360652	
		Chromium	0.67	I	ug/L	P360652	
		Copper	0.40	U	ug/L	P360652	
		Lead	0.35	I	ug/L	P360652	
		Nickel	0.50	U	ug/L	P360652	
		Selenium	0.24	I	ug/L	P360652	
		Silver	0.011	I	ug/L	P360652	
		Thallium	0.10	U	ug/L	P360652	

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: Lake Suggs Ctr

Collection Date/Time: 03/12/2019 12:15

Field ID: 20030922

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069128	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P360384	
	EPA 300.0 Rev. 2.1	Chloride	7.0		mg Cl/L	P360617	
		Sulfate	0.41	I	mg SO4/L	P360619	
	SM 2120 B	Color (true)	630		PCU	P360403	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P360896	
	SM 2540 C-97	TDS	105		mg/L	P360930	
	SM 2540 D-97	TSS	2	U	mg/L	P360832	
	SM 4500 F-C-97	Fluoride	0.046	I	mg F/L	P360903	
2069130	EPA 350.1 Rev. 2.0	Ammonia-N	1.1		mg N/L	P360575	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.4		mg N/L	P360539	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P360693	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P360563	
	SM 5310 B-00	Organic Carbon	48		mg C/L	P360753	
2069132	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P360379	
2069144	EPA 200.7 Rev. 4.4	Barium	12.0		ug/L	P360652	
		Calcium	2.09		mg/L	P360652	
		Iron	790		ug/L	P360652	
		Magnesium	1.46		mg/L	P360652	
		Potassium	1.5		mg/L	P360652	
		Sodium	4.1		mg/L	P360652	
		Zinc	5.0	U	ug/L	P360652	
		Aluminum	478		ug/L	P360652	
		Antimony	0.050	U	ug/L	P360652	
		Arsenic	0.76		ug/L	P360652	
		Boron**	14.5		ug/L	P360652	
		Cadmium	0.020	U	ug/L	P360652	
	EPA 200.8 Rev. 5.4	Chromium	0.60	I	ug/L	P360652	
		Copper	0.68	I	ug/L	P360652	
		Lead	0.78		ug/L	P360652	
		Nickel	0.62	I	ug/L	P360652	
		Selenium	0.20	I	ug/L	P360652	
		Silver	0.010	U	ug/L	P360652	
		Thallium	0.10	U	ug/L	P360652	

Ref. Method and Comment:

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

EPA 200.8 Rev. 5.4: The lead result was confirmed in the undigested sample on 03/22/2019.

Sample Location: Lake Rosa Center

Collection Date/Time: 03/12/2019 10:25

Field ID: G2NE1130

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069133	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P360384	
	EPA 300.0 Rev. 2.1	Chloride	9.4		mg Cl/L	P360617	
		Sulfate	7.5		mg SO4/L	P360619	
	SM 2120 B	Color (true)	8.6		PCU	P360403	
	SM 2320 B-97	Total Alkalinity	3.8		mg CaCO3/L	P360896	
	SM 2540 C-97	TDS	42		mg/L	P360930	
	SM 2540 D-97	TSS	2	U	mg/L	P360832	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P360903	
2069135	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P360575	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P360539	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P360693	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P360563	
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P360753	
2069137	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360379	

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: Goose Lake

Collection Date/Time: 03/12/2019 11:15

Field ID: 20030980

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2069134	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P360384	
	EPA 300.0 Rev. 2.1	Chloride	8.1		mg Cl/L	P360617	
		Sulfate	0.43	I	mg SO4/L	P360619	
	SM 2120 B	Color (true)	500		PCU	P360403	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P360896	
	SM 2540 C-97	TDS	89		mg/L	P360930	
	SM 2540 D-97	TSS	2	U	mg/L	P360832	
	SM 4500 F-C-97	Fluoride	0.045	I	mg F/L	P360903	
2069136	EPA 350.1 Rev. 2.0	Ammonia-N	0.33		mg N/L	P360575	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P360709	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P360693	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P360563	
	SM 5310 B-00	Organic Carbon	33		mg C/L	P360753	
2069138	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.13		mg P/L	P360379	

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: P360384

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360652

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: P360652

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: P360617

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360619

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360575

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: P360539

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360709

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360693

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360563

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360379

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

Reference Method: SM 2120 B
Batch ID: P360403

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P360896

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

Reference Method: SM 2540 C-97
Batch ID: P360930

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P360832

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P360903

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P360753

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: P360652

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	103		P	85 - 115
Iron	108		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	105		P	85 - 115
Sodium	100		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360652

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	96.8		P	85 - 115
Antimony	98.6		P	85 - 115
Arsenic	102		P	85 - 115
Boron	94.4		P	85 - 115
Cadmium	99.8		P	85 - 115
Chromium	91.9		P	85 - 115
Copper	98.1		P	85 - 115
Lead	98.3		P	85 - 115
Nickel	98.1		P	85 - 115
Selenium	99.0		P	85 - 115
Silver	110		P	85 - 115
Thallium	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360617

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360619

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360575

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: P360539

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360709

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360693

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360563

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360379

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

Reference Method: SM 2120 B
Batch ID: P360403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P360896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P360903

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360753

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360652

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069273	Barium	98.5		P	80 - 120
2069273	Calcium	104		P	80 - 120
2069273	Iron	107		P	80 - 120
2069273	Magnesium	106		P	80 - 120
2069273	Potassium	103		P	80 - 120
2069273	Sodium	101		P	80 - 120
2069273	Zinc	101		P	80 - 120
2069327	Barium	99.9	99.7	P/P	80 - 120
2069327	Calcium	104		P	80 - 120
2069327	Iron	109	108	P/P	80 - 120
2069327	Magnesium	104		P	80 - 120
2069327	Potassium	105	105	P/P	80 - 120
2069327	Sodium	106		P	80 - 120
2069327	Zinc	100	99.5	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360652

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069273	Aluminum	100		P	80 - 120
2069273	Antimony	99.3		P	80 - 120
2069273	Arsenic	101		P	80 - 120
2069273	Boron	103		P	80 - 120
2069273	Cadmium	97.8		P	80 - 120
2069273	Chromium	87.2		P	80 - 120
2069273	Copper	95.2		P	80 - 120
2069273	Lead	98.6		P	80 - 120
2069273	Nickel	96.5		P	80 - 120
2069273	Selenium	99.5		P	80 - 120
2069273	Silver	107		P	80 - 120
2069273	Thallium	101		P	80 - 120
2069327	Aluminum	98.7	98.6	P/P	80 - 120
2069327	Antimony	99.2	98.1	P/P	80 - 120
2069327	Arsenic	99.5	99.5	P/P	80 - 120
2069327	Boron	103	104	P/P	80 - 120
2069327	Cadmium	99.0	100	P/P	80 - 120
2069327	Chromium	91.4	92.0	P/P	80 - 120
2069327	Copper	94.4	94.7	P/P	80 - 120
2069327	Lead	98.5	97.8	P/P	80 - 120
2069327	Nickel	96.0	95.0	P/P	80 - 120
2069327	Selenium	95.2	97.9	P/P	80 - 120
2069327	Silver	111	111	P/P	80 - 120
2069327	Thallium	101	101	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069058	Chloride	103		P	90 - 110
2069102	Chloride	105		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069058	Sulfate	103		P	90 - 110
2069102	Sulfate	105		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069106	Ammonia-N	100	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069123	Kjeldahl Nitrogen	102	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069351	Kjeldahl Nitrogen	104	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069152	NO2NO3-N	98.0	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069062	Total-P	106	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360379

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069137	O-Phosphate-P	97.8	98.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P360903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069122	Fluoride	99.0	98.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360753

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2069123	Organic Carbon	92.7	94.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069187	Turbidity	5.94	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069327	Barium	0.178	Spike	P	0 - 20
2069327	Calcium	0.707	Spike	P	0 - 20
2069327	Iron	1.27	Spike	P	0 - 20
2069327	Magnesium	1.04	Spike	P	0 - 20
2069327	Potassium	0.0172	Spike	P	0 - 20
2069327	Sodium	1.82	Spike	P	0 - 20
2069327	Zinc	0.566	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069327	Aluminum	0.0910	Spike	P	0 - 20
2069327	Antimony	1.16	Spike	P	0 - 20
2069327	Arsenic	0.0323	Spike	P	0 - 20
2069327	Boron	1.06	Spike	P	0 - 20
2069327	Cadmium	1.09	Spike	P	0 - 20
2069327	Chromium	0.659	Spike	P	0 - 20
2069327	Copper	0.345	Spike	P	0 - 20
2069327	Lead	0.720	Spike	P	0 - 20
2069327	Nickel	1.01	Spike	P	0 - 20
2069327	Selenium	2.76	Spike	P	0 - 20
2069327	Silver	0.743	Spike	P	0 - 20
2069327	Thallium	0.171	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069058	Chloride	0.819	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P360619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069058	Sulfate	1.43	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P360575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069106	Ammonia-N	1.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069123	Kjeldahl Nitrogen	2.14	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360709

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069351	Kjeldahl Nitrogen	0.656	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069152	NO2NO3-N	1.52	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P360563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069062	Total-P	2.42	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069137	O-Phosphate-P	0.916	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069188	Color (true)	0.679	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P360896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069122	Total Alkalinity	0.494	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P360930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069257	TDS	3.27	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P360903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069122	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P360753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2069123	Organic Carbon	2.27	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: A89987

Included Lab Sample IDs: 2069131, 2069132, 2069137, 2069138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	97.7	P/P	90 - 110
O-Phosphate-P	97.1	95.6	P/P	90 - 110
O-Phosphate-P	98.9	97.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A89988

Included Lab Sample IDs: 2069127, 2069128, 2069133, 2069134

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

Reference Method: SM 2120 B

Run ID: A89998

Included Lab Sample IDs: 2069127, 2069128, 2069133, 2069134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115
Color (true)	102	104	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90054

Included Lab Sample IDs: 2069129, 2069130, 2069135, 2069136

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A90071

Included Lab Sample IDs: 2069127, 2069128, 2069133, 2069134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	103	P/P	90 - 110
Chloride	99.5	103	P/P	90 - 110
Sulfate	101	104	P/P	90 - 110
Sulfate	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90090

Included Lab Sample IDs: 2069129, 2069130, 2069135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90092

Included Lab Sample IDs: 2069129, 2069130, 2069136

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90099

Included Lab Sample IDs: 2069129, 2069130, 2069135, 2069136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90103

Included Lab Sample IDs: 2069143, 2069144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	102	P/P	90 - 110
Antimony	103	102	P/P	90 - 110
Arsenic	104	101	P/P	90 - 110
Boron	97.8	105	P/P	90 - 110
Cadmium	102	103	P/P	90 - 110
Chromium	100	101	P/P	90 - 110
Copper	103	99.8	P/P	90 - 110
Lead	104	103	P/P	90 - 110
Nickel	102	99.8	P/P	90 - 110
Selenium	102	101	P/P	90 - 110
Thallium	99.8	98.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A90113

Included Lab Sample IDs: 2069143, 2069144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	99.1	100	P/P	95 - 105
Calcium	102	101	P/P	95 - 105
Iron	101	102	P/P	95 - 105
Magnesium	102	103	P/P	95 - 105
Potassium	98.8	101	P/P	95 - 105
Sodium	97.3	100	P/P	95 - 105
Zinc	100	101	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A90118

Included Lab Sample IDs: 2069129, 2069130, 2069135, 2069136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.0	93.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90127

Included Lab Sample IDs: 2069136

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.9	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90136

Included Lab Sample IDs: 2069143, 2069144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90136

Included Lab Sample IDs: 2069143, 2069144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	103	107	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A90183

Included Lab Sample IDs: 2069127, 2069128, 2069133, 2069134

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

Reference Method: SM 4500 F-C-97

Run ID: A90183

Included Lab Sample IDs: 2069127, 2069128, 2069133, 2069134

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90185

Included Lab Sample IDs: 2069135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	102	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					5.94	
EPA 200.7 Rev. 4.4	Barium	101	98.5	99.9	99.7		0.178
	Calcium	103	104	104			0.707
	Iron	108	107	109	108		1.27
	Magnesium	104	106	104			1.04
	Potassium	105	103	105	105		0.0172
	Sodium	100	101	106			1.82
	Zinc	102	101	100	99.5		0.566
EPA 200.8 Rev. 5.4	Aluminum	96.8	100	98.7	98.6		0.0910
	Antimony	98.6	99.3	99.2	98.1		1.16
	Arsenic	102	101	99.5	99.5		0.0323
	Boron	94.4	103	103	104		1.06
	Cadmium	99.8	97.8	99.0	100		1.09
	Chromium	91.9	87.2	91.4	92.0		0.659
	Copper	98.1	95.2	94.4	94.7		0.345
	Lead	98.3	98.6	98.5	97.8		0.720
	Nickel	98.1	96.5	96.0	95.0		1.01
	Selenium	99.0	99.5	95.2	97.9		2.76
	Silver	110	107	111	111		0.743
	Thallium	100	101	101	101		0.171
EPA 300.0 Rev. 2.1	Chloride	101	103	105		0.819	
	Sulfate	103	103	105		1.43	
EPA 350.1 Rev. 2.0	Ammonia-N	101	100	102			1.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	102	105			2.14
	Kjeldahl Nitrogen	103	104	103			0.656
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.5	98.0	99.5			1.52
EPA 365.1 Rev. 2.0	Total-P	105	106	103			2.42
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.8	98.7			0.916
SM 2120 B	Color (true)	101				0.679	
SM 2320 B-97	Total Alkalinity	101				0.494	
SM 2540 C-97	TDS					3.27	
SM 4500 F-C-97	Fluoride	98.1	99.0	98.3			0.470
SM 5310 B-00	Organic Carbon	95.2	92.7	94.9			2.27

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2069127, 2069128, 2069133, 2069134
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2069143, 2069144
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2069143, 2069144
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2069127, 2069128, 2069133, 2069134
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2069127, 2069128, 2069133, 2069134
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2069129, 2069130, 2069135, 2069136
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2069129, 2069130, 2069135, 2069136
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2069129, 2069130, 2069135, 2069136
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2069129, 2069130, 2069135, 2069136

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2069131, 2069132, 2069137, 2069138
SM 2120 B / E31780	True Color measured at 450 nm	2069127, 2069128, 2069133, 2069134
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2069127, 2069128, 2069133, 2069134
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2069127, 2069128, 2069133, 2069134
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2069127, 2069128, 2069133, 2069134
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2069127, 2069128, 2069133, 2069134
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2069129, 2069130, 2069135, 2069136

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	03/13/2019			03/13/2019 16:52	Adrian Shelby	2069127, 2069128, 2069133, 2069134
EPA 200.7 Rev. 4.4	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/19/2019 12:51	Vijayalakshmi Reddy	2069143
	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/19/2019 12:56	Vijayalakshmi Reddy	2069144
EPA 200.8 Rev. 5.4	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/19/2019 15:07	Robert K Palmer	2069143
	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/19/2019 15:17	Robert K Palmer	2069144
	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/20/2019 12:11	Robert K Palmer	2069143
	03/13/2019	03/18/2019 13:30	Elliott D. Healy	03/20/2019 12:17	Robert K Palmer	2069144
EPA 300.0 Rev. 2.1	03/13/2019			03/19/2019 05:29	Lipi Saha	2069127
	03/13/2019			03/19/2019 05:41	Lipi Saha	2069128
	03/13/2019			03/19/2019 06:17	Lipi Saha	2069133
	03/13/2019			03/19/2019 06:29	Lipi Saha	2069134
EPA 350.1 Rev. 2.0	03/13/2019			03/14/2019 13:12	Ping Hua	2069129
	03/13/2019			03/14/2019 13:14	Ping Hua	2069130
	03/13/2019			03/14/2019 13:15	Ping Hua	2069135
	03/13/2019			03/14/2019 13:17	Ping Hua	2069136
EPA 351.2 Rev. 2.0	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:10	Joseph Suarez	2069129
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:11	Joseph Suarez	2069130
	03/13/2019	03/15/2019 16:30	Adrian Shelby	03/19/2019 11:13	Joseph Suarez	2069135
	03/13/2019	03/19/2019 12:25	Adrian Shelby	03/20/2019 08:52	Joseph Suarez	2069136
EPA 353.2 Rev. 2.0	03/13/2019			03/19/2019 12:33	Lauren Lees	2069129
	03/13/2019			03/19/2019 12:34	Lauren Lees	2069130
	03/13/2019			03/19/2019 12:36	Lauren Lees	2069135
	03/13/2019			03/19/2019 12:37	Lauren Lees	2069136
EPA 365.1 Rev. 2.0	03/13/2019	03/18/2019 14:30	Sima Feizi	03/19/2019 09:09	Beverly Y. Sanders	2069129
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/19/2019 09:11	Beverly Y. Sanders	2069130
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/19/2019 09:13	Beverly Y. Sanders	2069136
	03/13/2019	03/18/2019 14:30	Sima Feizi	03/21/2019 13:24	Beverly Y. Sanders	2069135
EPA 365.1 Rev. 2.0 dissolved	03/13/2019			03/13/2019 15:42	Julia Storbeck	2069137
	03/13/2019			03/13/2019 16:05	Julia Storbeck	2069132
	03/13/2019			03/13/2019 16:06	Julia Storbeck	2069138
	03/13/2019			03/13/2019 16:32	Julia Storbeck	2069131
SM 2120 B	03/13/2019			03/13/2019 16:27	Mariam Hanna	2069133
	03/13/2019			03/13/2019 17:02	Mariam Hanna	2069127
	03/13/2019			03/13/2019 17:03	Mariam Hanna	2069128
	03/13/2019			03/13/2019 17:04	Mariam Hanna	2069134
SM 2320 B-97	03/13/2019			03/21/2019 12:03	Dale L. Simmons	2069127
	03/13/2019			03/21/2019 12:12	Dale L. Simmons	2069128
	03/13/2019			03/21/2019 12:25	Dale L. Simmons	2069133
	03/13/2019			03/21/2019 12:35	Dale L. Simmons	2069134
SM 2540 C-97	03/13/2019			03/18/2019 14:58	Yijie Li	2069127, 2069128, 2069133, 2069134

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-97	03/13/2019			03/18/2019 14:58	Yijie Li	2069127, 2069128, 2069133, 2069134
SM 4500 F-C-97	03/13/2019			03/21/2019 12:03	Dale L. Simmons	2069127
	03/13/2019			03/21/2019 12:12	Dale L. Simmons	2069128
	03/13/2019			03/21/2019 12:25	Dale L. Simmons	2069133
	03/13/2019			03/21/2019 12:35	Dale L. Simmons	2069134
SM 5310 B-00	03/13/2019			03/19/2019 11:14	Julia Storbeck	2069129
	03/13/2019			03/19/2019 11:27	Julia Storbeck	2069130
	03/13/2019			03/19/2019 11:41	Julia Storbeck	2069135
	03/13/2019			03/19/2019 11:57	Julia Storbeck	2069136