Chemical Analysis Report

CEN-DIST-2020-06-02-01

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

Event Description: **Econ Trib / Fox / Kasey**
Request ID: **RQ-2020-03-09-37**
Customer: **CEN-DIST**
Project ID: **SMP**

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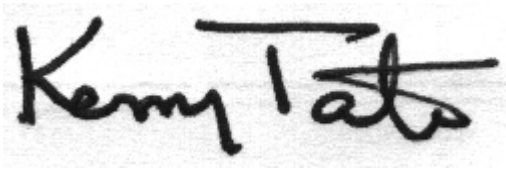
Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 19-JUN-2020 10:02



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: Kasey Lake @ Center **Collection Date/Time: 06/01/2020 13:27**

Field ID: G2CE0011 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2174151	EPA 180.1 Rev. 2.0	Turbidity	8.2		NTU	P382753	
	EPA 300.0 Rev. 2.1	Chloride	9.1		mg Cl/L	P382957	
		Sulfate	4.7		mg SO4/L	P382959	
	SM 2120 B-2011	Color (true)	39		PCU	P382733	
	SM 2320 B-2011	Total Alkalinity	28		mg CaCO3/L	P382856	
	SM 2540 C-2011	TDS	69		mg/L	P383028	
	SM 2540 D-2011	TSS	6	I	mg/L	P383037	
	SM 4500 F-C-2011	Fluoride	0.056	I	mg F/L	P382858	
2174152	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P382872	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P382949	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P382740	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P382757	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P382837	
2174153	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P382731	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FB_06012020 **Collection Date/Time: 06/01/2020 13:40**

Field ID: FB_06012020 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2174154	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P382753	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P382957	
		Sulfate	0.20	U	mg SO4/L	P382959	
	SM 2120 B-2011	Color (true)	2.5	U	PCU	P382733	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P382856	
	SM 2540 C-2011	TDS	15	U	mg/L	P383026	
	SM 2540 D-2011	TSS	2	U	mg/L	P383035	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P382858	
2174155	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P382872	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P382949	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P382740	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P383097	MS
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P382837	
2174156	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P382731	
2174159	EPA 200.7 Rev. 4.4	Barium	1.0	U	ug/L	P382780	
		Calcium	0.075	U	mg/L	P382780	
		Iron	30	U	ug/L	P382780	
		Magnesium	0.040	U	mg/L	P382780	
		Potassium	0.30	U	mg/L	P382780	
		Sodium	0.50	U	mg/L	P382780	
		Zinc	5.0	U	ug/L	P382780	
	EPA 200.8 Rev. 5.4	Aluminum	5.0	U	ug/L	P382780	
		Antimony	0.050	U	ug/L	P382780	
		Arsenic	0.050	U	ug/L	P382780	
		Boron**	2.0	U	ug/L	P382780	
		Cadmium	0.020	U	ug/L	P382780	
		Chromium	0.40	U	ug/L	P382780	
		Copper	0.40	U	ug/L	P382780	
		Lead	0.20	U	ug/L	P382780	
		Nickel	0.50	U	ug/L	P382780	
		Selenium	0.20	U	ug/L	P382780	
		Silver	0.010	U	ug/L	P382780	
		Thallium	0.10	U	ug/L	P382780	

Ref. Method and Comment:
SM 2540 D-2011: 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: P382753

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382780

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: P382780

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: P382957

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P382959

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382872

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: P382949

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382740

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382757

Component	Result	Code	Units
Total-P	0.005	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383097

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382731

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

Reference Method: SM 2120 B-2011
Batch ID: P382733

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P382856

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

Reference Method: SM 2540 C-2011
Batch ID: P383026

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P383028

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P383035

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P383037

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P382858

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P382837

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: P382780

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	100		P	85 - 115
Calcium	104		P	85 - 115
Iron	104		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	96.5		P	85 - 115
Sodium	97.3		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382780

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	94.5		P	85 - 115
Antimony	99.8		P	85 - 115
Arsenic	100		P	85 - 115
Boron	98.6		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	100		P	85 - 115
Copper	98.8		P	85 - 115
Lead	97.3		P	85 - 115
Nickel	97.2		P	85 - 115
Selenium	95.3		P	85 - 115
Silver	110		P	85 - 115
Thallium	93.2		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P382957

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P382959

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382872

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: P382949

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 353.2 Rev. 2.0
Batch ID: P382740

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382757

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383097

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: P382731

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	95.1		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P382733

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.9		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P382856

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P382858

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P382837

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2173954	Barium	99.3	100	P/P	80 - 120
2173954	Calcium	98.7	100	P/P	80 - 120
2173954	Iron	101	102	P/P	80 - 120
2173954	Magnesium	99.7	99.4	P/P	80 - 120
2173954	Potassium	90.9	91.2	P/P	80 - 120
2173954	Sodium	94.8		P	80 - 120
2173954	Zinc	103	104	P/P	80 - 120
2173998	Barium	98.4		P	80 - 120
2173998	Calcium	97.7		P	80 - 120
2173998	Iron	101		P	80 - 120
2173998	Magnesium	97.5		P	80 - 120
2173998	Potassium	92.2		P	80 - 120
2173998	Sodium	95.4		P	80 - 120
2173998	Zinc	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2173954	Aluminum	95.6	91.8	P/P	80 - 120
2173954	Antimony	98.9	96.8	P/P	80 - 120
2173954	Arsenic	101	98.9	P/P	80 - 120
2173954	Boron	96.3	95.3	P/P	80 - 120
2173954	Cadmium	101	98.2	P/P	80 - 120
2173954	Chromium	100	97.3	P/P	80 - 120
2173954	Copper	101	98.1	P/P	80 - 120
2173954	Lead	98.0	96.4	P/P	80 - 120
2173954	Nickel	98.3	96.5	P/P	80 - 120
2173954	Selenium	94.9	93.0	P/P	80 - 120
2173954	Silver	106	113	P/P	80 - 120
2173954	Thallium	94.6	96.5	P/P	80 - 120
2173998	Aluminum	96.5		P	80 - 120
2173998	Antimony	104		P	80 - 120
2173998	Arsenic	107		P	80 - 120
2173998	Boron	100		P	80 - 120
2173998	Cadmium	103		P	80 - 120
2173998	Chromium	102		P	80 - 120
2173998	Copper	103		P	80 - 120
2173998	Lead	102		P	80 - 120
2173998	Nickel	100		P	80 - 120
2173998	Selenium	100		P	80 - 120
2173998	Silver	117		P	80 - 120
2173998	Thallium	98.9		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P382957

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174071	Chloride	95.8		P	90 - 110
2174345	Chloride	101		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P382959

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174071	Sulfate	98.4		P	90 - 110
2174345	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174072	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P382949

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174072	Kjeldahl Nitrogen	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382740

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174152	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382757

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174011	Total-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174067	Total-P	110	105	F/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174069	O-Phosphate-P	96.2	96.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P382858

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174438	Fluoride	98.8	101	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P382837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174266	Organic Carbon	99.4	102	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P382753

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174009	Turbidity	0.259	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2173954	Barium	0.601	Spike	P	0 - 20
2173954	Calcium	0.796	Spike	P	0 - 20
2173954	Iron	0.426	Spike	P	0 - 20
2173954	Magnesium	0.180	Spike	P	0 - 20
2173954	Potassium	0.256	Spike	P	0 - 20
2173954	Sodium	0.757	Spike	P	0 - 20
2173954	Zinc	0.464	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2173954	Aluminum	3.94	Spike	P	0 - 20
2173954	Antimony	2.17	Spike	P	0 - 20
2173954	Arsenic	1.89	Spike	P	0 - 20
2173954	Boron	0.777	Spike	P	0 - 20
2173954	Cadmium	2.80	Spike	P	0 - 20
2173954	Chromium	3.07	Spike	P	0 - 20
2173954	Copper	2.31	Spike	P	0 - 20
2173954	Lead	1.62	Spike	P	0 - 20
2173954	Nickel	1.85	Spike	P	0 - 20
2173954	Selenium	2.05	Spike	P	0 - 20
2173954	Silver	6.51	Spike	P	0 - 20
2173954	Thallium	1.99	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P382957

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174071	Chloride	0.0914	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P382959

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174071	Sulfate	0.266	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174072	Ammonia-N	0.558	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P382949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174072	Kjeldahl Nitrogen	0.582	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174152	NO2NO3-N	0.494	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382757

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174011	Total-P	0.995	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174067	Total-P	4.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174069	O-Phosphate-P	0.518	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P382733

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174009	Color (true)	0.205	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P382856

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174438	Total Alkalinity	2.54	Sample	P	0 - 8.1

Quality Assurance Report
Precision

Reference Method: SM 2540 C-2011
Batch ID: P383026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2173989	TDS	3.90	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P383028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174002	TDS	4.63	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P382858

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174438	Fluoride	0.972	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P382837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174266	Organic Carbon	1.43	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A99133
Included Lab Sample IDs: 2174153, 2174156

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.8	96.4	P/P	90 - 110
O-Phosphate-P	97.7	96.8	P/P	90 - 110

Reference Method: SM 2120 B-2011
Run ID: A99134
Included Lab Sample IDs: 2174151, 2174154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A99141
Included Lab Sample IDs: 2174152, 2174155

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A99144
Included Lab Sample IDs: 2174151, 2174154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A99158
Included Lab Sample IDs: 2174152

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

Reference Method: SM 5310 B-2011
Run ID: A99176
Included Lab Sample IDs: 2174152, 2174155

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.6	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A99178
Included Lab Sample IDs: 2174159

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	101	99.4	P/P	90 - 110
Iron	103	101	P/P	90 - 110
Magnesium	101	100	P/P	90 - 110
Potassium	96.6	96.1	P/P	90 - 110
Sodium	99.1	98.6	P/P	90 - 110
Zinc	99.3	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-2011
Run ID: A99185
Included Lab Sample IDs: 2174151, 2174154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.5	95.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A99185
Included Lab Sample IDs: 2174151, 2174154

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A99191
Included Lab Sample IDs: 2174152, 2174155

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A99197
Included Lab Sample IDs: 2174159

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.2	97.6	P/P	90 - 110
Antimony	98.1	97.4	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Boron	99.4	98.9	P/P	90 - 110
Cadmium	99.4	98.6	P/P	90 - 110
Chromium	99.5	101	P/P	90 - 110
Copper	101	99.7	P/P	90 - 110
Lead	102	100	P/P	90 - 110
Nickel	100	99.7	P/P	90 - 110
Selenium	99.5	99.3	P/P	90 - 110
Thallium	92.1	90.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A99208
Included Lab Sample IDs: 2174159

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A99220
Included Lab Sample IDs: 2174151, 2174154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.7	98.0	P/P	90 - 110
Sulfate	99.0	98.7	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A99244
Included Lab Sample IDs: 2174152, 2174155

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A99336
Included Lab Sample IDs: 2174155

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.0	97.5	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			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						0.259	
EPA 200.7 Rev. 4.4	Barium	100	99.3	100	98.4			0.601
	Calcium	104	98.7	100	97.7			0.796
	Iron	104	101	102	101			0.426
	Magnesium	104	99.7	99.4	97.5			0.180
	Potassium	96.5	90.9	91.2	92.2			0.256
	Sodium	97.3	94.8	95.4				0.757
	Zinc	101	103	104	102			0.464
EPA 200.8 Rev. 5.4	Aluminum	94.5	95.6	91.8	96.5			3.94
	Antimony	99.8	98.9	96.8	104			2.17
	Arsenic	100	101	98.9	107			1.89
	Boron	98.6	96.3	95.3	100			0.777
	Cadmium	101	101	98.2	103			2.80
	Chromium	100	100	97.3	102			3.07
	Copper	98.8	101	98.1	103			2.31
	Lead	97.3	98.0	96.4	102			1.62
	Nickel	97.2	98.3	96.5	100			1.85
	Selenium	95.3	94.9	93.0	100			2.05
	Silver	110	106	113	117			6.51
	Thallium	93.2	94.6	96.5	98.9			1.99
EPA 300.0 Rev. 2.1	Chloride	99.9	95.8	101			0.0914	
	Sulfate	101	98.4	100			0.266	
EPA 350.1 Rev. 2.0	Ammonia-N	101	102	101				0.558
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	103	103				0.582
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	101				0.494
EPA 365.1 Rev. 2.0	Total-P	102	102	103				0.995
	Total-P	105	110	105				4.50
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.1	96.2	96.7				0.518
SM 2120 B-2011	Color (true)	98.9					0.205	
SM 2320 B-2011	Total Alkalinity	101					2.54	
SM 2540 C-2011	TDS						3.90	
	TDS						4.63	
SM 4500 F-C-2011	Fluoride	101	98.8	101				0.972
SM 5310 B-2011	Organic Carbon	98.8	99.4	102				1.43

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2174151, 2174154
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2174159
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2174159
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2174151, 2174154
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2174151, 2174154
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2174152, 2174155
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2174152, 2174155
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2174152, 2174155
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2174152, 2174155
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2174153, 2174156
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2174151, 2174154
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2174151, 2174154

Reference Method Descriptions

Method	Description	Associated Samples
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2174151, 2174154
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2174151, 2174154
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2174151, 2174154
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2174152, 2174155

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	06/02/2020			06/02/2020 15:16	Blanca Fach	2174151, 2174154
EPA 200.7 Rev. 4.4	06/02/2020	06/03/2020 17:30	Elliott D. Healy	06/04/2020 14:28	Betina Topolski	2174159
EPA 200.8 Rev. 5.4	06/02/2020	06/03/2020 17:30	Elliott D. Healy	06/05/2020 17:21	Justin Cutchin	2174159
	06/02/2020	06/03/2020 17:30	Elliott D. Healy	06/08/2020 11:22	Justin Cutchin	2174159
EPA 300.0 Rev. 2.1	06/02/2020			06/05/2020 20:18	Elliott Rodriguez	2174151
	06/02/2020			06/05/2020 20:31	Elliott Rodriguez	2174154
EPA 350.1 Rev. 2.0	06/02/2020			06/06/2020 12:11	Ping Hua	2174152
	06/02/2020			06/06/2020 12:14	Ping Hua	2174155
EPA 351.2 Rev. 2.0	06/02/2020	06/09/2020 10:30	Sima Feizi	06/10/2020 13:18	Jhamieka S. Greenwood	2174152
	06/02/2020	06/09/2020 10:30	Sima Feizi	06/10/2020 13:20	Jhamieka S. Greenwood	2174155
EPA 353.2 Rev. 2.0	06/02/2020			06/03/2020 09:05	Beverly Y. Sanders	2174152
	06/02/2020			06/03/2020 09:12	Beverly Y. Sanders	2174155
EPA 365.1 Rev. 2.0	06/02/2020	06/03/2020 12:55	Yen Ta	06/04/2020 08:53	Lipi Saha	2174152
	06/02/2020	06/11/2020 11:45	Yen Ta	06/16/2020 08:25	Lipi Saha	2174155
EPA 365.1 Rev. 2.0 dissolved	06/02/2020			06/02/2020 16:12	Jhamieka S. Greenwood	2174153
	06/02/2020			06/02/2020 16:18	Jhamieka S. Greenwood	2174156
SM 2120 B-2011	06/02/2020			06/02/2020 16:46	Blanca Fach	2174151, 2174154
SM 2320 B-2011	06/02/2020			06/05/2020 01:36	Dale L. Simmons	2174151
	06/02/2020			06/05/2020 01:45	Dale L. Simmons	2174154
SM 2540 C-2011	06/02/2020			06/05/2020 16:02	Yijie Li	2174151, 2174154
SM 2540 D-2011	06/02/2020			06/05/2020 16:02	Yijie Li	2174151, 2174154
SM 4500 F-C-2011	06/02/2020			06/05/2020 01:36	Dale L. Simmons	2174151
	06/02/2020			06/05/2020 01:45	Dale L. Simmons	2174154
SM 5310 B-2011	06/02/2020			06/04/2020 17:26	David Boose	2174152
	06/02/2020			06/04/2020 17:38	David Boose	2174155