

Chemical Analysis Report

SE-DIST-2020-06-03-01

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

Event Description: **SMP- Taylor Creek**
Request ID: **RQ-2020-06-01-45**
Customer: **SE-DIST**
Project ID: **SMP**

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

Date Certified: 24-JUN-2020 15:50



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: Taylor Creek @ 441

Collection Date/Time: 06/02/2020 12:20

Field ID: G1SE0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2174580	EPA 180.1 Rev. 2.0	Turbidity	7.3		NTU	P382772	
	EPA 300.0 Rev. 2.1	Chloride	64		mg Cl/L	P382957	
		Sulfate	40		mg SO4/L	P382959	
		Color (true)	240		PCU	P382778	
	SM 2320 B-2011	Total Alkalinity	50		mg CaCO3/L	P383005	
	SM 2540 C-2011	TDS	304	A	mg/L	P383030	
	SM 2540 D-2011	TSS	14	A	mg/L	P383039	
	SM 4500 F-C-2011	Fluoride	0.11		mg F/L	P382910	
2174581	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P382876	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P383259	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P382846	
	EPA 365.1 Rev. 2.0	Total-P	0.30		mg P/L	P382935	
	SM 5310 B-2011	Organic Carbon	30		mg C/L	P382838	
2174582	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P382776	
2174593	EPA 200.7 Rev. 4.4	Barium	28.1		ug/L	P382826	
		Calcium	30.8		mg/L	P382826	
		Iron	700		ug/L	P382826	
		Magnesium	9.18		mg/L	P382826	
		Potassium	10.4		mg/L	P382826	
		Sodium	35.9		mg/L	P382826	
		Zinc	5.3	I	ug/L	P382826	
	EPA 200.8 Rev. 5.4	Aluminum	445		ug/L	P382826	
		Antimony	0.070	I	ug/L	P383308	
		Arsenic	1.22		ug/L	P382826	
		Boron**	54.8		ug/L	P382826	
		Cadmium	0.020	U	ug/L	P382826	
		Chromium	1.2	I	ug/L	P382826	
		Copper	1.72		ug/L	P382826	
		Lead	1.60		ug/L	P382826	
		Nickel	0.73	I	ug/L	P382826	
		Selenium	0.26	I	ug/L	P382826	
		Silver	0.010	U	ug/L	P382826	
		Thallium	0.10	U	ug/L	P382826	
		Hardness	115		mg/L	P382826	

Ref. Method and Comment:

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Taylor Creek @ 98

Collection Date/Time: 06/02/2020 13:00

Field ID: G1SE0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2174577	EPA 180.1 Rev. 2.0	Turbidity	11	A	NTU	P382772	
	EPA 300.0 Rev. 2.1	Chloride	75		mg Cl/L	P382957	
		Sulfate	37		mg SO4/L	P382959	
	SM 2120 B-2011	Color (true)	65		PCU	P382778	
	SM 2320 B-2011	Total Alkalinity	142		mg CaCO3/L	P383005	
	SM 2540 C-2011	TDS	355		mg/L	P383030	
	SM 2540 D-2011	TSS	15	I	mg/L	P383039	
	SM 4500 F-C-2011	Fluoride	0.15		mg F/L	P382910	
2174578	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P382876	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.4		mg N/L	P383259	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P382846	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P382935	
	SM 5310 B-2011	Organic Carbon	22		mg C/L	P382838	
2174579	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P382776	

Ref. Method and Comment:

SM 2540 D-2011: The PQL was elevated because of sample matrix interference.

EPA 365.1 Rev. 2.0: Total-P: 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: P382772

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382826

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: P382826

Component	Result	Code	Units
Aluminum	5.0	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 200.8 Rev. 5.4
Batch ID: P383308

Component	Result	Code	Units
Antimony	0.050	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: P382876

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382876

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383259

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382846

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382935

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382776

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

Reference Method: SM 2120 B-2011
Batch ID: P382778

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P383005

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

Reference Method: SM 2540 C-2011
Batch ID: P383030

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P383039

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P382838

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: P382826

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	104		P	85 - 115
Calcium	109		P	85 - 115
Iron	111		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	101		P	85 - 115
Sodium	104		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382826

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Arsenic	96.4		P	85 - 115
Boron	104		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	102		P	85 - 115
Copper	104		P	85 - 115
Lead	100		P	85 - 115
Nickel	103		P	85 - 115
Selenium	101		P	85 - 115
Silver	105		P	85 - 115
Thallium	96.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383308

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Antimony	97.4		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: P382876

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383259

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383259

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382846

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382935

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382776

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	94.6		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P382778

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.7		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P383005

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P382838

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382826

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174281	Barium	105	105	P/P	80 - 120
2174281	Calcium	108	103	P/P	80 - 120
2174281	Iron	108	105	P/P	80 - 120
2174281	Magnesium	106	103	P/P	80 - 120
2174281	Potassium	99.8	96.6	P/P	80 - 120
2174281	Sodium	101		P	80 - 120
2174281	Zinc	106	106	P/P	80 - 120
2174598	Barium	104		P	80 - 120
2174598	Calcium	103		P	80 - 120
2174598	Iron	109		P	80 - 120
2174598	Magnesium	103		P	80 - 120
2174598	Potassium	98.8		P	80 - 120
2174598	Sodium	103		P	80 - 120
2174598	Zinc	108		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382826

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174281	Aluminum	101	105	P/P	80 - 120
2174281	Arsenic	96.9	101	P/P	80 - 120
2174281	Boron	101	109	P/P	80 - 120
2174281	Cadmium	100	105	P/P	80 - 120
2174281	Chromium	105	106	P/P	80 - 120
2174281	Copper	102	103	P/P	80 - 120
2174281	Lead	103	102	P/P	80 - 120
2174281	Nickel	103	104	P/P	80 - 120
2174281	Selenium	95.8	102	P/P	80 - 120
2174281	Silver	108	106	P/P	80 - 120
2174281	Thallium	106	103	P/P	80 - 120
2174598	Aluminum	101		P	80 - 120
2174598	Arsenic	101		P	80 - 120
2174598	Boron	102		P	80 - 120
2174598	Cadmium	103		P	80 - 120
2174598	Chromium	102		P	80 - 120
2174598	Copper	106		P	80 - 120
2174598	Lead	105		P	80 - 120
2174598	Nickel	103		P	80 - 120
2174598	Selenium	99.7		P	80 - 120
2174598	Silver	104		P	80 - 120
2174598	Thallium	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174062	Antimony	101	99.5	P/P	80 - 120
2174278	Antimony	102		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

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

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: P382876

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174589	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174589	Kjeldahl Nitrogen	85.5	95.4	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174440	NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382776

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174591	O-Phosphate-P	90.8	92.0	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174661	Fluoride	97.0	97.7	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P382838

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2174578	Organic Carbon	103		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P382772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174577	Turbidity	2.71	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P382826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174281	Barium	0.294	Spike	P	0 - 20
2174281	Calcium	2.58	Spike	P	0 - 20
2174281	Iron	2.32	Spike	P	0 - 20
2174281	Magnesium	1.47	Spike	P	0 - 20
2174281	Potassium	2.70	Spike	P	0 - 20
2174281	Sodium	1.11	Spike	P	0 - 20
2174281	Zinc	0.157	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P382826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174281	Aluminum	3.49	Spike	P	0 - 20
2174281	Arsenic	4.13	Spike	P	0 - 20
2174281	Boron	5.61	Spike	P	0 - 20
2174281	Cadmium	4.23	Spike	P	0 - 20
2174281	Chromium	1.51	Spike	P	0 - 20
2174281	Copper	1.14	Spike	P	0 - 20
2174281	Lead	0.621	Spike	P	0 - 20
2174281	Nickel	0.136	Spike	P	0 - 20
2174281	Selenium	6.38	Spike	P	0 - 20
2174281	Silver	1.10	Spike	P	0 - 20
2174281	Thallium	2.91	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P383308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174062	Antimony	1.85	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
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Quality Assurance Report Precision

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P382876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174589	Ammonia-N	1.07	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P383259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174589	Kjeldahl Nitrogen	5.60	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P382846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174440	NO2NO3-N	0.230	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P382935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174439	Total-P	2.09	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P382776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174591	O-Phosphate-P	1.31	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P382778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174587	Color (true)	2.28	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P383005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174661	Total Alkalinity	0.986	Sample	P	0 - 8.1

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P383030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174580	TDS	5.60	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P383039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174580	TSS	8.45	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P382910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174661	Fluoride	0.476	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P382838

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2174578	Organic Carbon	0.998	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: A99148

Included Lab Sample IDs: 2174577, 2174580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	102	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A99149

Included Lab Sample IDs: 2174579, 2174582

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.4	97.0	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A99150

Included Lab Sample IDs: 2174577, 2174580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115
Color (true)	99.6	102	P/P	90 - 115

Reference Method: SM 5310 B-2011

Run ID: A99176

Included Lab Sample IDs: 2174578, 2174581

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A99180

Included Lab Sample IDs: 2174578, 2174581

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A99191

Included Lab Sample IDs: 2174578, 2174581

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A99195

Included Lab Sample IDs: 2174593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	103	105	P/P	90 - 110
Calcium	104	104	P/P	90 - 110
Iron	105	105	P/P	90 - 110
Magnesium	103	103	P/P	90 - 110
Potassium	99.2	99.7	P/P	90 - 110
Sodium	103	104	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A99195

Included Lab Sample IDs: 2174593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	103	105	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A99205

Included Lab Sample IDs: 2174577, 2174580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A99218

Included Lab Sample IDs: 2174578, 2174581

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99219

Included Lab Sample IDs: 2174593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	101	P/P	90 - 110
Boron	101	104	P/P	90 - 110
Cadmium	99.8	98.0	P/P	90 - 110
Chromium	98.5	98.9	P/P	90 - 110
Copper	100	100	P/P	90 - 110
Lead	100	98.8	P/P	90 - 110
Nickel	99.6	99.5	P/P	90 - 110
Selenium	100	97.4	P/P	90 - 110
Silver	103	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A99220

Included Lab Sample IDs: 2174577, 2174580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.2	98.2	P/P	90 - 110
Sulfate	99.2	99.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99234

Included Lab Sample IDs: 2174593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Thallium	97.6	96.6	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A99239

Included Lab Sample IDs: 2174577, 2174580

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

Reference Method: SM 2320 B-2011

Run ID: A99239

Included Lab Sample IDs: 2174577, 2174580

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.0	98.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99247

Included Lab Sample IDs: 2174593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	94.0	94.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A99379

Included Lab Sample IDs: 2174578, 2174581

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A99411

Included Lab Sample IDs: 2174593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	98.3	98.8	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					2.71	
EPA 200.7 Rev. 4.4	Barium	104	105	105	104		0.294
	Calcium	109	108	103	103		2.58
	Iron	111	108	105	109		2.32
	Magnesium	109	106	103	103		1.47
	Potassium	101	99.8	96.6	98.8		2.70
	Sodium	104	101	103			1.11
	Zinc	104	106	106	108		0.157
EPA 200.8 Rev. 5.4	Aluminum	102	101	105	101		3.49
	Antimony	97.4	101	99.5	102		1.85
	Arsenic	96.4	96.9	101	101		4.13
	Boron	104	101	109	102		5.61
	Cadmium	100	100	105	103		4.23
	Chromium	102	105	106	102		1.51
	Copper	104	102	103	106		1.14
	Lead	100	103	102	105		0.621
	Nickel	103	103	104	103		0.136
	Selenium	101	95.8	102	99.7		6.38
	Silver	105	108	106	104		1.10
	Thallium	96.8	106	103	102		2.91
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	102	102	103			1.07
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	85.5	95.4			5.60
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.0	96.5				0.230
EPA 365.1 Rev. 2.0	Total-P	108					2.09
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	94.6	90.8	92.0			1.31
SM 2120 B-2011	Color (true)	99.7				2.28	
SM 2320 B-2011	Total Alkalinity	98.4				0.986	
SM 2540 C-2011	TDS					5.60	
SM 2540 D-2011	TSS					8.45	
SM 4500 F-C-2011	Fluoride	97.7	97.0	97.7			0.476
SM 5310 B-2011	Organic Carbon	99.4	103				0.998

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2174577, 2174580
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2174593
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2174593
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2174577, 2174580
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2174577, 2174580
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2174578, 2174581
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2174578, 2174581
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2174578, 2174581
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2174578, 2174581
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2174579, 2174582
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2174577, 2174580
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2174577, 2174580
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2174593

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2174577, 2174580
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2174577, 2174580
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2174577, 2174580
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2174578, 2174581

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	06/03/2020			06/03/2020 15:57	Yen Ta	2174577, 2174580
EPA 200.7 Rev. 4.4	06/03/2020	06/04/2020 17:30	Elliott D. Healy	06/05/2020 19:10	Betina Topolski	2174593
EPA 200.8 Rev. 5.4	06/03/2020	06/04/2020 17:30	Elliott D. Healy	06/08/2020 20:40	Justin Cutchin	2174593
	06/03/2020	06/04/2020 17:30	Elliott D. Healy	06/09/2020 19:26	Justin Cutchin	2174593
	06/03/2020	06/04/2020 17:30	Elliott D. Healy	06/10/2020 13:05	Justin Cutchin	2174593
	06/03/2020	06/17/2020 09:35	Justin Cutchin	06/18/2020 19:03	Justin Cutchin	2174593
EPA 300.0 Rev. 2.1	06/03/2020			06/06/2020 00:26	Elliott Rodriguez	2174577
	06/03/2020			06/06/2020 00:52	Elliott Rodriguez	2174580
EPA 350.1 Rev. 2.0	06/03/2020			06/06/2020 13:57	Ping Hua	2174581
	06/03/2020			06/06/2020 14:13	Ping Hua	2174578
EPA 351.2 Rev. 2.0	06/03/2020	06/16/2020 10:50	Sima Feizi	06/17/2020 09:42	Jhamieka S. Greenwood	2174578
	06/03/2020	06/16/2020 10:50	Sima Feizi	06/17/2020 09:43	Jhamieka S. Greenwood	2174581
EPA 353.2 Rev. 2.0	06/03/2020			06/05/2020 09:32	Beverly Y. Sanders	2174578
	06/03/2020			06/05/2020 09:33	Beverly Y. Sanders	2174581
EPA 365.1 Rev. 2.0	06/03/2020	06/08/2020 17:04	Yen Ta	06/09/2020 08:31	Lipi Saha	2174578
	06/03/2020	06/08/2020 17:04	Yen Ta	06/09/2020 08:32	Lipi Saha	2174581
EPA 365.1 Rev. 2.0 dissolved	06/03/2020			06/03/2020 16:27	Jhamieka S. Greenwood	2174579, 2174582
SM 2120 B-2011	06/03/2020			06/03/2020 16:16	Blanca Fach	2174577
	06/03/2020			06/03/2020 16:28	Blanca Fach	2174580
SM 2320 B-2011	06/03/2020			06/09/2020 13:48	Dale L. Simmons	2174577
	06/03/2020			06/09/2020 13:58	Dale L. Simmons	2174580
SM 2340B	06/03/2020			06/05/2020 19:10	Betina Topolski	2174593
SM 2540 C-2011	06/03/2020			06/05/2020 16:02	Yijie Li	2174577, 2174580
SM 2540 D-2011	06/03/2020			06/05/2020 16:02	Yijie Li	2174577, 2174580
SM 4500 F-C-2011	06/03/2020			06/05/2020 18:34	Dale L. Simmons	2174577
	06/03/2020			06/05/2020 18:46	Dale L. Simmons	2174580
SM 5310 B-2011	06/03/2020			06/04/2020 21:05	David Boose	2174578
	06/03/2020			06/04/2020 23:19	David Boose	2174581