

Chemical Analysis Report

NE-DIST-2020-01-10-01

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

Event Description: **Bmap 2 2020 SMP**
Request ID: **RQ-2020-01-06-44**
Customer: **NE-DIST**
Project ID: **SMP**

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

Date Certified: 28-JAN-2020 19:13



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: Trout River at Old Kings Rd

Collection Date/Time: 01/09/2020 12:50

Field ID: 20030753

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2148672	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P376939	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P377244	
		Sulfate	4.9		mg SO4/L	P377245	
	SM 2120 B-2011	Color (true)	310		PCU	P376942	
	SM 2320 B-2011	Total Alkalinity	21		mg CaCO3/L	P377393	
	SM 2540 C-2011	TDS	133		mg/L	P377412	
	SM 2540 D-2011	TSS	2	I	mg/L	P377203	
	SM 4500 F-C-2011	Fluoride	0.050	I	mg F/L	P377395	
2148674	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P377228	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P377275	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P377217	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P377411	
	SM 5310 B-2011	Organic Carbon	35		mg C/L	P377258	
2148676	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.028		mg P/L	P377278	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Moncrief Cr at Moncrief Road

Collection Date/Time: 01/09/2020 11:45

Field ID: 20030726

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2148673	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P376939	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P377244	
		Sulfate	37		mg SO4/L	P377245	
		Color (true)	15		PCU	P376942	
	SM 2320 B-2011	Total Alkalinity	149	A	mg CaCO3/L	P377393	
	SM 2540 C-2011	TDS	240		mg/L	P377412	
	SM 2540 D-2011	TSS	2	I	mg/L	P377203	
	SM 4500 F-C-2011	Fluoride	0.15		mg F/L	P377395	
2148675	EPA 350.1 Rev. 2.0	Ammonia-N	0.071		mg N/L	P377228	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P377275	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P377218	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P377411	
	SM 5310 B-2011	Organic Carbon	5.7		mg C/L	P377258	
2148677	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P377278	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: NW Tributary To Open Cr at Hodges

Collection Date/Time: 01/09/2020 14:10

Field ID: 20030848

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2148678	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P376939	
	EPA 300.0 Rev. 2.1	Chloride	35		mg Cl/L	P377244	
		Sulfate	63		mg SO4/L	P377245	
		Color (true)	30	A	PCU	P376942	
	SM 2320 B-2011	Total Alkalinity	77		mg CaCO3/L	P377393	
	SM 2540 C-2011	TDS	240	A	mg/L	P377413	
	SM 2540 D-2011	TSS	3	IA	mg/L	P377204	
	SM 4500 F-C-2011	Fluoride	0.078	I	mg F/L	P377395	
2148679	EPA 350.1 Rev. 2.0	Ammonia-N	0.075		mg N/L	P377228	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P377275	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P377218	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P377411	
	SM 5310 B-2011	Organic Carbon	10		mg C/L	P377258	
2148680	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P377278	
2148690	EPA 200.7 Rev. 4.4	Barium	38.5		ug/L	P377073	
		Calcium	47.9		mg/L	P377073	
		Iron	350		ug/L	P377073	
		Magnesium	7.88		mg/L	P377073	
		Potassium	3.4		mg/L	P377073	
		Sodium	20.3		mg/L	P377073	
		Zinc	5.0	U	ug/L	P377073	
	EPA 200.8 Rev. 5.4	Aluminum	147		ug/L	P377073	
		Antimony	0.18	I	ug/L	P377073	
		Arsenic	0.67		ug/L	P377073	
		Boron**	28.1		ug/L	P377073	
		Cadmium	0.020	U	ug/L	P377073	
		Chromium	0.40	U	ug/L	P377073	
		Copper	4.34		ug/L	P377073	
		Lead	0.20	U	ug/L	P377073	
		Nickel	0.50	U	ug/L	P377073	
		Selenium	0.20	U	ug/L	P377073	
		Silver	0.010	U	ug/L	P377073	
		Thallium	0.10	U	ug/L	P377073	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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: P376939

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P377073

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: P377073

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: P377244

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377245

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377228

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: P377275

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377217

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377218

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377411

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377278

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

Reference Method: SM 2120 B-2011
Batch ID: P376942

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P377393

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

Reference Method: SM 2540 C-2011
Batch ID: P377412

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P377413

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P377203

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P377204

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P377395

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P377258

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: P377073

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	97.6		P	85 - 115
Calcium	101		P	85 - 115
Iron	102		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	101		P	85 - 115
Sodium	100		P	85 - 115
Zinc	98.0		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P377073

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	80 - 120
Antimony	102		P	80 - 120
Arsenic	99.4		P	80 - 120
Boron	106		P	85 - 115
Cadmium	98.8		P	80 - 120
Chromium	101		P	80 - 120
Copper	108		P	85 - 115
Lead	99.2		P	80 - 120
Nickel	99.7		P	80 - 120
Selenium	96.0		P	80 - 120
Silver	102		P	80 - 120
Thallium	106		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377244

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377245

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377228

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377275

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377217

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377218

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377411

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377278

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

Reference Method: SM 2120 B-2011
Batch ID: P376942

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.7		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P377393

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P377395

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Reference Method: SM 5310 B-2011
Batch ID: P377258

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P377073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148228	Barium	98.2		P	80 - 120
2148228	Calcium	104		P	80 - 120
2148228	Iron	101		P	80 - 120
2148228	Magnesium	103		P	80 - 120
2148228	Potassium	98.3		P	80 - 120
2148228	Sodium	102		P	80 - 120
2148228	Zinc	99.5		P	80 - 120
2148690	Barium	95.3	96.7	P/P	80 - 120
2148690	Calcium	111		P	80 - 120
2148690	Iron	99.9	104	P/P	80 - 120
2148690	Magnesium	108		P	80 - 120
2148690	Potassium	93.8	96.5	P/P	80 - 120
2148690	Sodium	108		P	80 - 120
2148690	Zinc	95.8	97.7	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P377073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148228	Aluminum	99.2		P	80 - 120
2148228	Antimony	103		P	80 - 120
2148228	Arsenic	99.3		P	80 - 120
2148228	Boron	104		P	80 - 120
2148228	Cadmium	99.3		P	80 - 120
2148228	Chromium	101		P	80 - 120
2148228	Copper	105		P	80 - 120
2148228	Lead	101		P	80 - 120
2148228	Nickel	97.9		P	80 - 120
2148228	Selenium	90.7		P	80 - 120
2148228	Silver	99.5		P	80 - 120
2148228	Thallium	108		P	80 - 120
2148690	Aluminum	99.5	96.8	P/P	80 - 120
2148690	Antimony	105	102	P/P	80 - 120
2148690	Arsenic	101	98.0	P/P	80 - 120
2148690	Boron	110	109	P/P	80 - 120
2148690	Cadmium	103	98.0	P/P	80 - 120
2148690	Chromium	103	101	P/P	80 - 120
2148690	Copper	111	106	P/P	80 - 120
2148690	Lead	102	98.7	P/P	80 - 120
2148690	Nickel	99.4	95.6	P/P	80 - 120
2148690	Selenium	90.3	88.1	P/P	80 - 120
2148690	Silver	101	99.8	P/P	80 - 120
2148690	Thallium	109	105	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148651	Chloride	100		P	90 - 110
2148871	Chloride	100		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148651	Sulfate	99.8		P	90 - 110
2148871	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377228

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148618	Ammonia-N	99.7	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148745	Kjeldahl Nitrogen	106	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148580	NO2NO3-N	99.4	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148679	NO2NO3-N	97.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148617	Total-P	106	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148585	O-Phosphate-P	95.6	97.2	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P377395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148673	Fluoride	96.9	96.3	P/P	89 - 106

Reference Method: SM 5310 B-2011
Batch ID: P377258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2148675	Organic Carbon	97.7	98.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P376939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148578	Turbidity	1.37	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P377073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148690	Barium	1.37	Spike	P	0 - 20
2148690	Calcium	1.82	Spike	P	0 - 20
2148690	Iron	3.61	Spike	P	0 - 20
2148690	Magnesium	4.04	Spike	P	0 - 20
2148690	Potassium	1.50	Spike	P	0 - 20
2148690	Sodium	1.35	Spike	P	0 - 20
2148690	Zinc	1.94	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P377073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148690	Aluminum	2.26	Spike	P	0 - 20
2148690	Antimony	3.68	Spike	P	0 - 20
2148690	Arsenic	3.33	Spike	P	0 - 20
2148690	Boron	0.738	Spike	P	0 - 20
2148690	Cadmium	4.52	Spike	P	0 - 20
2148690	Chromium	2.41	Spike	P	0 - 20
2148690	Copper	3.46	Spike	P	0 - 20
2148690	Lead	2.91	Spike	P	0 - 20
2148690	Nickel	3.89	Spike	P	0 - 20
2148690	Selenium	2.42	Spike	P	0 - 20
2148690	Silver	0.988	Spike	P	0 - 20
2148690	Thallium	3.60	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P377244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148651	Chloride	0.279	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P377228

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148618	Ammonia-N	4.06	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P377275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148745	Kjeldahl Nitrogen	2.59	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148580	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P377218

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148679	NO2NO3-N	0.239	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P377411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148617	Total-P	4.42	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P377278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148585	O-Phosphate-P	1.21	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P376942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148678	Color (true)	5.41	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P377393

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148673	Total Alkalinity	0.594	Sample	P	0 - 2.8

Reference Method: SM 2540 C-2011
Batch ID: P377412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148525	TDS	2.92	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P377413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148678	TDS	7.07	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P377395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148673	Fluoride	0.477	Spike	P	0 - 2.5

Reference Method: SM 5310 B-2011
Batch ID: P377258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2148675	Organic Carbon	0.356	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: A96815

Included Lab Sample IDs: 2148672, 2148673, 2148678

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

Reference Method: SM 2120 B-2011

Run ID: A96816

Included Lab Sample IDs: 2148672, 2148673, 2148678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	85 - 115
Color (true)	102	101	P/P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A96853

Included Lab Sample IDs: 2148672, 2148673, 2148678

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A96895

Included Lab Sample IDs: 2148674, 2148675, 2148679

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A96907

Included Lab Sample IDs: 2148674, 2148675, 2148679

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A96908

Included Lab Sample IDs: 2148690

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	102	99.7	P/P	90 - 110
Iron	102	99.3	P/P	90 - 110
Magnesium	103	99.8	P/P	90 - 110
Potassium	101	98.9	P/P	90 - 110
Sodium	101	98.5	P/P	90 - 110
Zinc	102	102	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A96933

Included Lab Sample IDs: 2148674, 2148675, 2148679

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

Reference Method: SM 5310 B-2011

Run ID: A96933

Included Lab Sample IDs: 2148674, 2148675, 2148679

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	102	P/P	90 - 110
Organic Carbon	105	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A96938

Included Lab Sample IDs: 2148676, 2148677, 2148680

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	97.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A96957

Included Lab Sample IDs: 2148690

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.1	99.2	P/P	90 - 110
Antimony	98.6	98.9	P/P	90 - 110
Arsenic	99.7	101	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	104	106	P/P	90 - 110
Lead	97.7	98.7	P/P	90 - 110
Nickel	101	102	P/P	90 - 110
Selenium	102	103	P/P	90 - 110
Silver	103	104	P/P	90 - 110
Thallium	99.1	99.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A96983

Included Lab Sample IDs: 2148690

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	102	104	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A96987

Included Lab Sample IDs: 2148672, 2148673, 2148678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110
Total Alkalinity	105	103	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A96987

Included Lab Sample IDs: 2148672, 2148673, 2148678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.5	P/P	90 - 110
Fluoride	99.5	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A97004

Included Lab Sample IDs: 2148674, 2148675, 2148679

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A97009

Included Lab Sample IDs: 2148690

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Boron	97.1	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A97092

Included Lab Sample IDs: 2148674

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A97094

Included Lab Sample IDs: 2148675, 2148679

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

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					1.37	
EPA 200.7 Rev. 4.4	Barium	97.6		98.2	95.3	96.7	1.37
	Calcium	101		104	111		1.82
	Iron	102		101	99.9	104	3.61
	Magnesium	101		103	108		4.04
	Potassium	101		98.3	93.8	96.5	1.50
	Sodium	100		102	108		1.35
	Zinc	98.0		99.5	95.8	97.7	1.94
EPA 200.8 Rev. 5.4	Aluminum	100		99.2	99.5	96.8	2.26
	Antimony	102		103	105	102	3.68
	Arsenic	99.4		99.3	101	98.0	3.33
	Boron	106		110	109	104	0.738
	Cadmium	98.8		99.3	103	98.0	4.52
	Chromium	101		101	103	101	2.41
	Copper	108		105	111	106	3.46
	Lead	99.2		101	102	98.7	2.91
	Nickel	99.7		97.9	99.4	95.6	3.89
	Selenium	96.0		90.7	90.3	88.1	2.42
	Silver	102		99.5	101	99.8	0.988
	Thallium	106		108	109	105	3.60
EPA 300.0 Rev. 2.1	Chloride	99.8		100	100		
	Sulfate	99.7		99.8	100		
EPA 350.1 Rev. 2.0	Ammonia-N	96.6		99.7	104		4.06
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106		106	104		2.59
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100		99.4	99.4		0.0
	NO ₂ NO ₃ -N	100		97.0			0.239
EPA 365.1 Rev. 2.0	Total-P	104		106	99.0		4.42
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.0		95.6	97.2		1.21
SM 2120 B-2011	Color (true)	98.7				5.41	
SM 2320 B-2011	Total Alkalinity	105				0.594	
SM 2540 C-2011	TDS					2.92	
	TDS					7.07	
SM 4500 F-C-2011	Fluoride	96.7		96.9	96.3		0.477
SM 5310 B-2011	Organic Carbon	97.8		97.7	98.2		0.356

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2148672, 2148673, 2148678
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2148690
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2148690
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2148672, 2148673, 2148678
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2148672, 2148673, 2148678
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2148674, 2148675, 2148679
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2148674, 2148675, 2148679
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2148674, 2148675, 2148679

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2148674, 2148675, 2148679
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2148676, 2148677, 2148680
SM 2120 B-2011 / E31780	True Color measured at 450 nm	2148672, 2148673, 2148678
SM 2320 B-2011 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2148672, 2148673, 2148678
SM 2540 C-2011 / E31780	Total Dissolved Solids in aqueous matrices	2148672, 2148673, 2148678
SM 2540 D-2011 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2148672, 2148673, 2148678
SM 4500 F-C-2011 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2148672, 2148673, 2148678
SM 5310 B-2011 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2148674, 2148675, 2148679

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	01/10/2020			01/10/2020 16:48	Yen Ta	2148672, 2148673, 2148678
EPA 200.7 Rev. 4.4	01/10/2020	01/14/2020 15:20	Elliott D. Healy	01/15/2020 18:07	Betina Topolski	2148690
EPA 200.8 Rev. 5.4	01/10/2020	01/14/2020 15:20	Elliott D. Healy	01/16/2020 16:20	Alexander Thompson	2148690
	01/10/2020	01/14/2020 15:20	Elliott D. Healy	01/17/2020 18:41	Alexander Thompson	2148690
	01/10/2020	01/14/2020 15:20	Elliott D. Healy	01/21/2020 14:55	Alexander Thompson	2148690
EPA 300.0 Rev. 2.1	01/10/2020			01/15/2020 16:34	Lipi Saha	2148672
	01/10/2020			01/15/2020 16:46	Lipi Saha	2148673
	01/10/2020			01/15/2020 16:58	Lipi Saha	2148678
EPA 350.1 Rev. 2.0	01/10/2020			01/15/2020 14:23	Ping Hua	2148674
	01/10/2020			01/15/2020 14:25	Ping Hua	2148675
	01/10/2020			01/15/2020 14:26	Ping Hua	2148679
EPA 351.2 Rev. 2.0	01/10/2020	01/16/2020 13:40	Jhamieka S. Greenwood	01/21/2020 13:29	Virginia P. Brown	2148674
	01/10/2020	01/16/2020 13:40	Jhamieka S. Greenwood	01/21/2020 13:31	Virginia P. Brown	2148675
	01/10/2020	01/16/2020 13:40	Jhamieka S. Greenwood	01/21/2020 13:32	Virginia P. Brown	2148679
EPA 353.2 Rev. 2.0	01/10/2020			01/15/2020 10:08	Beverly Y. Sanders	2148674
	01/10/2020			01/15/2020 10:16	Beverly Y. Sanders	2148679
	01/10/2020			01/15/2020 10:21	Beverly Y. Sanders	2148675
EPA 365.1 Rev. 2.0	01/10/2020	01/21/2020 14:26	Yen Ta	01/22/2020 11:05	Benjamin T. Nordmann	2148674
	01/10/2020	01/21/2020 14:26	Yen Ta	01/23/2020 12:21	Benjamin T. Nordmann	2148675
	01/10/2020	01/21/2020 14:26	Yen Ta	01/23/2020 12:22	Benjamin T. Nordmann	2148679
EPA 365.1 Rev. 2.0 dissolved	01/10/2020			01/10/2020 15:25	Carlos Miranda	2148676
	01/10/2020			01/10/2020 15:26	Carlos Miranda	2148677
	01/10/2020			01/10/2020 15:27	Carlos Miranda	2148680
SM 2120 B-2011	01/10/2020			01/10/2020 17:00	Madeline Funaro	2148673
	01/10/2020			01/10/2020 17:02	Madeline Funaro	2148678
	01/10/2020			01/10/2020 17:22	Madeline Funaro	2148672
SM 2320 B-2011	01/10/2020			01/15/2020 21:25	Dale L. Simmons	2148673
	01/10/2020			01/16/2020 01:04	Dale L. Simmons	2148672
	01/10/2020			01/16/2020 01:17	Dale L. Simmons	2148678
SM 2540 C-2011	01/10/2020			01/14/2020 17:25	Yijie Li	2148672, 2148673, 2148678
SM 2540 D-2011	01/10/2020			01/14/2020 17:25	Yijie Li	2148672, 2148673, 2148678
SM 4500 F-C-2011	01/10/2020			01/15/2020 21:15	Dale L. Simmons	2148673
	01/10/2020			01/16/2020 01:04	Dale L. Simmons	2148672
	01/10/2020			01/16/2020 01:17	Dale L. Simmons	2148678
SM 5310 B-2011	01/10/2020			01/15/2020 17:07	Madeline Funaro	2148675
	01/10/2020			01/15/2020 18:01	Madeline Funaro	2148679
	01/10/2020			01/15/2020 23:08	Madeline Funaro	2148674