Chemical Analysis Report

NE-DIST-2019-04-10-01

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

Event Description: **Continuous Monitoring Event**
Request ID: **RQ-2019-04-08-59**
Customer: **NE-DIST**
Project ID: **SMP**

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8800 Baymeadows Way West
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Date Certified: 02-MAY-2019 13:54

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: HOPKINS CREEK AT KINGS RD **Collection Date/Time: 04/09/2019 14:30**

Field ID: HOPKINS CREEK AT KINGS RD Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2076797	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P361922	
	EPA 300.0	Bromide	45		mg Br/L	P362586	
	SM 2320 B-97	Total Alkalinity	99		mg CaCO3/L	P362573	
	SM 2540 D-97	TSS	8	IA	mg/L	P362240	
	SM 4500 F-C-97	Fluoride	0.85		mg F/L	P362578	
2076798	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.034		mg P/L	P361935	
	SM 4500 F-C-97 dissolved	Fluoride	0.81		mg F/L	P363132	
2076799	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P362285	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P362154	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.046		mg N/L	P362164	
	EPA 365.1 Rev. 2.0	Total-P	0.057		mg P/L	P362119	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P362201	
2076802	EPA 200.7 Rev. 4.4	Barium	14		ug/L	P361917	
		Calcium	259		mg/L	P361917	
		Iron	190	I	ug/L	P361917	
		Manganese	13		ug/L	P361917	
		Potassium	240		mg/L	P361917	
		Sodium	6.07E+03		mg/L	P361917	
		Zinc	15	U	ug/L	P361917	
	EPA 200.8 Rev. 5.4	Aluminum	273		ug/L	P361917	
		Antimony	0.20	U	ug/L	P361917	
		Arsenic	2.54		ug/L	P361917	
		Cadmium	0.080	U	ug/L	P361917	
		Chromium	4.0	U	ug/L	P361917	
		Lead	0.80	U	ug/L	P361917	
		Nickel	2.0	U	ug/L	P361917	
		Selenium	0.80	U	ug/L	P361917	
		Silver	0.040	U	ug/L	P361917	
		Thallium	0.40	U	ug/L	P361917	

Ref. Method and Comment:
EPA 300.0: Bromide: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for sodium 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: P361922

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P361917

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Manganese	1.0	U	ug/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: P361917

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	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
Batch ID: P362586

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362285

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362154

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362164

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362119

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361935

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

Reference Method: SM 2320 B-97
Batch ID: P362573

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

Reference Method: SM 2540 D-97
Batch ID: P362240

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P362578

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P363132

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P362201

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: P361917

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	102		P	85 - 115
Calcium	104		P	85 - 115
Iron	108		P	85 - 115
Manganese	101		P	85 - 115
Potassium	99.3		P	85 - 115
Sodium	103		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P361917

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	93.2		P	85 - 115
Antimony	97.4		P	85 - 115
Arsenic	102		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	93.8		P	85 - 115
Lead	98.4		P	85 - 115
Nickel	102		P	85 - 115
Selenium	101		P	85 - 115
Silver	96.9		P	85 - 115
Thallium	101		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P362586

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362285

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362154

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: P362164

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362119

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361935

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

Reference Method: SM 2320 B-97
Batch ID: P362573

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

Reference Method: SM 4500 F-C-97
Batch ID: P362578

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P363132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P362201

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P361917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2074793	Barium	99.5	99.7	P/P	80 - 120
2074793	Calcium	103		P	80 - 120
2074793	Iron	105	103	P/P	80 - 120
2074793	Manganese	99.4	100	P/P	80 - 120
2074793	Potassium	97.0		P	80 - 120
2074793	Zinc	102	103	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P361917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2074793	Aluminum	93.6	92.4	P/P	70 - 130
2074793	Antimony	101	100	P/P	70 - 130
2074793	Arsenic	107	106	P/P	70 - 130
2074793	Cadmium	105	101	P/P	70 - 130
2074793	Chromium	93.5	94.0	P/P	70 - 130
2074793	Lead	99.4	99.3	P/P	70 - 130
2074793	Nickel	103	101	P/P	70 - 130
2074793	Selenium	102	99.6	P/P	70 - 130
2074793	Silver	95.2	95.6	P/P	70 - 130
2074793	Thallium	101	102	P/P	70 - 130

Reference Method: EPA 300.0
Batch ID: P362586

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076447	Bromide	102	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076260	Ammonia-N	101	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362154

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076829	Kjeldahl Nitrogen	107	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076258	NO2NO3-N	98.2	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2075607	Total-P	94.8	93.2	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361935

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076833	O-Phosphate-P	97.3	99.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P362578

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2074865	Fluoride	100	100	P/P	89 - 106

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P363132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080079	Fluoride	97.9	99.6	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P362201

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076799	Organic Carbon	96.8	96.1	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P361922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076784	Turbidity	1.79	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P361917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2074793	Barium	0.154	Spike	P	0 - 20
2074793	Calcium	0.550	Spike	P	0 - 20
2074793	Iron	1.17	Spike	P	0 - 20
2074793	Manganese	0.865	Spike	P	0 - 20
2074793	Potassium	0.149	Spike	P	0 - 20
2074793	Sodium	0.293	Spike	P	0 - 20
2074793	Zinc	0.519	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P361917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2074793	Aluminum	1.19	Spike	P	0 - 20
2074793	Antimony	0.387	Spike	P	0 - 20
2074793	Arsenic	0.576	Spike	P	0 - 20
2074793	Cadmium	3.94	Spike	P	0 - 20
2074793	Chromium	0.597	Spike	P	0 - 20
2074793	Lead	0.122	Spike	P	0 - 20
2074793	Nickel	1.54	Spike	P	0 - 20
2074793	Selenium	2.30	Spike	P	0 - 20
2074793	Silver	0.346	Spike	P	0 - 20
2074793	Thallium	0.748	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P362586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076447	Bromide	1.41	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076260	Ammonia-N	1.88	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076829	Kjeldahl Nitrogen	0.0193	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076258	NO2NO3-N	1.48	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2075607	Total-P	1.68	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076833	O-Phosphate-P	2.24	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P362573

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2074865	Total Alkalinity	0.486	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
Batch ID: P362578

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2074865	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P363132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080079	Fluoride	0.940	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P362201

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076799	Organic Carbon	0.659	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A90588
Included Lab Sample IDs: 2076797

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	98.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A90590
Included Lab Sample IDs: 2076798

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	99.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A90641
Included Lab Sample IDs: 2076802

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	102	101	P/P	90 - 110
Calcium	103	102	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Manganese	101	101	P/P	90 - 110
Potassium	99.4	101	P/P	90 - 110
Zinc	102	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A90651
Included Lab Sample IDs: 2076802

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	93.7	93.0	P/P	90 - 110
Antimony	98.4	98.4	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Cadmium	98.6	98.5	P/P	90 - 110
Lead	97.5	97.5	P/P	90 - 110
Nickel	102	102	P/P	90 - 110
Selenium	92.4	91.5	P/P	90 - 110
Silver	96.5	96.3	P/P	90 - 110
Thallium	96.6	96.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A90698
Included Lab Sample IDs: 2076802

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	92.6	92.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A90731
Included Lab Sample IDs: 2076802

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	98.1	98.2	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A90738
Included Lab Sample IDs: 2076799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A90756
Included Lab Sample IDs: 2076799

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A90761
Included Lab Sample IDs: 2076799

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A90762
Included Lab Sample IDs: 2076799

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A90785
Included Lab Sample IDs: 2076799

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.7	101	P/P	90 - 110

Reference Method: EPA 300.0
Run ID: A90809
Included Lab Sample IDs: 2076797

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

Reference Method: SM 2320 B-97
Run ID: A90871
Included Lab Sample IDs: 2076797

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A90871
Included Lab Sample IDs: 2076797

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97 dissolved
Run ID: A91108
Included Lab Sample IDs: 2076798

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	100	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					1.79	
EPA 200.7 Rev. 4.4	Barium	102	99.5	99.7			0.154
	Calcium	104	103				0.550
	Iron	108	105	103			1.17
	Manganese	101	99.4	100			0.865
	Potassium	99.3	97.0				0.149
	Sodium	103					0.293
	Zinc	101	102	103			0.519
EPA 200.8 Rev. 5.4	Aluminum	93.2	93.6	92.4			1.19
	Antimony	97.4	101	100			0.387
	Arsenic	102	107	106			0.576
	Cadmium	101	105	101			3.94
	Chromium	93.8	93.5	94.0			0.597
	Lead	98.4	99.4	99.3			0.122
	Nickel	102	103	101			1.54
	Selenium	101	102	99.6			2.30
	Silver	96.9	95.2	95.6			0.346
	Thallium	101	101	102			0.748
EPA 300.0	Bromide	103	102	100			1.41
EPA 350.1 Rev. 2.0	Ammonia-N	100	101	104			1.88
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	107	107			0.0193
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	98.2	99.7			1.48
EPA 365.1 Rev. 2.0	Total-P	98.0	94.8	93.2			1.68
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.3	99.5			2.24
SM 2320 B-97	Total Alkalinity	101				0.486	
SM 4500 F-C-97	Fluoride	101	100	100			0.0
SM 4500 F-C-97 dissolved	Fluoride	96.6	97.9	99.6			0.940
SM 5310 B-00	Organic Carbon	97.6	96.8	96.1			0.659

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2076797
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2076802
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2076802
EPA 300.0 / E31780	Bromide in aqueous matrices	2076797
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2076799
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2076799
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2076799
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2076799
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2076798
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2076797
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2076797
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2076797
SM 4500 F-C-97 dissolved / E31780	Fluoride, dissolved, in filtered aqueous matrices, without distillation (not valid for NPDES monitoring)	2076798
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2076799

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	04/10/2019			04/10/2019 17:05	Adrian Shelby	2076797
EPA 200.7 Rev. 4.4	04/10/2019	04/10/2019 16:25	Elliott D. Healy	04/11/2019 19:00	Betina Topolski	2076802
	04/10/2019	04/10/2019 16:25	Elliott D. Healy	04/11/2019 19:07	Betina Topolski	2076802
	04/10/2019	04/10/2019 16:25	Elliott D. Healy	04/12/2019 15:00	Vijayalakshmi Reddy	2076802
EPA 200.8 Rev. 5.4	04/10/2019	04/10/2019 16:25	Elliott D. Healy	04/12/2019 03:34	Robert K Palmer	2076802
	04/10/2019	04/10/2019 16:25	Elliott D. Healy	04/15/2019 16:53	Robert K Palmer	2076802
EPA 300.0	04/10/2019			04/18/2019 15:47	Lipi Saha	2076797
EPA 350.1 Rev. 2.0	04/10/2019			04/15/2019 12:45	Ping Hua	2076799
EPA 351.2 Rev. 2.0	04/10/2019	04/15/2019 18:52	Jhamieka S. Greenwood	04/17/2019 09:45	Joseph Suarez	2076799
EPA 353.2 Rev. 2.0	04/10/2019			04/15/2019 13:59	Lauren Lees	2076799
EPA 365.1 Rev. 2.0	04/10/2019	04/15/2019 13:05	Sima Feizi	04/16/2019 14:48	Rosalyn Ballman	2076799
EPA 365.1 Rev. 2.0 dissolved	04/10/2019			04/10/2019 20:29	Jhamieka S. Greenwood	2076798
SM 2320 B-97	04/10/2019			04/19/2019 17:34	Samantha Davila	2076797
SM 2540 D-97	04/10/2019			04/11/2019 16:14	Yijie Li	2076797
SM 4500 F-C-97	04/10/2019			04/19/2019 16:15	Samantha Davila	2076797
SM 4500 F-C-97 dissolved	04/10/2019			04/30/2019 18:31	Dale L. Simmons	2076798
SM 5310 B-00	04/10/2019			04/16/2019 03:42	Julia Storbeck	2076799