

Chemical Analysis Report

SE-DIST-2019-02-15-01

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

Event Description: **SMP-North Miami**

Request ID: **RQ-2019-02-04-73**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

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Certified by: Colin Wright, Program Administrator

Date Certified: 13-MAR-2019 10:57

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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: ICWW @ 79TH STREET CAUSEWAY

Collection Date/Time: 02/14/2019 10:45

Field ID: G4SE0027

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2062838	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P359007	
	EPA 300.0	Bromide	65		mg Br/L	P359658	
	SM 2320 B-97	Total Alkalinity	135		mg CaCO3/L	P359386	
	SM 2540 D-97	TSS	5	I	mg/L	P359297	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P359395	
2062840	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P359376	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34	I	mg N/L	P359085	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P359216	
	EPA 365.1 Rev. 2.0	Total-P	0.01	I	mg P/L	P359093	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P359685	
2062842	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359024	
2062853	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P359254	
		Manganese	4.0	U	ug/L	P359254	
		Zinc	20	U	ug/L	P359254	
		Aluminum	20	U	ug/L	P359254	
	EPA 200.8 Rev. 5.4	Antimony	0.27	I	ug/L	P359254	
		Arsenic	1.42		ug/L	P359254	
		Cadmium	0.080	U	ug/L	P359254	
		Chromium	4.0	U	ug/L	P359254	
		Copper	1.6	U	ug/L	P359254	
		Lead	2.0	U	ug/L	P359254	
		Nickel	2.0	U	ug/L	P359254	
		Selenium	0.80	U	ug/L	P359254	
		Silver	0.040	U	ug/L	P359254	
		Thallium	1.0	U	ug/L	P359254	

Sample Location: ICWW @ SOUTH SHORE PELICAN HARBOR

Collection Date/Time: 02/14/2019 11:30

Field ID: G4SE0099

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2062839	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P359007	
	EPA 300.0	Bromide	67		mg Br/L	P359658	
	SM 2320 B-97	Total Alkalinity	135		mg CaCO3/L	P359387	
	SM 2540 D-97	TSS	5	I	mg/L	P359297	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P359397	
2062841	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P359345	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P359085	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.030		mg N/L	P359216	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P359094	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P359685	
2062843	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359024	
2062854	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P359254	
		Manganese	4.0	U	ug/L	P359254	
		Zinc	20	U	ug/L	P359254	
	EPA 200.8 Rev. 5.4	Aluminum	21	I	ug/L	P359254	
		Antimony	0.20	U	ug/L	P359254	
		Arsenic	1.48		ug/L	P359254	
		Cadmium	0.080	U	ug/L	P359254	
		Chromium	4.0	U	ug/L	P359254	
		Copper	1.6	U	ug/L	P359254	
		Lead	2.0	U	ug/L	P359254	
		Nickel	2.0	U	ug/L	P359254	
		Selenium	0.80	U	ug/L	P359254	
		Silver	0.040	U	ug/L	P359254	
		Thallium	1.0	U	ug/L	P359254	

Sample Location: PORT OF MIAMI NEAR GOVERNMENT CUT

Collection Date/Time: 02/14/2019 14:05

Field ID: G4SE0119

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2062844	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P359007	
	EPA 300.0	Bromide	72		mg Br/L	P359948	
	SM 2320 B-97	Total Alkalinity	124	A	mg CaCO3/L	P359387	
	SM 2540 D-97	TSS	18	A	mg/L	P359298	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P359397	
2062845	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P359377	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P359243	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P359217	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P359094	
	SM 5310 B-00	Organic Carbon	1.4	I	mg C/L	P359685	
2062846	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P359028	
2062855	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P359254	
		Manganese	4.0	U	ug/L	P359254	
		Zinc	20	U	ug/L	P359254	
		Aluminum	20	U	ug/L	P359254	
	EPA 200.8 Rev. 5.4	Antimony	0.20	U	ug/L	P359254	
		Arsenic	1.67		ug/L	P359254	
		Cadmium	0.080	U	ug/L	P359254	
		Chromium	4.0	U	ug/L	P359254	
		Copper	1.6	U	ug/L	P359254	
		Lead	2.0	U	ug/L	P359254	
		Nickel	2.0	U	ug/L	P359254	
		Selenium	0.80	U	ug/L	P359254	
		Silver	0.040	U	ug/L	P359254	
		Thallium	1.0	U	ug/L	P359254	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359007

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359254

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359254

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
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
Batch ID: P359658

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0
Batch ID: P359948

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359345

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359376

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359377

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359085

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359243

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359216

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359217

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359093

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359094

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359024

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359028

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P359386

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2320 B-97
Batch ID: P359387

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 D-97
Batch ID: P359297

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P359298

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P359395

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P359397

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P359685

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: P359254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	107		P	85 - 115
Manganese	105		P	85 - 115
Zinc	106		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.8		P	85 - 115
Antimony	96.0		P	85 - 115
Arsenic	100		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	99.7		P	85 - 115
Copper	98.1		P	85 - 115
Lead	94.1		P	85 - 115
Nickel	98.2		P	85 - 115
Selenium	100		P	85 - 115
Silver	101		P	85 - 115
Thallium	99.9		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P359658

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

Reference Method: EPA 300.0
Batch ID: P359948

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359345

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359376

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359377

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359085

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359243

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359216

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: P359217

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359093

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359094

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359024

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359028

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.4		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P359386

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P359387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P359395

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P359397

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359685

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063332	Iron	103	106	P/P	80 - 120
2063332	Manganese	98.2	100	P/P	80 - 120
2063332	Zinc	104	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063332	Aluminum	112	110	P/P	70 - 130
2063332	Antimony	99.7	101	P/P	70 - 130
2063332	Arsenic	109	107	P/P	70 - 130
2063332	Cadmium	94.6	92.0	P/P	70 - 130
2063332	Chromium	99.3	96.5	P/P	70 - 130
2063332	Copper	96.1	94.0	P/P	70 - 130
2063332	Lead	98.4	97.3	P/P	70 - 130
2063332	Nickel	95.4	93.4	P/P	70 - 130
2063332	Selenium	102	100	P/P	70 - 130
2063332	Silver	95.1	94.2	P/P	70 - 130
2063332	Thallium	104	106	P/P	70 - 130

Reference Method: EPA 300.0
Batch ID: P359658

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062993	Bromide	100	100	P/P	90 - 110
2062994	Bromide	102		P	90 - 110

Reference Method: EPA 300.0
Batch ID: P359948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063443	Bromide	101	96.7	P/P	90 - 110
2065388	Bromide	99.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359345

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062785	Ammonia-N	102	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359376

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062649	Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2063311	Ammonia-N	102	106	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359085

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062771	Kjeldahl Nitrogen	97.5	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359243

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062903	Kjeldahl Nitrogen	104	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359216

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062486	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062845	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359093

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062770	Total-P	97.4	92.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359094

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062841	Total-P	94.2	95.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359024

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062842	O-Phosphate-P	94.0	95.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062998	O-Phosphate-P	94.1	95.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P359395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062546	Fluoride	96.7	96.7	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P359397

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062844	Fluoride	92.4	92.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P359685

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2062786	Organic Carbon	98.5	99.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P359007

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062940	Turbidity	1.75	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P359254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063332	Iron	2.24	Spike	P	0 - 20
2063332	Manganese	1.66	Spike	P	0 - 20
2063332	Zinc	1.49	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P359254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063332	Aluminum	1.76	Spike	P	0 - 20
2063332	Antimony	0.830	Spike	P	0 - 20
2063332	Arsenic	1.68	Spike	P	0 - 20
2063332	Cadmium	2.82	Spike	P	0 - 20
2063332	Chromium	2.90	Spike	P	0 - 20
2063332	Copper	2.20	Spike	P	0 - 20
2063332	Lead	1.06	Spike	P	0 - 20
2063332	Nickel	2.21	Spike	P	0 - 20
2063332	Selenium	2.23	Spike	P	0 - 20
2063332	Silver	1.01	Spike	P	0 - 20
2063332	Thallium	1.26	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P359658

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062993	Bromide	0.0576	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P359948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063443	Bromide	2.78	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062785	Ammonia-N	2.22	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062649	Ammonia-N	0.858	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P359377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2063311	Ammonia-N	2.39	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359085

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062771	Kjeldahl Nitrogen	2.37	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P359243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062903	Kjeldahl Nitrogen	1.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062486	NO2NO3-N	0.319	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P359217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062845	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359093

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062770	Total-P	5.25	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P359094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062841	Total-P	1.46	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062842	O-Phosphate-P	1.58	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P359028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062998	O-Phosphate-P	1.69	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P359386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062546	Total Alkalinity	0.674	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P359387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062844	Total Alkalinity	0.455	Sample	P	0 - 1.6

Reference Method: SM 2540 D-97
Batch ID: P359297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062780	TSS	7.59	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P359298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062844	TSS	2.25	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P359395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062546	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P359397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062844	Fluoride	0.0	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P359685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2062786	Organic Carbon	0.541	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: A89446

Included Lab Sample IDs: 2062838, 2062839, 2062844

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A89450

Included Lab Sample IDs: 2062842, 2062843, 2062846

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	98.2	P/P	90 - 110
O-Phosphate-P	99.2	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A89525

Included Lab Sample IDs: 2062840, 2062841, 2062845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	98.5	P/P	90 - 110
NO2NO3-N	98.5	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89532

Included Lab Sample IDs: 2062840, 2062841, 2062845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89541

Included Lab Sample IDs: 2062840, 2062841

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A89563

Included Lab Sample IDs: 2062853, 2062854, 2062855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	100	99.6	P/P	95 - 105
Manganese	103	102	P/P	95 - 105
Zinc	101	101	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89568

Included Lab Sample IDs: 2062845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	99.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89577

Included Lab Sample IDs: 2062841

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89592

Included Lab Sample IDs: 2062840, 2062845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	105	106	P/P	90 - 110
Ammonia-N	99.0	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89593

Included Lab Sample IDs: 2062838, 2062839, 2062844

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.7	P/P	90 - 110
Total Alkalinity	99.7	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89593

Included Lab Sample IDs: 2062838, 2062839, 2062844

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.0	P/P	90 - 110
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A89711

Included Lab Sample IDs: 2062838, 2062839

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89712

Included Lab Sample IDs: 2062853, 2062854, 2062855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.7	107	P/P	90 - 110
Antimony	95.7	96.6	P/P	90 - 110
Arsenic	97.9	99.0	P/P	90 - 110
Cadmium	97.9	97.9	P/P	90 - 110
Copper	99.3	97.0	P/P	90 - 110
Lead	93.4	94.6	P/P	90 - 110
Nickel	98.1	93.8	P/P	90 - 110
Silver	102	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89713

Included Lab Sample IDs: 2062853, 2062854, 2062855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	94.8	97.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A89721

Included Lab Sample IDs: 2062840, 2062841, 2062845

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.0	94.4	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A89785

Included Lab Sample IDs: 2062844

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	98.1	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A89815

Included Lab Sample IDs: 2062853, 2062854, 2062855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	102	103	P/P	90 - 110
Thallium	96.5	96.6	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					1.75	
EPA 200.7 Rev. 4.4	Iron	107	103	106			2.24
	Manganese	105	98.2	100			1.66
	Zinc	106	104	106			1.49
EPA 200.8 Rev. 5.4	Aluminum	99.8	112	110			1.76
	Antimony	96.0	99.7	101			0.830
	Arsenic	100	109	107			1.68
	Cadmium	100	94.6	92.0			2.82
	Chromium	99.7	99.3	96.5			2.90
	Copper	98.1	96.1	94.0			2.20
	Lead	94.1	98.4	97.3			1.06
	Nickel	98.2	95.4	93.4			2.21
	Selenium	100	102	100			2.23
	Silver	101	95.1	94.2			1.01
	Thallium	99.9	104	106			1.26
EPA 300.0	Bromide	107	100	100	102		0.0576
	Bromide	107	101	96.7	99.3		2.78
EPA 350.1 Rev. 2.0	Ammonia-N	98.9	102	105			2.22
	Ammonia-N	98.9	104	103			0.858
	Ammonia-N	98.5	102	106			2.39
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	97.5	100			2.37
	Kjeldahl Nitrogen	106	104	106			1.45
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	100			0.319
	NO2NO3-N	101	101	101			0.0
EPA 365.1 Rev. 2.0	Total-P	104	97.4	92.2			5.25
	Total-P	102	94.2	95.6			1.46
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	94.0	95.5			1.58
	O-Phosphate-P	99.4	94.1	95.7			1.69
SM 2320 B-97	Total Alkalinity	101				0.674	
	Total Alkalinity	102				0.455	
SM 2540 D-97	TSS					7.59	
	TSS					2.25	
SM 4500 F-C-97	Fluoride	96.9	96.7	96.7			0.0
	Fluoride	97.3	92.4	92.4			0.0
SM 5310 B-00	Organic Carbon	95.9	98.5	99.0			0.541

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2062838, 2062839, 2062844
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2062853, 2062854, 2062855
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2062853, 2062854, 2062855
EPA 300.0 / E31780	Bromide in aqueous matrices	2062838, 2062839, 2062844
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2062840, 2062841, 2062845
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2062840, 2062841, 2062845
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2062840, 2062841, 2062845
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2062840, 2062841, 2062845

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2062842, 2062843, 2062846
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2062838, 2062839, 2062844
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2062838, 2062839, 2062844
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2062838, 2062839, 2062844
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2062840, 2062841, 2062845

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	02/15/2019			02/15/2019 16:26	Adrian Shelby	2062838, 2062839, 2062844
EPA 200.7 Rev. 4.4	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/21/2019 13:07	Martin Acosta	2062853
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/21/2019 13:14	Martin Acosta	2062854
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/21/2019 13:21	Martin Acosta	2062855
EPA 200.8 Rev. 5.4	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/27/2019 21:00	Allison Taylor	2062853
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/27/2019 21:07	Allison Taylor	2062854
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/27/2019 21:14	Allison Taylor	2062855
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/28/2019 02:14	Robert K Palmer	2062853
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/28/2019 02:24	Robert K Palmer	2062854
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/28/2019 02:33	Robert K Palmer	2062855
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/28/2019 03:50	Robert K Palmer	2062853
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/28/2019 03:59	Robert K Palmer	2062854
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	02/28/2019 04:09	Robert K Palmer	2062855
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	03/05/2019 18:46	Robert K Palmer	2062853
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	03/05/2019 18:53	Robert K Palmer	2062854
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	03/05/2019 19:00	Robert K Palmer	2062855
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	03/05/2019 19:37	Robert K Palmer	2062853
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	03/05/2019 19:45	Robert K Palmer	2062854
	02/15/2019	02/20/2019 17:30	Elliott D. Healy	03/05/2019 19:52	Robert K Palmer	2062855
EPA 300.0	02/15/2019			02/28/2019 01:08	Lipi Saha	2062838
	02/15/2019			02/28/2019 01:25	Lipi Saha	2062839
	02/15/2019			03/05/2019 15:30	Lipi Saha	2062844
EPA 350.1 Rev. 2.0	02/15/2019			02/21/2019 12:21	Ping Hua	2062841
	02/15/2019			02/22/2019 10:47	Ping Hua	2062840
	02/15/2019			02/22/2019 13:03	Ping Hua	2062845
EPA 351.2 Rev. 2.0	02/15/2019	02/18/2019 13:50	Adrian Shelby	02/19/2019 15:08	Joseph Suarez	2062840
	02/15/2019	02/18/2019 13:50	Adrian Shelby	02/19/2019 15:10	Joseph Suarez	2062841
	02/15/2019	02/20/2019 12:40	Jhamieka S. Greenwood	02/21/2019 15:09	Joseph Suarez	2062845
EPA 353.2 Rev. 2.0	02/15/2019			02/20/2019 10:36	Beverly Y. Sanders	2062840
	02/15/2019			02/20/2019 10:37	Beverly Y. Sanders	2062841
	02/15/2019			02/20/2019 10:44	Beverly Y. Sanders	2062845
EPA 365.1 Rev. 2.0	02/15/2019	02/18/2019 13:35	Sima Feizi	02/20/2019 14:55	Rosalyn Ballman	2062840
	02/15/2019	02/18/2019 13:35	Sima Feizi	02/20/2019 14:57	Rosalyn Ballman	2062841
	02/15/2019	02/18/2019 13:35	Sima Feizi	02/20/2019 14:58	Rosalyn Ballman	2062845
EPA 365.1 Rev. 2.0 dissolved	02/15/2019			02/15/2019 17:06	Jhamieka S. Greenwood	2062842
	02/15/2019			02/15/2019 18:20	Jhamieka S. Greenwood	2062843, 2062846
SM 2320 B-97	02/15/2019			02/21/2019 17:00	Dale L. Simmons	2062838
	02/15/2019			02/21/2019 19:07	Dale L. Simmons	2062844
	02/15/2019			02/21/2019 19:19	Dale L. Simmons	2062839
SM 2540 D-97	02/15/2019			02/20/2019 15:05	Mariam Hanna	2062838, 2062839, 2062844

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	02/15/2019			02/21/2019 12:04	Dale L. Simmons	2062838
	02/15/2019			02/21/2019 18:30	Dale L. Simmons	2062844
	02/15/2019			02/21/2019 18:42	Dale L. Simmons	2062839
SM 5310 B-00	02/15/2019			02/28/2019 06:55	Chelsea Hernandez	2062840
	02/15/2019			02/28/2019 07:11	Chelsea Hernandez	2062841
	02/15/2019			02/28/2019 07:37	Chelsea Hernandez	2062845