Chemical Analysis Report

SO-DIST-2018-06-08-01

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

Event Description: **GOM : 8065, 8063, 3278U x 2**
Request ID: **RQ-2018-05-14-43**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Maryann Dugan

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 03-JUL-2018 13:48

B. Steinbock

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 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: 8065-ENRE 6 @ **Collection Date/Time: 06/07/2018 10:40**

Field ID: G1SD0065 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998998	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P346620	
	SM 2320 B-97	Total Alkalinity	119		mg CaCO3/L	P347267	RPD
	SM 2540 D-97	TSS	7	I	mg/L	P346714	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P347271	
1999000	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P347161	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P347097	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346755	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P346869	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P346719	
1999002	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P346610	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Rookery Bay-Site 2 **Collection Date/Time: 06/07/2018 11:15**

Field ID: G1SD0068 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998992	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P346620	
	SM 2320 B-97	Total Alkalinity	125		mg CaCO3/L	P347267	RPD
	SM 2540 D-97	TSS	4	I	mg/L	P346714	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P347271	
1998994	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P347161	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P347097	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346755	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P346869	
	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P346719	
1998996	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.033		mg P/L	P346610	
1999046	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P346772	
	EPA 200.8 Rev. 5.4	Arsenic	2.66		ug/L	P346772	
		Cadmium	0.080	U	ug/L	P346772	
		Chromium	1.6	U	ug/L	P346772	
		Copper	0.80	U	ug/L	P346772	
		Lead	0.30	U	ug/L	P346772	
		Nickel	0.80	U	ug/L	P346772	
		Silver	0.040	U	ug/L	P347508	
		Zinc	4.0	U	ug/L	P346772	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Rookery Bay-Site 1 **Collection Date/Time: 06/07/2018 12:00**

Field ID: G1SD0067 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998993	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P346620	
	SM 2320 B-97	Total Alkalinity	126		mg CaCO3/L	P347267	RPD
	SM 2540 D-97	TSS	5	IA	mg/L	P346714	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P347271	
1998995	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P347161	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.55		mg N/L	P347097	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346755	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P346869	
	SM 5310 B-00	Organic Carbon	4.3		mg C/L	P346719	
1998997	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P346610	
1999047	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P346772	
	EPA 200.8 Rev. 5.4	Arsenic	2.37		ug/L	P346772	
		Cadmium	0.080	U	ug/L	P346772	
		Chromium	1.6	U	ug/L	P346772	
		Copper	0.80	U	ug/L	P346772	
		Lead	0.40	U	ug/L	P346772	
		Nickel	0.80	U	ug/L	P346772	
		Silver	0.040	U	ug/L	P347508	
		Zinc	4.0	U	ug/L	P346772	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: The sample required dilution for lead due to matrix interference.

Sample Location: 8063-ENRE 2 @ **Collection Date/Time: 06/07/2018 12:30**

Field ID: G1SD0066 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1998999	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P346621	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P347267	RPD
	SM 2540 D-97	TSS	3	U	mg/L	P346714	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P347271	
1999001	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P347163	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P347097	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346755	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P346869	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P346719	
1999003	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P346610	

Ref. Method and Comment:
SM 2540 D-97: 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: P346620

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346621

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P346772

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P346772

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Zinc	1.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347508

Component	Result	Code	Units
Silver	0.010	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347161

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347163

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347097

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346755

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346869

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346610

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

Reference Method: SM 2320 B-97
Batch ID: P347267

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

Reference Method: SM 2540 D-97
Batch ID: P346714

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P347271

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P346719

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: P346772

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P346772

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	100		P	85 - 115
Cadmium	99.2		P	85 - 115
Chromium	93.5		P	85 - 115
Copper	96.4		P	85 - 115
Lead	94.7		P	85 - 115
Nickel	98.6		P	85 - 115
Zinc	97.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347508

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Silver	95.2		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347161

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347163

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347097

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346755

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: P346869

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346610

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

Reference Method: SM 2320 B-97
Batch ID: P347267

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P347271

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346719

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P346772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999668	Iron	103	101	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P346772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999668	Arsenic	107	110	P/P	70 - 130
1999668	Cadmium	95.4	98.9	P/P	70 - 130
1999668	Chromium	89.8	92.1	P/P	70 - 130
1999668	Copper	89.7	92.5	P/P	70 - 130
1999668	Lead	101	103	P/P	70 - 130
1999668	Nickel	92.3	94.2	P/P	70 - 130
1999668	Zinc	92.8	94.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347508

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999046	Silver	84.4	85.8	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998995	Ammonia-N	102	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347163

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999001	Ammonia-N	99.6	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998339	Kjeldahl Nitrogen	98.0	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998994	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999000	Total-P	92.2	94.9	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346610

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1998996	O-Phosphate-P	96.6	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P347271

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999650	Fluoride	96.9	96.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346719

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1997756	Organic Carbon	98.6	96.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998960	Turbidity	12.1	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999101	Turbidity	8.08	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P346772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999668	Iron	1.54	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P346772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999668	Arsenic	2.97	Spike	P	0 - 20
1999668	Cadmium	3.65	Spike	P	0 - 20
1999668	Chromium	2.61	Spike	P	0 - 20
1999668	Copper	2.91	Spike	P	0 - 20
1999668	Lead	2.42	Spike	P	0 - 20
1999668	Nickel	1.98	Spike	P	0 - 20
1999668	Zinc	2.12	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347508

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999046	Silver	1.71	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998995	Ammonia-N	3.61	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999001	Ammonia-N	2.27	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998339	Kjeldahl Nitrogen	0.734	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998994	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999000	Total-P	2.83	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346610

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1998996	O-Phosphate-P	0.154	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P347267

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999650	Total Alkalinity	7.69	Sample	F	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P347271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999650	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P346719

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1997756	Organic Carbon	1.98	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 365.1 Rev. 2.0 dissolved
Run ID: A84465
Included Lab Sample IDs: 1998996, 1998997, 1999002, 1999003

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	94.4	P/P	90 - 110
O-Phosphate-P	94.4	98.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84466
Included Lab Sample IDs: 1998992, 1998993, 1998998, 1998999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: SM 5310 B-00
Run ID: A84511
Included Lab Sample IDs: 1998994, 1998995, 1999000, 1999001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84519
Included Lab Sample IDs: 1998994, 1998995, 1999000, 1999001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	97.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A84583
Included Lab Sample IDs: 1999046, 1999047

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84687
Included Lab Sample IDs: 1999046, 1999047

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.8	99.5	P/P	90 - 110
Cadmium	97.1	95.8	P/P	90 - 110
Copper	98.4	100	P/P	90 - 110
Nickel	97.3	97.1	P/P	90 - 110
Zinc	98.9	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84693
Included Lab Sample IDs: 1998994, 1998995, 1999000, 1999001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	P/P	90 - 110
Ammonia-N	98.8	100	P/P	90 - 110
Ammonia-N	99.3	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84706
Included Lab Sample IDs: 1998994, 1998995, 1999000, 1999001

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

Reference Method: SM 2320 B-97
Run ID: A84752
Included Lab Sample IDs: 1998992, 1998993, 1998998, 1998999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.6	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A84752
Included Lab Sample IDs: 1998992, 1998993, 1998998, 1998999

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84763
Included Lab Sample IDs: 1999046, 1999047

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	98.0	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84770
Included Lab Sample IDs: 1998994, 1998995, 1999000, 1999001

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84821
Included Lab Sample IDs: 1999046, 1999047

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	95.4	95.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84893
Included Lab Sample IDs: 1999046, 1999047

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	107	92.7	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					12.1	
	Turbidity					8.08	
EPA 200.7 Rev. 4.4	Iron	106	103	101			1.54
EPA 200.8 Rev. 5.4	Arsenic	100	107	110			2.97
	Cadmium	99.2	95.4	98.9			3.65
	Chromium	93.5	89.8	92.1			2.61
	Copper	96.4	89.7	92.5			2.91
	Lead	94.7	101	103			2.42
	Nickel	98.6	92.3	94.2			1.98
	Silver	95.2	84.4	85.8			1.71
	Zinc	97.7	92.8	94.8			2.12
EPA 350.1 Rev. 2.0	Ammonia-N	102	102	98.0			3.61
	Ammonia-N	102	99.6	102			2.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	98.0	99.0			0.734
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	102	102			0.489
EPA 365.1 Rev. 2.0	Total-P	101	92.2	94.9			2.83
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	96.6	96.4			0.154
SM 2320 B-97	Total Alkalinity	100				7.69	
SM 4500 F-C-97	Fluoride	98.6	96.9	96.9			0.0
SM 5310 B-00	Organic Carbon	98.4	98.6	96.5			1.98

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1998992, 1998993, 1998998, 1998999
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1999046, 1999047
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1999046, 1999047
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1998994, 1998995, 1999000, 1999001
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1998994, 1998995, 1999000, 1999001
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1998994, 1998995, 1999000, 1999001
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1998994, 1998995, 1999000, 1999001
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1998996, 1998997, 1999002, 1999003
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1998992, 1998993, 1998998, 1998999
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1998992, 1998993, 1998998, 1998999
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1998992, 1998993, 1998998, 1998999
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1998994, 1998995, 1999000, 1999001

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	06/08/2018			06/08/2018 15:48	Julia Storbeck	1998992, 1998993, 1998998, 1998999
EPA 200.7 Rev. 4.4	06/08/2018	06/12/2018 14:50	Elliott D. Healy	06/14/2018 13:07	Betina Topolski	1999046
	06/08/2018	06/12/2018 14:50	Elliott D. Healy	06/14/2018 13:12	Betina Topolski	1999047
EPA 200.8 Rev. 5.4	06/08/2018	06/12/2018 14:50	Elliott D. Healy	06/19/2018 16:47	Robert K Palmer	1999046
	06/08/2018	06/12/2018 14:50	Elliott D. Healy	06/19/2018 16:57	Robert K Palmer	1999047
	06/08/2018	06/12/2018 14:50	Elliott D. Healy	06/21/2018 21:59	Robert K Palmer	1999046
	06/08/2018	06/12/2018 14:50	Elliott D. Healy	06/21/2018 22:06	Robert K Palmer	1999047
	06/08/2018	06/12/2018 14:50	Elliott D. Healy	06/22/2018 12:01	Robert K Palmer	1999046
	06/08/2018	06/12/2018 14:50	Elliott D. Healy	06/22/2018 12:11	Robert K Palmer	1999047
	06/08/2018	06/26/2018 15:15	Elliott D. Healy	06/27/2018 13:42	Robert K Palmer	1999046
	06/08/2018	06/26/2018 15:15	Elliott D. Healy	06/27/2018 14:05	Robert K Palmer	1999047
EPA 350.1 Rev. 2.0	06/08/2018			06/19/2018 09:38	Ping Hua	1998995
	06/08/2018			06/19/2018 09:57	Ping Hua	1998994
	06/08/2018			06/19/2018 10:00	Ping Hua	1999000
	06/08/2018			06/19/2018 10:38	Ping Hua	1999001
EPA 351.2 Rev. 2.0	06/08/2018	06/19/2018 10:15	Adrian Shelby	06/21/2018 14:09	Joseph Suarez	1998994
	06/08/2018	06/19/2018 10:15	Adrian Shelby	06/21/2018 14:10	Joseph Suarez	1998995
	06/08/2018	06/19/2018 10:15	Adrian Shelby	06/21/2018 14:12	Joseph Suarez	1999000
	06/08/2018	06/19/2018 10:15	Adrian Shelby	06/21/2018 14:13	Joseph Suarez	1999001
EPA 353.2 Rev. 2.0	06/08/2018			06/12/2018 11:35	Lauren Bottorf	1998994
	06/08/2018			06/12/2018 11:41	Lauren Bottorf	1998995
	06/08/2018			06/12/2018 11:43	Lauren Bottorf	1999001
	06/08/2018			06/12/2018 11:49	Lauren Bottorf	1999000
EPA 365.1 Rev. 2.0	06/08/2018	06/14/2018 12:39	Sima Feizi	06/19/2018 11:39	Beverly Y. Sanders	1998994
	06/08/2018	06/14/2018 12:39	Sima Feizi	06/19/2018 11:40	Beverly Y. Sanders	1998995
	06/08/2018	06/14/2018 12:39	Sima Feizi	06/19/2018 11:41	Beverly Y. Sanders	1999000
	06/08/2018	06/14/2018 12:39	Sima Feizi	06/19/2018 11:49	Beverly Y. Sanders	1999001
EPA 365.1 Rev. 2.0 dissolved	06/08/2018			06/08/2018 14:48	Megan Treadwell	1998996
	06/08/2018			06/08/2018 14:55	Megan Treadwell	1998997
	06/08/2018			06/08/2018 14:56	Megan Treadwell	1999002
	06/08/2018			06/08/2018 14:57	Megan Treadwell	1999003
SM 2320 B-97	06/08/2018			06/21/2018 05:32	Lauren Bottorf	1998992
	06/08/2018			06/21/2018 05:41	Lauren Bottorf	1998993
	06/08/2018			06/21/2018 05:51	Lauren Bottorf	1998998
	06/08/2018			06/21/2018 06:00	Lauren Bottorf	1998999
SM 2540 D-97	06/08/2018			06/08/2018 16:15	William L. Brown IV	1998992, 1998993, 1998998, 1998999
SM 4500 F-C-97	06/08/2018			06/21/2018 01:24	Lauren Bottorf	1998992
	06/08/2018			06/21/2018 01:28	Lauren Bottorf	1998993
	06/08/2018			06/21/2018 01:31	Lauren Bottorf	1998998
	06/08/2018			06/21/2018 01:35	Lauren Bottorf	1998999

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	06/08/2018			06/12/2018 05:49	Megan Treadwell	1998994
	06/08/2018			06/12/2018 06:02	Megan Treadwell	1998995
	06/08/2018			06/12/2018 06:14	Megan Treadwell	1999000
	06/08/2018			06/12/2018 06:26	Megan Treadwell	1999001