Chemical Analysis Report

SO-DIST-2018-06-12-01

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

Event Description: **Charlotte Harbor**
Request ID: **RQ-2018-05-14-40**
Customer: **SO-DIST**
Project ID: **SMP**

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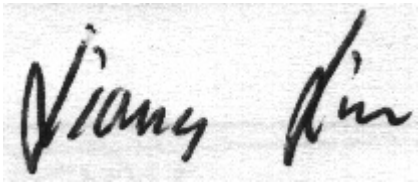
Date Certified: 05-JUL-2018 13:51



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: TRAILER PARK CANAL @ MOUTH **Collection Date/Time: 06/11/2018 10:35**

Field ID: G3SD0072 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1999650	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P346784	
	SM 2320 B-97	Total Alkalinity	69	AJ	mg CaCO3/L	P347267	RPD
	SM 2540 D-97	TSS	4	I	mg/L	P347420	
	SM 4500 F-C-97	Fluoride	0.48		mg F/L	P347271	
1999651	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P347163	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P347285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.062		mg N/L	P346963	
	EPA 365.1 Rev. 2.0	Total-P	0.49		mg P/L	P346869	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P347065	
1999652	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.43		mg P/L	P346782	
1999668	EPA 200.7 Rev. 4.4	Iron	350	I	ug/L	P346772	
	EPA 200.8 Rev. 5.4	Arsenic	2.23		ug/L	P346772	
		Cadmium	0.060	U	ug/L	P346772	
		Chromium	1.2	U	ug/L	P346772	
		Copper	1.1	I	ug/L	P346772	
		Lead	0.15	U	ug/L	P346772	
		Nickel	0.60	U	ug/L	P346772	
		Silver	0.030	U	ug/L	P347508	
		Zinc	3.0	U	ug/L	P346772	

Ref. Method and Comment:
SM 2320 B-97: Refer to the narrative for an explanation of QC Codes.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: MYAKKA CUTOFF (WESTERN) **Collection Date/Time: 06/11/2018 11:00**

Field ID: G3SD0073 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1999653	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P346784	
	SM 2320 B-97	Total Alkalinity	72		mg CaCO3/L	P347267	RPD
	SM 2540 D-97	TSS	3	I	mg/L	P347420	
	SM 4500 F-C-97	Fluoride	0.52		mg F/L	P347271	
1999655	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P347163	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P347285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.067		mg N/L	P346963	
	EPA 365.1 Rev. 2.0	Total-P	0.50		mg P/L	P346869	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P347093	
1999657	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.41		mg P/L	P346782	

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: MYAKKA CUTOFF (WESTERN) **Collection Date/Time: 06/11/2018 11:05**

Field ID: G3SD0073_DUP Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1999659	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P346784	
	SM 2320 B-97	Total Alkalinity	65		mg CaCO3/L	P347267	RPD
	SM 2540 D-97	TSS	4	I	mg/L	P347420	
	SM 4500 F-C-97	Fluoride	0.52		mg F/L	P347271	
1999660	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P347163	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P347285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.066		mg N/L	P346963	
	EPA 365.1 Rev. 2.0	Total-P	0.48		mg P/L	P347118	MS
	SM 5310 B-00	Organic Carbon	18		mg C/L	P347093	
1999661	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.41		mg P/L	P346782	

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: WHIDDEN CREEK- SOUTH PT **Collection Date/Time: 06/11/2018 12:40**

Field ID: G2SD0029 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1999654	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P346784	
	SM 2320 B-97	Total Alkalinity	115		mg CaCO3/L	P347267	RPD
	SM 2540 D-97	TSS	6	IA	mg/L	P347420	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P347271	
1999656	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P347163	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.91		mg N/L	P347285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346963	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P346869	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P347093	
1999658	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346782	

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: P346784

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: P347163

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347285

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346963

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347118

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346782

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: P347420

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: P347065

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-00
Batch ID: P347093

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: 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: P347285

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346963

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347118

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.2		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346782

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	102		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: P347065

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P347093

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		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: 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: P347285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999794	Kjeldahl Nitrogen	98.4	97.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346963

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999651	NO2NO3-N	100	99.8	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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2000199	Total-P	88.5	87.0	F/F	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346782

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999658	O-Phosphate-P	96.1	96.6	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: P347065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999150	Organic Carbon	99.2	100	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P347093

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1999655	Organic Carbon	99.3	98.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999595	Turbidity	1.49	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: P347163

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P347285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999794	Kjeldahl Nitrogen	0.948	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346963

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999651	NO2NO3-N	0.382	Spike	P	0 - 20

Quality Assurance Report
Precision

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
Batch ID: P347118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2000199	Total-P	1.61	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346782

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999658	O-Phosphate-P	0.519	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: P347065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999150	Organic Carbon	0.892	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P347093

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1999655	Organic Carbon	0.691	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: A84528
Included Lab Sample IDs: 1999652, 1999657, 1999658, 1999661

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.4	P/P	90 - 110
O-Phosphate-P	99.5	99.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84529
Included Lab Sample IDs: 1999650, 1999653, 1999654, 1999659

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A84583
Included Lab Sample IDs: 1999668

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84610
Included Lab Sample IDs: 1999651, 1999655, 1999656, 1999660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	98.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A84659
Included Lab Sample IDs: 1999651

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84662
Included Lab Sample IDs: 1999651, 1999655

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.6	100	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A84672
Included Lab Sample IDs: 1999655, 1999656, 1999660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	96.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84687
Included Lab Sample IDs: 1999668

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.8	99.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84687
Included Lab Sample IDs: 1999668

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	97.1	95.8	P/P	90 - 110
Copper	98.4	100	P/P	90 - 110
Lead	98.0	97.3	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: 1999651, 1999655, 1999656, 1999660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	103	P/P	90 - 110
Ammonia-N	99.3	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84706
Included Lab Sample IDs: 1999656

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84710
Included Lab Sample IDs: 1999660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.6	99.2	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A84752
Included Lab Sample IDs: 1999650, 1999653, 1999654, 1999659

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

Reference Method: SM 4500 F-C-97
Run ID: A84752
Included Lab Sample IDs: 1999650, 1999653, 1999654, 1999659

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84763
Included Lab Sample IDs: 1999668

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84814
Included Lab Sample IDs: 1999651, 1999655, 1999656, 1999660

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	91.5	91.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84893
Included Lab Sample IDs: 1999668

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					1.49	
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	99.6	102			2.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.8	98.4	97.3			0.948
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	100	99.8			0.382
EPA 365.1 Rev. 2.0	Total-P	101	92.2	94.9			2.83
	Total-P	97.2	88.5	87.0			1.61
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	96.1	96.6			0.519
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	102	99.2	100			0.892
	Organic Carbon	97.0	99.3	98.3			0.691

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1999650, 1999653, 1999654, 1999659
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1999668
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1999668
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1999651, 1999655, 1999656, 1999660
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1999651, 1999655, 1999656, 1999660
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1999651, 1999655, 1999656, 1999660
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1999651, 1999655, 1999656, 1999660
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1999652, 1999657, 1999658, 1999661
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1999650, 1999653, 1999654, 1999659
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1999650, 1999653, 1999654, 1999659
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1999650, 1999653, 1999654, 1999659
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1999651, 1999655, 1999656, 1999660

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	06/12/2018			06/12/2018 16:26	William L. Brown IV	1999650, 1999653, 1999654, 1999659
EPA 200.7 Rev. 4.4	06/12/2018	06/12/2018 14:50	Elliott D. Healy	06/14/2018 13:18	Betina Topolski	1999668
EPA 200.8 Rev. 5.4	06/12/2018	06/12/2018 14:50	Elliott D. Healy	06/19/2018 16:18	Robert K Palmer	1999668
	06/12/2018	06/12/2018 14:50	Elliott D. Healy	06/21/2018 21:40	Robert K Palmer	1999668
	06/12/2018	06/26/2018 15:15	Elliott D. Healy	06/27/2018 14:10	Robert K Palmer	1999668
EPA 350.1 Rev. 2.0	06/12/2018			06/19/2018 10:42	Ping Hua	1999651
	06/12/2018			06/19/2018 10:50	Ping Hua	1999655
	06/12/2018			06/19/2018 10:51	Ping Hua	1999660
	06/12/2018			06/19/2018 10:53	Ping Hua	1999656
EPA 351.2 Rev. 2.0	06/12/2018	06/21/2018 12:00	Adrian Shelby	06/22/2018 17:49	Tanya Welborn	1999651
	06/12/2018	06/21/2018 12:00	Adrian Shelby	06/22/2018 17:50	Tanya Welborn	1999655
	06/12/2018	06/21/2018 12:00	Adrian Shelby	06/22/2018 17:52	Tanya Welborn	1999656
	06/12/2018	06/21/2018 12:00	Adrian Shelby	06/22/2018 17:53	Tanya Welborn	1999660
EPA 353.2 Rev. 2.0	06/12/2018			06/15/2018 09:19	Lauren Bottorf	1999651
	06/12/2018			06/15/2018 09:25	Lauren Bottorf	1999655
	06/12/2018			06/15/2018 09:26	Lauren Bottorf	1999660
	06/12/2018			06/15/2018 09:28	Lauren Bottorf	1999656
EPA 365.1 Rev. 2.0	06/12/2018	06/14/2018 12:39	Sima Feizi	06/18/2018 14:23	Beverly Y. Sanders	1999651
	06/12/2018	06/14/2018 12:39	Sima Feizi	06/18/2018 14:25	Beverly Y. Sanders	1999655
	06/12/2018	06/14/2018 12:39	Sima Feizi	06/19/2018 11:49	Beverly Y. Sanders	1999656
	06/12/2018	06/19/2018 11:10	Sima Feizi	06/20/2018 11:59	Lipi Saha	1999660
EPA 365.1 Rev. 2.0 dissolved	06/12/2018			06/12/2018 14:55	Megan Treadwell	1999658
	06/12/2018			06/12/2018 15:27	Megan Treadwell	1999652
	06/12/2018			06/12/2018 15:28	Megan Treadwell	1999657
	06/12/2018			06/12/2018 15:29	Megan Treadwell	1999661
SM 2320 B-97	06/12/2018			06/21/2018 03:28	Lauren Bottorf	1999650
	06/12/2018			06/21/2018 03:39	Lauren Bottorf	1999653
	06/12/2018			06/21/2018 03:49	Lauren Bottorf	1999659
	06/12/2018			06/21/2018 06:11	Lauren Bottorf	1999654
SM 2540 D-97	06/12/2018			06/15/2018 16:52	Yijie Li	1999650, 1999653, 1999654, 1999659
SM 4500 F-C-97	06/12/2018			06/20/2018 23:55	Lauren Bottorf	1999650
	06/12/2018			06/21/2018 01:01	Lauren Bottorf	1999653
	06/12/2018			06/21/2018 01:05	Lauren Bottorf	1999659
	06/12/2018			06/21/2018 01:39	Lauren Bottorf	1999654
SM 5310 B-00	06/12/2018			06/15/2018 22:33	Blanca Fach	1999651
	06/12/2018			06/19/2018 03:37	Megan Treadwell	1999655
	06/12/2018			06/19/2018 04:14	Megan Treadwell	1999656
	06/12/2018			06/19/2018 04:26	Megan Treadwell	1999660