Chemical Analysis Report

SO-DIST-2018-03-30-01

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

Event Description: **Telegraph**
Request ID: **RQ-2018-03-26-14**
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

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Certified by: Colin Wright, Program Administrator

Date Certified: 02-MAY-2018 13:10

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: Telegraph Swamp South **Collection Date/Time: 03/28/2018 12:40**

Field ID: G3SD0100 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1979346	EPA 180.1 Rev. 2.0	Turbidity	60		NTU	P342514	
	EPA 300.0 Rev. 2.1	Chloride	230		mg Cl/L	P342688	
		Sulfate	57		mg SO4/L	P342689	
	SM 2120 B	Color (true)	53	A	PCU	P342491	
	SM 2320 B-97	Total Alkalinity	99		mg CaCO3/L	P343026	RPD
	SM 2540 C-97	TDS	776		mg/L	P343011	
	SM 2540 D-97	TSS	120		mg/L	P342958	
	SM 4500 F-C-97	Fluoride	0.37		mg F/L	P343648	
1979348	EPA 350.1 Rev. 2.0	Ammonia-N	2.0		mg N/L	P343148	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	9.1		mg N/L	P342606	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.098		mg N/L	P342848	
	EPA 365.1 Rev. 2.0	Total-P	0.91		mg P/L	P342651	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P343082	
1979350	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P342543	
1979354	EPA 200.7 Rev. 4.4	Calcium	72.6		mg/L	P342557	
		Iron	3.35E+03		ug/L	P342557	
		Magnesium	19.4		mg/L	P342557	
		Potassium	6.8		mg/L	P342557	
		Sodium	117		mg/L	P342557	
		Zinc	13	I	ug/L	P342557	
	EPA 200.8 Rev. 5.4	Arsenic	2.45		ug/L	P342557	
		Cadmium	0.036	I	ug/L	P342557	
		Chromium	1.5	I	ug/L	P343282	
		Copper	2.08		ug/L	P342557	
		Lead	2.01		ug/L	P342557	
		Nickel	0.72	IV	ug/L	P343282	
		Silver	0.010	U	ug/L	P342557	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The result was confirmed on 04/11/2018.
EPA 200.8 Rev. 5.4: V: Nickel was detected in the method blank at a level of 0.37 I ug/L.

Sample Location: Telegraph Swamp South **Collection Date/Time: 03/28/2018 12:45**

Field ID: G3SD0100_DUP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1979347	EPA 180.1 Rev. 2.0	Turbidity	60		NTU	P342514	
	EPA 300.0 Rev. 2.1	Chloride	230		mg Cl/L	P342688	
		Sulfate	56		mg SO4/L	P342689	
	SM 2120 B	Color (true)	54		PCU	P342491	
	SM 2320 B-97	Total Alkalinity	99		mg CaCO3/L	P343026	RPD
	SM 2540 C-97	TDS	722		mg/L	P343011	
	SM 2540 D-97	TSS	112		mg/L	P342958	
	SM 4500 F-C-97	Fluoride	0.37		mg F/L	P343648	

Field ID: G3SD0100_DUP Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1979349	EPA 350.1 Rev. 2.0	Ammonia-N	2.1		mg N/L	P343148	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	9.2		mg N/L	P342606	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P342848	
	EPA 365.1 Rev. 2.0	Total-P	0.93		mg P/L	P342651	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P343082	
1979351	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.043		mg P/L	P342543	
1979355	EPA 200.7 Rev. 4.4	Calcium	73.9		mg/L	P342557	
		Iron	3.09E+03		ug/L	P342557	
		Magnesium	19.8		mg/L	P342557	
		Potassium	7.0		mg/L	P342557	
		Sodium	121		mg/L	P342557	
		Zinc	12	I	ug/L	P342557	
	EPA 200.8 Rev. 5.4	Arsenic	2.43		ug/L	P342557	
		Cadmium	0.024	I	ug/L	P342557	
		Chromium	1.2	I	ug/L	P343282	
		Copper	1.86		ug/L	P342557	
		Lead	1.81		ug/L	P342557	
		Nickel	0.67	IV	ug/L	P343282	
		Silver	0.010	U	ug/L	P342557	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The result was confirmed on 04/11/2018.
EPA 200.8 Rev. 5.4: V: Nickel was detected in the method blank at a level of 0.37 I ug/L.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342514

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P342557

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342557

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342557

Component	Result	Code	Units
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343282

Component	Result	Code	Units
Chromium	0.40	U	ug/L
Nickel	0.37	I	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342688

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342689

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343148

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342606

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342848

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342651

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342543

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2120 B
Batch ID: P342491

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P343026

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

Reference Method: SM 2540 C-97
Batch ID: P343011

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P342958

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P343648

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P343082

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: P342557

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	106		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	102		P	85 - 115
Sodium	104		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342557

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.8		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342557

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cadmium	104		P	85 - 115
Copper	97.3		P	85 - 115
Lead	101		P	85 - 115
Silver	97.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343282

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	104		P	85 - 115
Nickel	96.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342688

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342689

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343148

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342606

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342848

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342651

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: P342543

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342543

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

Reference Method: SM 2320 B-97
Batch ID: P343026

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.3		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P343648

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P343082

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P342557

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979326	Calcium	106		P	80 - 120
1979326	Iron	109		P	80 - 120
1979326	Magnesium	108		P	80 - 120
1979326	Potassium	102		P	80 - 120
1979326	Sodium	107		P	80 - 120
1979326	Zinc	104		P	80 - 120
1979402	Calcium	102		P	80 - 120
1979402	Iron	106	107	P/P	80 - 120
1979402	Magnesium	106	107	P/P	80 - 120
1979402	Potassium	99.0	98.2	P/P	80 - 120
1979402	Sodium	102		P	80 - 120
1979402	Zinc	101	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342557

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979326	Arsenic	96.7		P	80 - 120
1979326	Cadmium	105		P	80 - 120
1979326	Copper	93.4		P	80 - 120
1979326	Lead	98.9		P	80 - 120
1979326	Silver	95.6		P	80 - 120
1979402	Arsenic	97.9	96.1	P/P	80 - 120
1979402	Cadmium	103	99.5	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342557

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979402	Copper	95.4	93.6	P/P	80 - 120
1979402	Lead	99.7	97.8	P/P	80 - 120
1979402	Silver	95.1	93.5	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343282

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1982123	Chromium	106		P	80 - 120
1982123	Nickel	97.8		P	80 - 120
1983042	Chromium	104	104	P/P	80 - 120
1983042	Nickel	97.5	97.8	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979517	Sulfate	97.4		P	90 - 110
1979575	Sulfate	93.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343148

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979359	Ammonia-N	98.4	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342606

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979317	Kjeldahl Nitrogen	94.4	92.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979374	NO2NO3-N	108	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342651

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979381	Total-P	103	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342543

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979350	O-Phosphate-P	95.3	96.9	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P343648

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979516	Fluoride	97.2	97.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P343082

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1979043	Organic Carbon	94.4	97.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P342514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979396	Turbidity	0.219	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P342557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979402	Calcium	1.16	Spike	P	0 - 20
1979402	Iron	0.502	Spike	P	0 - 20
1979402	Magnesium	0.459	Spike	P	0 - 20
1979402	Potassium	0.464	Spike	P	0 - 20
1979402	Sodium	0.317	Spike	P	0 - 20
1979402	Zinc	0.681	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979402	Arsenic	1.70	Spike	P	0 - 20
1979402	Cadmium	3.05	Spike	P	0 - 20
1979402	Copper	1.86	Spike	P	0 - 20
1979402	Lead	1.99	Spike	P	0 - 20
1979402	Silver	1.71	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P343282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1983042	Chromium	0.255	Spike	P	0 - 20
1983042	Nickel	0.330	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979517	Chloride	0.433	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P342689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979517	Sulfate	0.338	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P343148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979359	Ammonia-N	0.0223	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P342606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979317	Kjeldahl Nitrogen	1.58	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P342848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979374	NO2NO3-N	0.926	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P342651

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979381	Total-P	3.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P342543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979350	O-Phosphate-P	1.16	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P342491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979346	Color (true)	8.19	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-97
Batch ID: P343026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979292	Total Alkalinity	2.33	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P343011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979378	TDS	0.738	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P343648

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979516	Fluoride	0.477	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P343082

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1979043	Organic Carbon	1.61	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: SM 2120 B
Run ID: A82955
Included Lab Sample IDs: 1979346, 1979347

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.1	99.9	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82962
Included Lab Sample IDs: 1979346, 1979347

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82973
Included Lab Sample IDs: 1979350, 1979351

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A83001
Included Lab Sample IDs: 1979346, 1979347

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.4	97.1	P/P	90 - 110
Sulfate	97.1	97.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A83016
Included Lab Sample IDs: 1979354, 1979355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	90 - 110
Calcium	102	99.1	P/P	90 - 110
Iron	100	98.8	P/P	90 - 110
Iron	99.3	100	P/P	90 - 110
Magnesium	101	99.1	P/P	90 - 110
Magnesium	99.3	101	P/P	90 - 110
Potassium	98.3	97.0	P/P	90 - 110
Potassium	98.8	98.3	P/P	90 - 110
Sodium	103	99.7	P/P	90 - 110
Sodium	103	103	P/P	90 - 110
Zinc	102	99.6	P/P	90 - 110
Zinc	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83020
Included Lab Sample IDs: 1979348, 1979349

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A83040
Included Lab Sample IDs: 1979354, 1979355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	96.2	96.6	P/P	90 - 110
Cadmium	99.6	98.8	P/P	90 - 110
Copper	91.8	93.1	P/P	90 - 110
Lead	97.4	96.6	P/P	90 - 110
Silver	99.3	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83043
Included Lab Sample IDs: 1979348, 1979349

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.2	99.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83062
Included Lab Sample IDs: 1979348, 1979349

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83062
Included Lab Sample IDs: 1979348, 1979349

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A83116
Included Lab Sample IDs: 1979346, 1979347

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.3	100	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A83136
Included Lab Sample IDs: 1979348, 1979349

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	97.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A83153
Included Lab Sample IDs: 1979348, 1979349

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A83248
Included Lab Sample IDs: 1979354, 1979355

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	102	101	P/P	90 - 110
Nickel	97.9	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83315
Included Lab Sample IDs: 1979346, 1979347

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	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						0.219	
EPA 200.7 Rev. 4.4	Calcium	105	106	102				1.16
	Iron	106	109	106	107			0.502

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 200.7 Rev. 4.4	Magnesium	109	108	106	107			0.459
	Potassium	102	102	99.0	98.2			0.464
	Sodium	104	107	102				0.317
	Zinc	101	104	101	102			0.681
EPA 200.8 Rev. 5.4	Arsenic	98.8	97.9	96.1	96.7			1.70
	Cadmium	104	103	99.5	105			3.05
	Chromium	104	106	104	104			0.255
	Copper	97.3	95.4	93.6	93.4			1.86
	Lead	101	99.7	97.8	98.9			1.99
	Nickel	96.1	97.8	97.5	97.8			0.330
	Silver	97.8	95.1	93.5	95.6			1.71
EPA 300.0 Rev. 2.1	Chloride	97.5					0.433	
	Sulfate	96.5	97.4	93.0			0.338	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	98.4	98.4				0.0223
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.9	94.4	92.3				1.58
EPA 353.2 Rev. 2.0	NO2NO3-N	106	108	108				0.926
EPA 365.1 Rev. 2.0	Total-P	102	103	98.9				3.49
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	95.3	96.9				1.16
SM 2120 B	Color (true)						8.19	
SM 2320 B-97	Total Alkalinity	98.3					2.33	
SM 2540 C-97	TDS						0.738	
SM 4500 F-C-97	Fluoride	98.1	97.2	97.8				0.477
SM 5310 B-00	Organic Carbon	96.0	94.4	97.0				1.61

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1979346, 1979347
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1979354, 1979355
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1979354, 1979355
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1979346, 1979347
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1979346, 1979347
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1979348, 1979349
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1979348, 1979349
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1979348, 1979349
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1979348, 1979349
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1979350, 1979351
SM 2120 B / E31780	True Color measured at 450 nm	1979346, 1979347
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1979346, 1979347
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1979346, 1979347
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1979346, 1979347
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1979346, 1979347
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1979348, 1979349

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	03/30/2018			03/30/2018 10:49	Tanya Welborn	1979346
	03/30/2018			03/30/2018 10:54	Tanya Welborn	1979347
EPA 200.7 Rev. 4.4	03/30/2018	04/02/2018 13:15	Elliott D. Healy	04/03/2018 19:15	Betina Topolski	1979354
	03/30/2018	04/02/2018 13:15	Elliott D. Healy	04/03/2018 19:46	Betina Topolski	1979355
EPA 200.8 Rev. 5.4	03/30/2018	04/02/2018 13:15	Elliott D. Healy	04/05/2018 00:00	Nadine Brooks	1979354
	03/30/2018	04/02/2018 13:15	Elliott D. Healy	04/05/2018 00:19	Nadine Brooks	1979355
	03/30/2018	04/12/2018 14:50	Elliott D. Healy	04/13/2018 21:16	Nadine Brooks	1979354
	03/30/2018	04/12/2018 14:50	Elliott D. Healy	04/13/2018 21:26	Nadine Brooks	1979355
EPA 300.0 Rev. 2.1	03/30/2018			04/03/2018 18:07	Lipi Saha	1979346
	03/30/2018			04/03/2018 18:19	Lipi Saha	1979347
EPA 350.1 Rev. 2.0	03/30/2018			04/10/2018 12:01	Ping Hua	1979348
	03/30/2018			04/10/2018 12:03	Ping Hua	1979349
EPA 351.2 Rev. 2.0	03/30/2018	04/03/2018 09:50	Adrian Shelby	04/04/2018 16:29	Joseph Suarez	1979348
	03/30/2018	04/03/2018 09:50	Adrian Shelby	04/04/2018 16:30	Joseph Suarez	1979349
EPA 353.2 Rev. 2.0	03/30/2018			04/05/2018 13:27	Lauren Bottorf	1979348
	03/30/2018			04/05/2018 13:28	Lauren Bottorf	1979349
EPA 365.1 Rev. 2.0	03/30/2018	04/03/2018 13:07	Sima Feizi	04/04/2018 09:22	Beverly Y. Sanders	1979348
	03/30/2018	04/03/2018 13:07	Sima Feizi	04/04/2018 09:23	Beverly Y. Sanders	1979349
EPA 365.1 Rev. 2.0 dissolved	03/30/2018			03/30/2018 12:08	Megan Treadwell	1979350
	03/30/2018			03/30/2018 12:10	Megan Treadwell	1979351
SM 2120 B	03/30/2018			03/30/2018 11:27	Tanya Welborn	1979346
	03/30/2018			03/30/2018 11:28	Tanya Welborn	1979347
SM 2320 B-97	03/30/2018			04/07/2018 04:00	Dale L. Simmons	1979346
	03/30/2018			04/07/2018 04:15	Dale L. Simmons	1979347
SM 2540 C-97	03/30/2018			04/04/2018 10:10	Yijie Li	1979346, 1979347
SM 2540 D-97	03/30/2018			04/04/2018 10:10	Yijie Li	1979346, 1979347
SM 4500 F-C-97	03/30/2018			04/17/2018 18:47	Dale L. Simmons	1979346
	03/30/2018			04/17/2018 18:50	Dale L. Simmons	1979347
SM 5310 B-00	03/30/2018			04/06/2018 22:25	Julia Storbeck	1979348
	03/30/2018			04/06/2018 22:39	Julia Storbeck	1979349