Chemical Analysis Report

SO-DIST-2018-07-31-02

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

Event Description: **Tellywog**
Request ID: **RQ-2018-07-16-17**
Customer: **SO-DIST**
Project ID: **SMP**

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FLDEP South District Office
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Date Certified: 16-AUG-2018 16:46

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: 07/30/2018 09:10**

Field ID: G3SD0100 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2012021	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P349464	
	EPA 300.0 Rev. 2.1	Chloride	48		mg Cl/L	P349593	MS
		Sulfate	4.6		mg SO4/L	P349596	
	SM 2120 B	Color (true)	310		PCU	P349459	
	SM 2320 B-97	Total Alkalinity	55		mg CaCO3/L	P349652	
	SM 2540 C-97	TDS	208	A	mg/L	P349797	
	SM 2540 D-97	TSS	5	IA	mg/L	P349952	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P349655	
2012022	EPA 350.1 Rev. 2.0	Ammonia-N	0.078		mg N/L	P349684	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P349539	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P349493	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P349562	
	SM 5310 B-00	Organic Carbon	30		mg C/L	P350131	
2012023	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.060		mg P/L	P349455	
2012031	EPA 200.7 Rev. 4.4	Calcium	26.9		mg/L	P349496	
		Iron	910		ug/L	P349496	
		Magnesium	4.52		mg/L	P349496	
		Potassium	1.4		mg/L	P349496	
		Sodium	22.6		mg/L	P349496	
		Zinc	5.0	U	ug/L	P349496	
	EPA 200.8 Rev. 5.4	Arsenic	0.83		ug/L	P349496	
		Cadmium	0.020	U	ug/L	P349496	
		Chromium	0.63	I	ug/L	P349496	
		Copper	0.59	I	ug/L	P349496	
		Lead	0.18	I	ug/L	P349496	
		Nickel	0.42	I	ug/L	P349496	
		Silver	0.010	U	ug/L	P349496	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Pollywog Creek @ SR 78 **Collection Date/Time: 07/30/2018 10:30**

Field ID: G3SD0098 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2012015	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P349464	
	EPA 300.0 Rev. 2.1	Chloride	5.5		mg Cl/L	P349593	MS
		Sulfate	0.54	I	mg SO4/L	P349596	
	SM 2120 B	Color (true)	480		PCU	P349459	
	SM 2320 B-97	Total Alkalinity	7.6		mg CaCO3/L	P349652	
	SM 2540 C-97	TDS	93		mg/L	P349797	
	SM 2540 D-97	TSS	10	I	mg/L	P349952	
	SM 4500 F-C-97	Fluoride	0.043	I	mg F/L	P349655	
2012017	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P349684	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P349537	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P349493	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P349562	
	SM 5310 B-00	Organic Carbon	33		mg C/L	P349691	
2012019	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P349455	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Bee Branch @LoblollyBay **Collection Date/Time: 07/30/2018 11:15**

Field ID: G3SD0085 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2012016	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P349464	
	EPA 300.0 Rev. 2.1	Chloride	7.3		mg Cl/L	P349593	MS
		Sulfate	1.1		mg SO4/L	P349596	
	SM 2120 B	Color (true)	330		PCU	P349459	
	SM 2320 B-97	Total Alkalinity	6.3		mg CaCO3/L	P349652	
	SM 2540 C-97	TDS	80		mg/L	P349797	
	SM 2540 D-97	TSS	3	I	mg/L	P349952	
	SM 4500 F-C-97	Fluoride	0.050	I	mg F/L	P349655	
2012018	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P349684	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P349539	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.028		mg N/L	P349493	
	EPA 365.1 Rev. 2.0	Total-P	0.089		mg P/L	P349562	
	SM 5310 B-00	Organic Carbon	27		mg C/L	P349691	
2012020	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.061		mg P/L	P349455	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349464

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349496

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: P349496

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
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349593

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349596

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349684

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349537

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349539

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349493

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349562

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349455

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

Reference Method: SM 2120 B
Batch ID: P349459

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P349652

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

Reference Method: SM 2540 C-97
Batch ID: P349797

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349952

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P349655

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P349691

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

Reference Method: SM 5310 B-00
Batch ID: P350131

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: P349496

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	108		P	85 - 115
Magnesium	111		P	85 - 115
Potassium	106		P	85 - 115
Sodium	103		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349496

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	100		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	94.3		P	85 - 115
Copper	95.4		P	85 - 115
Lead	95.4		P	85 - 115
Nickel	97.5		P	85 - 115
Silver	97.3		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349593

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349596

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349684

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349537

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349539

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349493

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349455

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

Reference Method: SM 2120 B
Batch ID: P349459

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.6		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P349652

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P349655

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

Reference Method: SM 5310 B-00
Batch ID: P349691

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.5		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P350131

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349496

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011929	Calcium	104		P	80 - 120
2011929	Iron	110		P	80 - 120
2011929	Magnesium	113		P	80 - 120
2011929	Potassium	110		P	80 - 120
2011929	Sodium	103		P	80 - 120
2011929	Zinc	105		P	80 - 120
2011931	Calcium	106		P	80 - 120
2011931	Iron	108	107	P/P	80 - 120
2011931	Magnesium	110	108	P/P	80 - 120
2011931	Potassium	105	103	P/P	80 - 120
2011931	Sodium	104		P	80 - 120
2011931	Zinc	105	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349496

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011929	Arsenic	102		P	80 - 120
2011929	Cadmium	102		P	80 - 120
2011929	Chromium	95.9		P	80 - 120
2011929	Copper	96.4		P	80 - 120
2011929	Lead	96.9		P	80 - 120
2011929	Nickel	98.8		P	80 - 120
2011929	Silver	96.4		P	80 - 120
2011931	Arsenic	106	104	P/P	80 - 120
2011931	Cadmium	105	105	P/P	80 - 120
2011931	Chromium	98.6	97.7	P/P	80 - 120
2011931	Copper	99.4	98.8	P/P	80 - 120
2011931	Lead	98.0	98.2	P/P	80 - 120
2011931	Nickel	102	100	P/P	80 - 120
2011931	Silver	98.4	95.3	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349593

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011870	Chloride	99.0		P	90 - 110
2011973	Chloride	113		F	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349596

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011870	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349684

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012161	Ammonia-N	93.1	91.8	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012164	Kjeldahl Nitrogen	93.9	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349493

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012005	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012208	Total-P	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011979	O-Phosphate-P	92.9	94.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P349655

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011974	Fluoride	102	102	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011976	Organic Carbon	94.0	95.7	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P350131

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012022	Organic Carbon	104		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349464

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011890	Turbidity	1.22	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011931	Calcium	1.48	Spike	P	0 - 20
2011931	Iron	1.04	Spike	P	0 - 20
2011931	Magnesium	0.990	Spike	P	0 - 20
2011931	Potassium	0.826	Spike	P	0 - 20
2011931	Sodium	0.705	Spike	P	0 - 20
2011931	Zinc	3.08	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011931	Arsenic	1.31	Spike	P	0 - 20
2011931	Cadmium	0.318	Spike	P	0 - 20
2011931	Chromium	0.877	Spike	P	0 - 20
2011931	Copper	0.580	Spike	P	0 - 20
2011931	Lead	0.197	Spike	P	0 - 20
2011931	Nickel	1.82	Spike	P	0 - 20
2011931	Silver	3.27	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011870	Chloride	0.772	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011870	Sulfate	1.99	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012161	Ammonia-N	0.758	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011998	Kjeldahl Nitrogen	0.242	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012164	Kjeldahl Nitrogen	3.01	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012005	NO2NO3-N	1.45	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012208	Total-P	0.249	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011979	O-Phosphate-P	1.39	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P349459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011890	Color (true)	0.649	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P349652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011974	Total Alkalinity	1.13	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P349797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012021	TDS	0.962	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P349655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011974	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P349691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011976	Organic Carbon	1.43	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P350131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012022	Organic Carbon	0.286	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 300.0 Rev. 2.1
Run ID: A85560
Included Lab Sample IDs: 2012015, 2012016, 2012021

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	103	P/P	90 - 110
Sulfate	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85586
Included Lab Sample IDs: 2012019, 2012020, 2012023

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

Reference Method: SM 2120 B
Run ID: A85589
Included Lab Sample IDs: 2012015, 2012016, 2012021

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85591
Included Lab Sample IDs: 2012015, 2012016, 2012021

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85611
Included Lab Sample IDs: 2012017, 2012018, 2012022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A85663
Included Lab Sample IDs: 2012031

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	101	P/P	90 - 110
Iron	103	103	P/P	90 - 110
Magnesium	103	103	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Sodium	103	101	P/P	90 - 110
Zinc	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85666
Included Lab Sample IDs: 2012017, 2012018, 2012022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.9	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85667
Included Lab Sample IDs: 2012017, 2012018, 2012022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	108	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A85689
Included Lab Sample IDs: 2012031

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	104	102	P/P	90 - 110
Cadmium	102	99.5	P/P	90 - 110
Chromium	98.0	98.4	P/P	90 - 110
Copper	101	100	P/P	90 - 110
Lead	97.5	96.0	P/P	90 - 110
Nickel	101	99.3	P/P	90 - 110
Silver	96.1	94.8	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A85692
Included Lab Sample IDs: 2012015, 2012016, 2012021

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A85692
Included Lab Sample IDs: 2012015, 2012016, 2012021

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85703
Included Lab Sample IDs: 2012017, 2012018, 2012022

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

Reference Method: SM 5310 B-00
Run ID: A85704
Included Lab Sample IDs: 2012017, 2012018

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.4	99.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A85886
Included Lab Sample IDs: 2012022

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.7	99.2	P/P	90 - 110

Quality Assurance Report
Calibration Verification

* 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						1.22	
EPA 200.7 Rev. 4.4	Calcium	105	104	106				1.48
	Iron	108	110	108	107			1.04
	Magnesium	111	113	110	108			0.990
	Potassium	106	110	105	103			0.826
	Sodium	103	103	104				0.705
	Zinc	102	105	105	102			3.08
EPA 200.8 Rev. 5.4	Arsenic	100	102	106	104			1.31
	Cadmium	101	102	105	105			0.318
	Chromium	94.3	95.9	98.6	97.7			0.877
	Copper	95.4	96.4	99.4	98.8			0.580
	Lead	95.4	96.9	98.0	98.2			0.197
	Nickel	97.5	98.8	102	100			1.82
	Silver	97.3	96.4	98.4	95.3			3.27
EPA 300.0 Rev. 2.1	Chloride	99.3	99.0	113			0.772	
	Sulfate	98.4	100				1.99	
EPA 350.1 Rev. 2.0	Ammonia-N	98.5	93.1	91.8				0.758
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101						0.242
	Kjeldahl Nitrogen	103	93.9	98.4				3.01
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	104				1.45
EPA 365.1 Rev. 2.0	Total-P	99.3	100	100				0.249
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	92.9	94.2				1.39
SM 2120 B	Color (true)	98.6					0.649	
SM 2320 B-97	Total Alkalinity	103					1.13	
SM 2540 C-97	TDS						0.962	
SM 4500 F-C-97	Fluoride	97.8	102	102				0.0
SM 5310 B-00	Organic Carbon	93.5	94.0	95.7				1.43
	Organic Carbon	97.6	104					0.286

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2012015, 2012016, 2012021
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2012031
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2012031
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2012015, 2012016, 2012021
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2012015, 2012016, 2012021
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2012017, 2012018, 2012022
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2012017, 2012018, 2012022
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2012017, 2012018, 2012022
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2012017, 2012018, 2012022
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2012019, 2012020, 2012023
SM 2120 B / E31780	True Color measured at 450 nm	2012015, 2012016, 2012021
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2012015, 2012016, 2012021
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2012015, 2012016, 2012021

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2012015, 2012016, 2012021
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2012015, 2012016, 2012021
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2012017, 2012018, 2012022

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	07/31/2018			07/31/2018 14:19	Megan Treadwell	2012015, 2012016, 2012021
EPA 200.7 Rev. 4.4	07/31/2018	08/01/2018 15:30	Elliott D. Healy	08/02/2018 16:00	Betina Topolski	2012031
EPA 200.8 Rev. 5.4	07/31/2018	08/01/2018 15:30	Elliott D. Healy	08/04/2018 03:55	Allison Taylor	2012031
EPA 300.0 Rev. 2.1	07/31/2018			08/03/2018 03:41	Lipi Saha	2012015
	07/31/2018			08/03/2018 03:53	Lipi Saha	2012016
	07/31/2018			08/03/2018 04:05	Lipi Saha	2012021
EPA 350.1 Rev. 2.0	07/31/2018			08/06/2018 13:53	Julia Storbeck	2012017
	07/31/2018			08/06/2018 13:55	Julia Storbeck	2012018
	07/31/2018			08/06/2018 13:56	Julia Storbeck	2012022
EPA 351.2 Rev. 2.0	07/31/2018	08/02/2018 11:00	Adrian Shelby	08/03/2018 09:23	Joseph Suarez	2012017
	07/31/2018	08/02/2018 11:00	Adrian Shelby	08/03/2018 09:36	Joseph Suarez	2012018
	07/31/2018	08/02/2018 11:00	Adrian Shelby	08/03/2018 09:37	Joseph Suarez	2012022
EPA 353.2 Rev. 2.0	07/31/2018			08/01/2018 12:28	Lauren Bottorf	2012017
	07/31/2018			08/01/2018 12:29	Lauren Bottorf	2012018
	07/31/2018			08/01/2018 12:30	Lauren Bottorf	2012022
EPA 365.1 Rev. 2.0	07/31/2018	08/02/2018 11:50	Sima Feizi	08/03/2018 09:29	Beverly Y. Sanders	2012017
	07/31/2018	08/02/2018 11:50	Sima Feizi	08/03/2018 09:31	Beverly Y. Sanders	2012018
	07/31/2018	08/02/2018 11:50	Sima Feizi	08/03/2018 09:32	Beverly Y. Sanders	2012022
EPA 365.1 Rev. 2.0 dissolved	07/31/2018			07/31/2018 15:02	Julia Storbeck	2012019
	07/31/2018			07/31/2018 15:03	Julia Storbeck	2012020, 2012023
SM 2120 B	07/31/2018			07/31/2018 15:30	Tanya Welborn	2012015, 2012016
	07/31/2018			07/31/2018 15:31	Tanya Welborn	2012021
SM 2320 B-97	07/31/2018			08/03/2018 04:47	Dale L. Simmons	2012015
	07/31/2018			08/03/2018 04:57	Dale L. Simmons	2012016
	07/31/2018			08/03/2018 05:07	Dale L. Simmons	2012021
SM 2540 C-97	07/31/2018			08/03/2018 16:45	Yijie Li	2012015, 2012016, 2012021
SM 2540 D-97	07/31/2018			08/03/2018 16:45	Yijie Li	2012015, 2012016, 2012021
SM 4500 F-C-97	07/31/2018			08/03/2018 04:47	Dale L. Simmons	2012015
	07/31/2018			08/03/2018 04:57	Dale L. Simmons	2012016
	07/31/2018			08/03/2018 05:07	Dale L. Simmons	2012021
SM 5310 B-00	07/31/2018			08/04/2018 08:26	Julia Storbeck	2012017
	07/31/2018			08/04/2018 08:40	Julia Storbeck	2012018
	07/31/2018			08/14/2018 13:59	Megan Treadwell	2012022