

Chemical Analysis Report

SO-DIST-2018-08-02-01

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

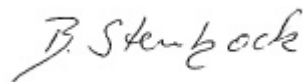
Event Description: **Charlotte Gators**
Request ID: **RQ-2018-08-06-43**
Customer: **SO-DIST**
Project ID: **SMP**

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 21-AUG-2018 18:53



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: Alligator @ Burnt Store

Collection Date/Time: 08/01/2018 10:50

Field ID: G2SD0016_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2012649	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P349587	
	EPA 300.0 Rev. 2.1	Chloride	28		mg Cl/L	P349707	
		Sulfate	7.6		mg SO4/L	P349708	
	SM 2120 B	Color (true)	140		PCU	P349582	
	SM 2320 B-97	Total Alkalinity	140		mg CaCO3/L	P350017	
	SM 2540 C-97	TDS	234		mg/L	P349822	
	SM 2540 D-97	TSS	6	I	mg/L	P349819	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P350020	
2012650	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P349810	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.79		mg N/L	P349666	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.040		mg N/L	P349614	
	EPA 365.1 Rev. 2.0	Total-P	0.059		mg P/L	P349671	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P349849	
2012651	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P349578	

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: Alligator @ Burnt Store

Collection Date/Time: 08/01/2018 10:45

Field ID: G2SD0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2012637	EPA 180.1 Rev. 2.0	Turbidity	5.7		NTU	P349586	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P349707	
		Sulfate	7.4		mg SO4/L	P349708	
	SM 2120 B	Color (true)	140		PCU	P349582	
	SM 2320 B-97	Total Alkalinity	140		mg CaCO3/L	P350016	
	SM 2540 C-97	TDS	236		mg/L	P349822	
	SM 2540 D-97	TSS	6	I	mg/L	P349819	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P350019	
2012640	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P349810	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P349666	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.040		mg N/L	P349614	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P349671	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P349849	
2012643	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P349578	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Alligator N@JonesLoopRd

Collection Date/Time: 08/01/2018 12:35

Field ID: G2SD0032

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2012638	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P349586	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P349707	
		Sulfate	16		mg SO4/L	P349708	
	SM 2120 B	Color (true)	82		PCU	P349582	
	SM 2320 B-97	Total Alkalinity	64		mg CaCO3/L	P350016	
	SM 2540 C-97	TDS	153		mg/L	P349822	
	SM 2540 D-97	TSS	5	I	mg/L	P349819	
	SM 4500 F-C-97	Fluoride	0.079	I	mg F/L	P350019	
2012641	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P349810	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P349666	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.020		mg N/L	P349614	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P349671	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P349849	
2012644	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P349578	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Alligator S@JonesLoopRd

Collection Date/Time: 08/01/2018 11:40

Field ID: G2SD0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2012639	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P349586	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P349707	
		Sulfate	0.99		mg SO4/L	P349708	
	SM 2120 B	Color (true)	110		PCU	P349582	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P350017	
	SM 2540 C-97	TDS	69		mg/L	P349822	
	SM 2540 D-97	TSS	2	I	mg/L	P349819	
	SM 4500 F-C-97	Fluoride	0.038	I	mg F/L	P350020	
2012642	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P349810	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P349666	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P349614	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P349671	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P349849	
2012645	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P349578	

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: ClevelandCemeteryDitch

Collection Date/Time: 08/01/2018 13:25

Field ID: G3SD0076

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2012646	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P349586	
	SM 2320 B-97	Total Alkalinity	93		mg CaCO3/L	P350017	
	SM 2540 D-97	TSS	2	U	mg/L	P349819	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P350020	
2012647	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P349810	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P349666	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.027		mg N/L	P349614	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P349671	
	SM 5310 B-00	Organic Carbon	30		mg C/L	P349849	
2012648	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P349578	
2012682	EPA 200.7 Rev. 4.4	Iron	480		ug/L	P349576	
		Zinc	14	I	ug/L	P349576	
	EPA 200.8 Rev. 5.4	Arsenic	6.63		ug/L	P349576	
		Cadmium	0.020	U	ug/L	P349576	
		Chromium	0.81	I	ug/L	P349576	
		Copper	1.65		ug/L	P349576	
		Lead	0.43		ug/L	P349576	
		Nickel	0.67	I	ug/L	P349576	
		Silver	0.010	U	ug/L	P349576	

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: P349586

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349587

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349576

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349576

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: P349707

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349708

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349810

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349666

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: P349614

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349671

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349578

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

Reference Method: SM 2120 B
Batch ID: P349582

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P350016

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

Reference Method: SM 2320 B-97
Batch ID: P350017

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

Reference Method: SM 2540 C-97
Batch ID: P349822

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349819

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350019

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P350020

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P349849

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: P349576

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	105		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349576

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.3		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	93.5		P	85 - 115
Copper	96.3		P	85 - 115
Lead	95.3		P	85 - 115
Nickel	98.2		P	85 - 115
Silver	97.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349707

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349810

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349666

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349614

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349671

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.0		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349578

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

Reference Method: SM 2120 B
Batch ID: P349582

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.4		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P350016

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P350017

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

Reference Method: SM 4500 F-C-97
Batch ID: P350019

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

Reference Method: SM 4500 F-C-97
Batch ID: P350020

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

Reference Method: SM 5310 B-00
Batch ID: P349849

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012229	Iron	107		P	80 - 120
2012229	Zinc	105		P	80 - 120
2012690	Iron	110	109	P/P	80 - 120
2012690	Zinc	107	108	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012229	Arsenic	102		P	80 - 120
2012229	Cadmium	103		P	80 - 120
2012229	Chromium	95.7		P	80 - 120
2012229	Copper	98.8		P	80 - 120
2012229	Lead	98.2		P	80 - 120
2012229	Nickel	101		P	80 - 120
2012229	Silver	99.0		P	80 - 120
2012690	Arsenic	99.4	104	P/P	80 - 120
2012690	Cadmium	98.8	102	P/P	80 - 120
2012690	Chromium	94.1	97.1	P/P	80 - 120
2012690	Copper	93.8	98.4	P/P	80 - 120
2012690	Lead	94.3	97.8	P/P	80 - 120
2012690	Nickel	96.1	100	P/P	80 - 120
2012690	Silver	96.2	98.8	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012625	Chloride	100		P	90 - 110
2012655	Chloride	97.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012625	Sulfate	100		P	90 - 110
2012655	Sulfate	95.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349810

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012657	Ammonia-N	100	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349666

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012642	Kjeldahl Nitrogen	103	108	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012641	NO2NO3-N	99.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349671

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012641	Total-P	96.2	95.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349578

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012658	O-Phosphate-P	95.8	94.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P350020

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012921	Fluoride	97.8	97.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2012656	Organic Carbon	96.0	94.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012580	Turbidity	0.930	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012710	Turbidity	6.28	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P349576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012690	Iron	0.552	Spike	P	0 - 20
2012690	Zinc	0.608	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P349576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012690	Arsenic	4.00	Spike	P	0 - 20
2012690	Cadmium	3.50	Spike	P	0 - 20
2012690	Chromium	3.10	Spike	P	0 - 20
2012690	Copper	4.68	Spike	P	0 - 20
2012690	Lead	3.61	Spike	P	0 - 20
2012690	Nickel	3.90	Spike	P	0 - 20
2012690	Silver	2.68	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012625	Chloride	4.74	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012625	Sulfate	5.10	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012657	Ammonia-N	3.42	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349666

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012642	Kjeldahl Nitrogen	2.89	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012641	NO2NO3-N	1.81	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349671

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012641	Total-P	0.344	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349578

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012658	O-Phosphate-P	1.79	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P349582

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012625	Color (true)	2.59	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P350016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013532	Total Alkalinity	1.16	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P350017

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012921	Total Alkalinity	0.485	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P349822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012588	TDS	0.803	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P350019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2013532	Fluoride	0.471	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P350020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012921	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P349849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2012656	Organic Carbon	0.869	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: A85654

Included Lab Sample IDs: 2012643, 2012644, 2012645, 2012648, 2012651

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.0	98.1	P/P	90 - 110
O-Phosphate-P	99.0	97.0	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A85656

Included Lab Sample IDs: 2012637, 2012638, 2012639, 2012649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A85657

Included Lab Sample IDs: 2012637, 2012638, 2012639, 2012646, 2012649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105
Turbidity	103	102	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A85677

Included Lab Sample IDs: 2012640, 2012641, 2012642, 2012647, 2012650

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A85708

Included Lab Sample IDs: 2012682

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	103	P/P	90 - 110
Zinc	106	106	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A85712

Included Lab Sample IDs: 2012637, 2012638, 2012639, 2012649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	105	105	P/P	90 - 110
Sulfate	104	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A85716

Included Lab Sample IDs: 2012682

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	102	P/P	90 - 110
Cadmium	100	101	P/P	90 - 110
Copper	100	100	P/P	90 - 110
Lead	98.5	99.2	P/P	90 - 110
Nickel	100	98.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A85716

Included Lab Sample IDs: 2012682

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	95.4	95.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A85718

Included Lab Sample IDs: 2012640, 2012647, 2012650

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A85720

Included Lab Sample IDs: 2012641, 2012642

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A85727

Included Lab Sample IDs: 2012640, 2012641, 2012642, 2012647, 2012650

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A85738

Included Lab Sample IDs: 2012682

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	97.3	98.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A85755

Included Lab Sample IDs: 2012640, 2012641, 2012642, 2012647, 2012650

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

Reference Method: SM 5310 B-00

Run ID: A85775

Included Lab Sample IDs: 2012640, 2012641, 2012642, 2012647, 2012650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	97.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A85838

Included Lab Sample IDs: 2012637, 2012638, 2012639, 2012646, 2012649

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A85838

Included Lab Sample IDs: 2012637, 2012638, 2012639, 2012646, 2012649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	100	P/P	90 - 110
Fluoride	99.5	100	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision	MS
							SMP	
EPA 180.1 Rev. 2.0	Turbidity						0.930	
	Turbidity						6.28	
EPA 200.7 Rev. 4.4	Iron	105	107	110	109			0.552
	Zinc	103	105	107	108			0.608
EPA 200.8 Rev. 5.4	Arsenic	99.3	102	99.4	104			4.00
	Cadmium	101	103	98.8	102			3.50
	Chromium	93.5	95.7	94.1	97.1			3.10
	Copper	96.3	98.8	93.8	98.4			4.68
	Lead	95.3	98.2	94.3	97.8			3.61
	Nickel	98.2	101	96.1	100			3.90
	Silver	97.6	99.0	96.2	98.8			2.68
EPA 300.0 Rev. 2.1	Chloride	98.7	100	97.1			4.74	
	Sulfate	97.3	100	95.2			5.10	
EPA 350.1 Rev. 2.0	Ammonia-N	101	100	104				3.42
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.0	103	108				2.89
EPA 353.2 Rev. 2.0	NO2NO3-N	101	99.4	101				1.81
EPA 365.1 Rev. 2.0	Total-P	95.0	96.2	95.9				0.344
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	95.8	94.1				1.79
SM 2120 B	Color (true)	99.4					2.59	
SM 2320 B-97	Total Alkalinity	105					1.16	
	Total Alkalinity	103					0.485	
SM 2540 C-97	TDS						0.803	
SM 4500 F-C-97	Fluoride	97.3						0.471
	Fluoride	97.8	97.8	97.8				0.0
SM 5310 B-00	Organic Carbon	96.4	96.0	94.9				0.869

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2012637, 2012638, 2012639, 2012646, 2012649
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2012682
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2012682
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2012637, 2012638, 2012639, 2012649
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2012637, 2012638, 2012639, 2012649
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2012640, 2012641, 2012642, 2012647, 2012650
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2012640, 2012641, 2012642, 2012647, 2012650
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2012640, 2012641, 2012642, 2012647, 2012650
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2012640, 2012641, 2012642, 2012647, 2012650
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2012643, 2012644, 2012645, 2012648, 2012651
SM 2120 B / E31780	True Color measured at 450 nm	2012637, 2012638, 2012639, 2012649
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2012637, 2012638, 2012639, 2012646, 2012649
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2012637, 2012638, 2012639, 2012649
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2012637, 2012638, 2012639, 2012646, 2012649

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2012637, 2012638, 2012639, 2012646, 2012649
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2012640, 2012641, 2012642, 2012647, 2012650

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	08/02/2018			08/02/2018 16:39	William L. Brown IV	2012637, 2012638, 2012639, 2012646, 2012649
EPA 200.7 Rev. 4.4	08/02/2018	08/02/2018 15:20	Elliott D. Healy	08/03/2018 18:53	Betina Topolski	2012682
EPA 200.8 Rev. 5.4	08/02/2018	08/02/2018 15:20	Elliott D. Healy	08/06/2018 21:14	Allison Taylor	2012682
	08/02/2018	08/02/2018 15:20	Elliott D. Healy	08/07/2018 20:48	Allison Taylor	2012682
EPA 300.0 Rev. 2.1	08/02/2018			08/06/2018 17:27	Lipi Saha	2012637
	08/02/2018			08/06/2018 17:39	Lipi Saha	2012638
	08/02/2018			08/06/2018 17:51	Lipi Saha	2012639
	08/02/2018			08/06/2018 18:03	Lipi Saha	2012649
EPA 350.1 Rev. 2.0	08/02/2018			08/08/2018 14:25	Julia Storbeck	2012640
	08/02/2018			08/08/2018 14:26	Julia Storbeck	2012641
	08/02/2018			08/08/2018 14:28	Julia Storbeck	2012642
	08/02/2018			08/08/2018 14:29	Julia Storbeck	2012647
	08/02/2018			08/08/2018 14:31	Julia Storbeck	2012650
EPA 351.2 Rev. 2.0	08/02/2018	08/06/2018 15:40	Adrian Shelby	08/07/2018 12:16	Joseph Suarez	2012640
	08/02/2018	08/06/2018 15:40	Adrian Shelby	08/07/2018 12:17	Joseph Suarez	2012641
	08/02/2018	08/06/2018 15:40	Adrian Shelby	08/07/2018 12:19	Joseph Suarez	2012642
	08/02/2018	08/06/2018 15:40	Adrian Shelby	08/07/2018 12:24	Joseph Suarez	2012647
	08/02/2018	08/06/2018 15:40	Adrian Shelby	08/07/2018 12:25	Joseph Suarez	2012650
EPA 353.2 Rev. 2.0	08/02/2018			08/03/2018 12:05	Lauren Bottorf	2012641
	08/02/2018			08/03/2018 12:11	Lauren Bottorf	2012640
	08/02/2018			08/03/2018 12:12	Lauren Bottorf	2012650
	08/02/2018			08/03/2018 12:13	Lauren Bottorf	2012642
	08/02/2018			08/03/2018 12:15	Lauren Bottorf	2012647
EPA 365.1 Rev. 2.0	08/02/2018	08/06/2018 13:35	Sima Feizi	08/07/2018 10:35	Beverly Y. Sanders	2012640
	08/02/2018	08/06/2018 13:35	Sima Feizi	08/07/2018 10:37	Beverly Y. Sanders	2012647
	08/02/2018	08/06/2018 13:35	Sima Feizi	08/07/2018 10:38	Beverly Y. Sanders	2012650
	08/02/2018	08/06/2018 13:35	Sima Feizi	08/07/2018 12:03	Beverly Y. Sanders	2012641
	08/02/2018	08/06/2018 13:35	Sima Feizi	08/07/2018 12:04	Beverly Y. Sanders	2012642
EPA 365.1 Rev. 2.0 dissolved	08/02/2018			08/02/2018 15:30	Julia Storbeck	2012643
	08/02/2018			08/02/2018 15:31	Julia Storbeck	2012651
	08/02/2018			08/02/2018 15:44	Julia Storbeck	2012644
	08/02/2018			08/02/2018 15:45	Julia Storbeck	2012645
	08/02/2018			08/02/2018 15:46	Julia Storbeck	2012648
SM 2120 B	08/02/2018			08/02/2018 15:39	Tanya Welborn	2012637
	08/02/2018			08/02/2018 15:40	Tanya Welborn	2012638, 2012639
	08/02/2018			08/02/2018 15:41	Tanya Welborn	2012649
SM 2320 B-97	08/02/2018			08/10/2018 09:46	Dale L. Simmons	2012637
	08/02/2018			08/10/2018 09:57	Dale L. Simmons	2012638
	08/02/2018			08/10/2018 11:30	Dale L. Simmons	2012639

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	08/02/2018			08/10/2018 11:41	Dale L. Simmons	2012646
	08/02/2018			08/10/2018 11:51	Dale L. Simmons	2012649
SM 2540 C-97	08/02/2018			08/03/2018 17:00	William L. Brown IV	2012637, 2012638, 2012639, 2012649
SM 2540 D-97	08/02/2018			08/03/2018 17:05	William L. Brown IV	2012637, 2012638, 2012639, 2012646, 2012649
SM 4500 F-C-97	08/02/2018			08/10/2018 09:46	Dale L. Simmons	2012637
	08/02/2018			08/10/2018 09:57	Dale L. Simmons	2012638
	08/02/2018			08/10/2018 11:30	Dale L. Simmons	2012639
	08/02/2018			08/10/2018 11:41	Dale L. Simmons	2012646
	08/02/2018			08/10/2018 11:51	Dale L. Simmons	2012649
SM 5310 B-00	08/02/2018			08/07/2018 21:22	Julia Storbeck	2012640
	08/02/2018			08/07/2018 21:36	Julia Storbeck	2012641
	08/02/2018			08/07/2018 21:50	Julia Storbeck	2012642
	08/02/2018			08/07/2018 22:04	Julia Storbeck	2012647
	08/02/2018			08/07/2018 22:18	Julia Storbeck	2012650