

Chemical Analysis Report

SE-DIST-2018-08-10-01

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

Event Description: **SMP- South Lakes**
Request ID: **RQ-2018-02-26-26**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
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2199 South Rock Road
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 29-AUG-2018 10:40

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: Nutrients and Pesticides.

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: Pine Lake

Collection Date/Time: 08/09/2018 12:10

Field ID: G3SE0003

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2016182	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P349936	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P350126	
		Sulfate	11		mg SO4/L	P350127	
	SM 2120 B	Color (true)	36		PCU	P349933	
	SM 2320 B-97	Total Alkalinity	144		mg CaCO3/L	P350148	
	SM 2540 C-97	TDS	221		mg/L	P350512	
	SM 2540 D-97	TSS	6	I	mg/L	P350395	
	SM 4500 F-C-97	Fluoride	0.082	I	mg F/L	P350151	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P350240	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.87		mg N/L	P350161	
2016183	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P350258	
	EPA 365.1 Rev. 2.0	Total-P	0.071		mg P/L	P350354	
	SM 5310 B-00	Organic Carbon	9.2		mg C/L	P350253	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	I	mg P/L	P349928	
	dissolved						
2016217	EPA 8321B	2,4-D	0.078		ug/L	P349855	
		Bentazon	0.019		ug/L	P349855	
		MCP	0.0020	U	ug/L	P349855	
		Triclopyr**	0.0040	U	ug/L	P349855	
		Imidacloprid	0.017		ug/L	P349855	
		Diuron	0.0038	I	ug/L	P349855	
		Pyraclostrobin**	0.0020	U	ug/L	P349855	
		Primidone**	0.0040	U	ug/L	P349855	
		Linuron	0.0040	U	ug/L	P349855	
		Acetaminophen**	0.0080	U	ug/L	P349855	
		Fenuron	0.016	U	ug/L	P349855	
		Imazapyr**	0.71		ug/L	P349855	
		Carbamazepine**	8.0E-04	U	ug/L	P349855	
		Fluridone**	0.14		ug/L	P349855	
		Hydrocodone**	8.0E-04	U	ug/L	P349855	
		Sucralose**	0.14		ug/L	P349904	

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: ACME (South Sector) @ Lake Worth

Collection Date/Time: 08/09/2018 13:00

Field ID: G3SE0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2016179	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P349936	
	EPA 300.0 Rev. 2.1	Chloride	46		mg Cl/L	P350126	
		Sulfate	34		mg SO4/L	P350127	
		Color (true)	35		PCU	P349933	
	SM 2320 B-97	Total Alkalinity	211		mg CaCO3/L	P350148	
	SM 2540 C-97	TDS	358		mg/L	P350512	
	SM 2540 D-97	TSS	4	I	mg/L	P350395	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P350151	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P350240	
2016180	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P350158	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.067		mg N/L	P350258	
	EPA 365.1 Rev. 2.0	Total-P	0.045		mg P/L	P350354	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P350253	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P349928	
2016181	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P349928	

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: South Shore Blvd 2

Collection Date/Time: 08/09/2018 13:30

Field ID: G3SE0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2016176	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P349936	
	EPA 300.0 Rev. 2.1	Chloride	57		mg Cl/L	P350126	
		Sulfate	31		mg SO4/L	P350127	
	SM 2120 B	Color (true)	58	A	PCU	P349933	
	SM 2320 B-97	Total Alkalinity	211		mg CaCO3/L	P350148	
	SM 2540 C-97	TDS	385		mg/L	P350512	
	SM 2540 D-97	TSS	2	I	mg/L	P350395	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P350151	
2016177	EPA 350.1 Rev. 2.0	Ammonia-N	0.064		mg N/L	P350240	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P350158	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.039		mg N/L	P350258	
	EPA 365.1 Rev. 2.0	Total-P	0.083		mg P/L	P350354	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P350253	
2016178	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P349928	

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: P349936

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350126

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350127

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350240

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350158

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350161

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350258

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350354

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349928

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P349855

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	4.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P349904

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P349933

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P350148

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P350512

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P350395

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P350151

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: P350253

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350126

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350127

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350158

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350161

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350258

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: P350354

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349928

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

Reference Method: EPA 8321B
Batch ID: P349855

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	94.9		P	40 - 150
Acetaminophen	89.9		P	30 - 150
Bentazon	83.9		P	30 - 150
Carbamazepine	76.0		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P349855

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Diuron	67.0		P	40 - 150
Fenuron	92.7		P	40 - 150
Fluridone	75.1		P	40 - 150
Hydrocodone	78.4		P	40 - 150
Imazapyr	68.9		P	40 - 150
Imidacloprid	101		P	40 - 160
Linuron	60.2		P	40 - 150
MCPP	94.8		P	40 - 150
Primidone	82.1		P	40 - 150
Pyraclostrobin	67.5		P	40 - 150
Triclopyr	103		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P349904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	99.5		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P349933

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P350148

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

Reference Method: SM 4500 F-C-97
Batch ID: P350151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350253

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350126

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015866	Chloride	96.2		P	90 - 110
2016079	Chloride	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350127

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015866	Sulfate	98.5		P	90 - 110
2016079	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2016139	Ammonia-N	95.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350158

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2016177	Kjeldahl Nitrogen	99.6	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2016183	Kjeldahl Nitrogen	93.8	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2016131	NO2NO3-N	98.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350354

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2016183	Total-P	95.8	95.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349928

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2016125	O-Phosphate-P	97.5	97.4	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P349855

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015801	2,4-D	136	113	P/P	40 - 150
2015801	Acetaminophen	91.3	94.3	P/P	30 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P349855

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2015801	Bentazon	43.5	36.8	P/P	30 - 150
2015801	Carbamazepine	69.2	66.0	P/P	40 - 150
2015801	Diuron	54.3	50.9	P/P	40 - 150
2015801	Fenuron	80.3	70.7	P/P	40 - 150
2015801	Fluridone	70.1	72.1	P/P	40 - 150
2015801	Hydrocodone	65.1	68.0	P/P	40 - 150
2015801	Imazapyr	77.8	81.2	P/P	40 - 150
2015801	Imidacloprid	130	130	P/P	40 - 160
2015801	Linuron	52.3	53.3	P/P	40 - 150
2015801	MCPP	111	102	P/P	40 - 150
2015801	Primidone	77.7	78.8	P/P	40 - 150
2015801	Pyraclostrobin	68.5	74.6	P/P	40 - 150
2015801	Triclopyr	148	136	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P349904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2016146	Sucralose	97.2	92.5	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P350151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2016260	Fluoride	99.4	98.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2016177	Organic Carbon	95.2	96.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349936

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016079	Turbidity	2.23	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350126

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015866	Chloride	1.12	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350127

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015866	Sulfate	1.79	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016139	Ammonia-N	2.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350158

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016177	Kjeldahl Nitrogen	1.53	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016183	Kjeldahl Nitrogen	2.96	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016131	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016183	Total-P	0.110	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349928

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016125	O-Phosphate-P	0.0525	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P349855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2015801	2,4-D	17.3	Spike	P	0 - 30
2015801	Acetaminophen	3.18	Spike	P	0 - 30
2015801	Bentazon	15.3	Spike	P	0 - 30
2015801	Carbamazepine	4.76	Spike	P	0 - 30
2015801	Diuron	5.74	Spike	P	0 - 30
2015801	Fenuron	12.7	Spike	P	0 - 30
2015801	Fluridone	2.75	Spike	P	0 - 30
2015801	Hydrocodone	4.37	Spike	P	0 - 30
2015801	Imazapyr	2.10	Spike	P	0 - 30
2015801	Imidacloprid	0.358	Spike	P	0 - 30
2015801	Linuron	1.86	Spike	P	0 - 30
2015801	MCP	8.17	Spike	P	0 - 30
2015801	Primidone	1.36	Spike	P	0 - 30
2015801	Pyraclostrobin	8.42	Spike	P	0 - 30
2015801	Triclopyr	8.20	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P349904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016146	Sucralose	4.98	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P349933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016176	Color (true)	2.35	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P350148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016260	Total Alkalinity	0.622	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P350512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016130	TDS	3.46	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P350151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016260	Fluoride	0.953	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P350253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2016177	Organic Carbon	0.875	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 Surrogates

Lab Sample ID: 2016217
Field Sample ID: G3SE0003

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	98.2	P	30 - 160
EPA 8321B	Acetaminophen-d4	78.3	P	30 - 160
EPA 8321B	Carbamazepine-d10	52.3	P	30 - 160
EPA 8321B	Diuron-d6	47.3	P	30 - 160
EPA 8321B	Primidone-d5	71.2	P	30 - 160
EPA 8321B	Sucralose-d6	71.8	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A855929
Included Lab Sample IDs: 2016217

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	79.0	87.4	P/P	50 - 150
Bentazon	75.9	82.0	P/P	50 - 160
MCPP	74.0	80.8	P/P	50 - 150
Triclopyr	90.0	81.7	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85808
Included Lab Sample IDs: 2016178, 2016181, 2016184

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.9	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A85810
Included Lab Sample IDs: 2016176, 2016179, 2016182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.3	99.4	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85811
Included Lab Sample IDs: 2016176, 2016179, 2016182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	102	P/P	95 - 105

Reference Method: EPA 8321B
Run ID: A85816
Included Lab Sample IDs: 2016217

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	88.2	96.0	P/P	60 - 160

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85845
Included Lab Sample IDs: 2016176, 2016179, 2016182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	99.0	P/P	90 - 110
Sulfate	101	99.7	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A85893
Included Lab Sample IDs: 2016176, 2016179, 2016182

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A85893

Included Lab Sample IDs: 2016176, 2016179, 2016182

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A85932

Included Lab Sample IDs: 2016177, 2016180, 2016183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A85934

Included Lab Sample IDs: 2016177, 2016180, 2016183

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

Reference Method: SM 5310 B-00

Run ID: A85935

Included Lab Sample IDs: 2016177, 2016180, 2016183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A85940

Included Lab Sample IDs: 2016177, 2016180

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A85955

Included Lab Sample IDs: 2016183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.5	97.6	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A85967

Included Lab Sample IDs: 2016217

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	108	107	P/P	60 - 150
Carbamazepine	110	109	P/P	60 - 150
Diuron	92.7	94.3	P/P	60 - 150
Fenuron	104	104	P/P	60 - 150
Fluridone	96.3	96.2	P/P	60 - 160
Hydrocodone	100	95.4	P/P	60 - 150
Imazapyr	91.7	80.7	P/P	50 - 150
Imidacloprid	110	107	P/P	60 - 150
Linuron	95.3	93.1	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A85967

Included Lab Sample IDs: 2016217

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Primidone	98.1	106	P/P	60 - 150
Pyraclostrobin	94.0	93.5	P/P	60 - 150

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A85998

Included Lab Sample IDs: 2016177, 2016183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86011

Included Lab Sample IDs: 2016180

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	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	MS
EPA 180.1 Rev. 2.0	Turbidity				2.23	
EPA 300.0 Rev. 2.1	Chloride	98.1	96.2	99.8	1.12	
	Sulfate	97.6	98.5	100	1.79	
EPA 350.1 Rev. 2.0	Ammonia-N	96.8	95.8	100		2.59
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	99.6	103		1.53
	Kjeldahl Nitrogen	101	93.8	98.8		2.96
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	98.0	98.0		0.0
EPA 365.1 Rev. 2.0	Total-P	98.6	95.8	95.7		0.110
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	97.5	97.4		0.0525
EPA 8321B	2,4-D	94.9	136	113		17.3
	Acetaminophen	89.9	91.3	94.3		3.18
	Bentazon	83.9	43.5	36.8		15.3
	Carbamazepine	76.0	69.2	66.0		4.76
	Diuron	67.0	54.3	50.9		5.74
	Fenuron	92.7	80.3	70.7		12.7
	Fluridone	75.1	70.1	72.1		2.75
	Hydrocodone	78.4	65.1	68.0		4.37
	Imazapyr	68.9	77.8	81.2		2.10
	Imidacloprid	101	130	130		0.358
	Linuron	60.2	52.3	53.3		1.86
	MCPP	94.8	111	102		8.17
	Primidone	82.1	77.7	78.8		1.36
	Pyraclostrobin	67.5	68.5	74.6		8.42
	Sucralose	99.5	97.2	92.5		4.98
	Triclopyr	103	148	136		8.20
SM 2120 B	Color (true)	96.3			2.35	
SM 2320 B-97	Total Alkalinity	103			0.622	
SM 2540 C-97	TDS				3.46	
SM 4500 F-C-97	Fluoride	98.5	99.4	98.0		0.953
SM 5310 B-00	Organic Carbon	95.8	95.2	96.8		0.875

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2016176, 2016179, 2016182
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2016176, 2016179, 2016182
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2016176, 2016179, 2016182
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2016177, 2016180, 2016183
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2016177, 2016180, 2016183
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2016177, 2016180, 2016183
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2016177, 2016180, 2016183
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2016178, 2016181, 2016184
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2016217
SM 2120 B / E31780	True Color measured at 450 nm	2016176, 2016179, 2016182
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2016176, 2016179, 2016182
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2016176, 2016179, 2016182
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2016176, 2016179, 2016182

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2016176, 2016179, 2016182
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2016177, 2016180, 2016183

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	08/10/2018			08/10/2018 15:00	Tanya Welborn	2016176, 2016179, 2016182
EPA 300.0 Rev. 2.1	08/10/2018			08/14/2018 19:59	Lipi Saha	2016176
	08/10/2018			08/14/2018 20:11	Lipi Saha	2016179
	08/10/2018			08/14/2018 20:23	Lipi Saha	2016182
EPA 350.1 Rev. 2.0	08/10/2018			08/16/2018 12:03	Ping Hua	2016177
	08/10/2018			08/16/2018 12:04	Ping Hua	2016180
	08/10/2018			08/16/2018 12:06	Ping Hua	2016183
EPA 351.2 Rev. 2.0	08/10/2018	08/15/2018 16:00	Adrian Shelby	08/16/2018 15:34	Joseph Suarez	2016177
	08/10/2018	08/15/2018 16:00	Adrian Shelby	08/16/2018 15:39	Joseph Suarez	2016180
	08/10/2018	08/15/2018 16:00	Adrian Shelby	08/17/2018 09:37	Joseph Suarez	2016183
EPA 353.2 Rev. 2.0	08/10/2018			08/16/2018 14:34	Lauren Bottorf	2016177
	08/10/2018			08/16/2018 14:36	Lauren Bottorf	2016180
	08/10/2018			08/16/2018 14:37	Lauren Bottorf	2016183
EPA 365.1 Rev. 2.0	08/10/2018	08/17/2018 14:01	Sima Feizi	08/20/2018 09:51	Beverly Y. Sanders	2016183
	08/10/2018	08/17/2018 14:01	Sima Feizi	08/20/2018 09:57	Beverly Y. Sanders	2016177
	08/10/2018	08/17/2018 14:01	Sima Feizi	08/20/2018 14:56	Beverly Y. Sanders	2016180
EPA 365.1 Rev. 2.0 dissolved	08/10/2018			08/10/2018 15:11	Megan Treadwell	2016178
	08/10/2018			08/10/2018 15:12	Megan Treadwell	2016181, 2016184
EPA 8321B	08/10/2018	08/10/2018 16:00	Hoor Shaik	08/12/2018 03:09	Mohammad Ghaffari	2016217
	08/10/2018	08/13/2018 10:00	Hoor Shaik	08/15/2018 07:13	Juyoung Kim	2016217
	08/10/2018	08/13/2018 10:00	Hoor Shaik	08/16/2018 13:17	Juyoung Kim	2016217
SM 2120 B	08/10/2018			08/10/2018 15:51	Tanya Welborn	2016176
	08/10/2018			08/10/2018 15:52	Tanya Welborn	2016179
	08/10/2018			08/10/2018 15:53	Tanya Welborn	2016182
SM 2320 B-97	08/10/2018			08/15/2018 07:31	Dale L. Simmons	2016176
	08/10/2018			08/15/2018 07:42	Dale L. Simmons	2016179
	08/10/2018			08/15/2018 07:52	Dale L. Simmons	2016182
SM 2540 C-97	08/10/2018			08/15/2018 15:06	Yijie Li	2016176, 2016179, 2016182
SM 2540 D-97	08/10/2018			08/15/2018 15:06	Yijie Li	2016176, 2016179, 2016182
SM 4500 F-C-97	08/10/2018			08/15/2018 07:31	Dale L. Simmons	2016176
	08/10/2018			08/15/2018 07:42	Dale L. Simmons	2016179
	08/10/2018			08/15/2018 07:52	Dale L. Simmons	2016182
SM 5310 B-00	08/10/2018			08/16/2018 06:16	Megan Treadwell	2016177
	08/10/2018			08/16/2018 07:12	Megan Treadwell	2016180
	08/10/2018			08/16/2018 07:25	Megan Treadwell	2016183