

Chemical Analysis Report

SO-DIST-2018-05-31-02

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

Event Description: **SFM: Oak, Hendry, Winkler, Manuel**
Request ID: **RQ-2018-06-04-54**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Nicole Reistad

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 18-JUN-2018 14:02

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 "T" and a long, sweeping underline.

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: MANUEL BRANCH @ BROADWAY

Collection Date/Time: 05/30/2018 08:15

Field ID: G3SD0078

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1996311	EPA 8321B	2,4-D	0.0085		ug/L	P346184	
		Bentazon	0.0086		ug/L	P346184	MS
		MCP	0.0020	U	ug/L	P346184	
		Triclopyr**	0.0040	U	ug/L	P346184	
		Imidacloprid	0.012		ug/L	P346184	
		Diuron	0.023		ug/L	P346184	
		Pyraclostrobin**	0.0020	U	ug/L	P346184	
		Primidone**	0.0040	U	ug/L	P346184	
		Linuron	0.0040	U	ug/L	P346184	
		Acetaminophen**	0.015	I	ug/L	P346184	
		Fenuron	0.016	U	ug/L	P346184	
		Imazapyr**	0.0040	U	ug/L	P346184	
		Carbamazepine**	4.0E-04	U	ug/L	P346184	
		Fluridone**	4.0E-04	U	ug/L	P346184	
		Hydrocodone**	8.0E-04	U	ug/L	P346184	
		Sucralose**	0.038	I	ug/L	P346245	
		Glyphosate**	3.3		ug/L	P346245	
		AMPA**	1.3		ug/L	P346245	
		Endothall**	0.10	U	ug/L	P346245	
		Glufosinate**	0.10	U	ug/L	P346245	

Sample Location: WINKLER CANAL @ PRINCETON

Collection Date/Time: 05/30/2018 08:50

Field ID: G3SD0055

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1996294	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P346210	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P346344	
		Sulfate	11		mg SO4/L	P346345	
	SM 2120 B	Color (true)	15		PCU	P346197	
	SM 2320 B-97	Total Alkalinity	56		mg CaCO3/L	P346303	
	SM 2540 C-97	TDS	115		mg/L	P346475	
	SM 2540 D-97	TSS	2	I	mg/L	P346447	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P346304	
1996295	EPA 350.1 Rev. 2.0	Ammonia-N	0.046		mg N/L	P346624	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22		mg N/L	P346461	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P346267	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P346385	
	SM 5310 B-00	Organic Carbon	2.7		mg C/L	P346584	
1996296	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017		mg P/L	P346190	
1996312	EPA 8321B	2,4-D	0.0082		ug/L	P346184	
		Bentazon	0.0041		ug/L	P346184	MS
		MCP	0.0020	U	ug/L	P346184	
		Triclopyr**	0.0040	U	ug/L	P346184	
		Imidacloprid	0.015		ug/L	P346184	

Field ID: G3SD0055

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1996312	EPA 8321B	Diuron	0.0074	I	ug/L	P346184	
		Pyraclostrobin**	0.0020	U	ug/L	P346184	
		Primidone**	0.0040	U	ug/L	P346184	
		Linuron	0.0040	U	ug/L	P346184	
		Acetaminophen**	0.0080	U	ug/L	P346184	
		Fenuron	0.016	U	ug/L	P346184	
		Imazapyr**	0.033		ug/L	P346184	
		Carbamazepine**	4.0E-04	U	ug/L	P346184	
		Fluridone**	0.011		ug/L	P346184	
		Hydrocodone**	8.0E-04	U	ug/L	P346184	
		Sucralose**	0.042		ug/L	P346245	
		Glyphosate**	1.4		ug/L	P346245	
		AMPA**	0.36	I	ug/L	P346245	
		Endothal**	0.10	U	ug/L	P346245	
		Glufosinate**	0.10	U	ug/L	P346245	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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: OAK CREEK @ OAK CRK PRESERVE

Collection Date/Time: 05/30/2018 10:30

Field ID: G1SD0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1996300	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P346210	
	EPA 300.0 Rev. 2.1	Chloride	44		mg Cl/L	P346344	
		Sulfate	29		mg SO4/L	P346345	
	SM 2120 B	Color (true)	23		PCU	P346197	
	SM 2320 B-97	Total Alkalinity	267		mg CaCO3/L	P346303	
	SM 2540 C-97	TDS	414		mg/L	P346475	
	SM 2540 D-97	TSS	2	I	mg/L	P346447	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P346304	
1996301	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P346691	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P346461	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P346268	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P346386	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P346584	
1996302	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P346191	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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: HendryCrk@OldGladiolus

Collection Date/Time: 05/30/2018 09:30

Field ID: G1SD0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1996297	EPA 180.1 Rev. 2.0	Turbidity	6.3		NTU	P346210	
	SM 2320 B-97	Total Alkalinity	150		mg CaCO3/L	P346303	
	SM 2540 D-97	TSS	9	I	mg/L	P346447	
	SM 4500 F-C-97	Fluoride	0.25		mg F/L	P346304	
1996298	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P346691	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P346461	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P346267	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P346385	
	SM 5310 B-00	Organic Carbon	7.3		mg C/L	P346584	
1996299	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P346190	

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: P346210

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P346344

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P346345

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P346624

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P346691

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P346461

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: P346267

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346268

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346385

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346386

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346190

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346191

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

Reference Method: EPA 8321B
Batch ID: P346184

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	4.0E-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
MCPP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P346245

Component	Result	Code	Units
AMPA	0.10	U	ug/L
Endothall	0.10	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P346197

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P346303

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

Reference Method: SM 2540 C-97
Batch ID: P346475

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P346447

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P346304

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P346584

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: P346344

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346345

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346624

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346691

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346461

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346267

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346268

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: P346385

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346386

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346190

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346191

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

Reference Method: EPA 8321B
Batch ID: P346184

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	81.0		P	40 - 150
Acetaminophen	104		P	30 - 150
Bentazon	74.7		P	30 - 150
Carbamazepine	72.5		P	40 - 150
Diuron	62.7		P	40 - 150
Fenuron	105		P	40 - 150
Fluridone	75.6		P	40 - 150
Hydrocodone	96.3		P	40 - 150
Imazapyr	89.2		P	40 - 150
Imidacloprid	109		P	40 - 160
Linuron	72.7		P	40 - 150
MCPP	86.8		P	40 - 150
Primidone	96.7		P	40 - 150
Pyraclostrobin	69.3		P	40 - 150
Triclopyr	78.4		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P346245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
AMPA	103		P	40 - 140
Endothall	91.8		P	40 - 140
Glufosinate	105		P	40 - 140
Glyphosate	119		P	40 - 140
Sucralose	116		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P346303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P346304

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.7		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996333	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346345

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996189	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995695	Ammonia-N	99.6	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996298	Ammonia-N	97.2	96.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996301	Kjeldahl Nitrogen	106	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346267

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996256	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996301	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996295	Total-P	99.8	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346386

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996301	Total-P	100	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346190

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996250	O-Phosphate-P	98.1	98.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346191

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996302	O-Phosphate-P	96.3	97.0	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P346184

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996357	2,4-D	66.2	43.6	P/P	40 - 150
1996357	Acetaminophen	128	98.4	P/P	30 - 150
1996357	Bentazon	11.1	3.35	F/F	30 - 150
1996357	Carbamazepine	59.6	57.9	P/P	40 - 150
1996357	Diuron	45.7	41.0	P/P	40 - 150
1996357	Fenuron	70.7	55.9	P/P	40 - 150
1996357	Fluridone	61.9	56.1	P/P	40 - 150
1996357	Hydrocodone	79.6	76.6	P/P	40 - 150
1996357	Imazapyr	104	99.3	P/P	40 - 150
1996357	Imidacloprid	119	134	P/P	40 - 160
1996357	Linuron	60.5	51.1	P/P	40 - 150
1996357	MCP	89.8	85.3	P/P	40 - 150
1996357	Primidone	93.0	78.9	P/P	40 - 150
1996357	Pyraclostrobin	81.3	70.8	P/P	40 - 150
1996357	Triclopyr	104	103	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P346245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996311	AMPA	61.2	55.1	P/P	40 - 140
1996311	Endothall	122	121	P/P	40 - 140
1996311	Glufosinate	96.2	95.3	P/P	40 - 140
1996311	Glyphosate	115	105	P/P	40 - 140
1996311	Sucralose	123	116	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P346304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996248	Fluoride	95.6	96.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996054	Organic Carbon	97.9	97.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996242	Turbidity	5.94	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996189	Chloride	0.228	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996189	Sulfate	0.222	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995695	Ammonia-N	1.82	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996298	Ammonia-N	0.142	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996301	Kjeldahl Nitrogen	5.01	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346267

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996256	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996301	NO2NO3-N	0.295	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996295	Total-P	1.71	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996301	Total-P	2.26	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996250	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P346191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996302	O-Phosphate-P	0.606	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P346184

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996357	2,4-D	10.9	Spike	P	0 - 30
1996357	Acetaminophen	26.2	Spike	P	0 - 30
1996357	Bentazon	20.9	Spike	P	0 - 30
1996357	Carbamazepine	2.85	Spike	P	0 - 30
1996357	Diuron	7.58	Spike	P	0 - 30
1996357	Fenuron	23.5	Spike	P	0 - 30
1996357	Fluridone	8.68	Spike	P	0 - 30
1996357	Hydrocodone	3.88	Spike	P	0 - 30
1996357	Imazapyr	2.21	Spike	P	0 - 30
1996357	Imidacloprid	7.73	Spike	P	0 - 30
1996357	Linuron	16.8	Spike	P	0 - 30
1996357	MCPP	5.07	Spike	P	0 - 30
1996357	Primidone	15.4	Spike	P	0 - 30
1996357	Pyraclostrobin	13.7	Spike	P	0 - 30
1996357	Triclopyr	0.503	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P346245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996311	AMPA	5.49	Spike	P	0 - 30
1996311	Endothall	1.43	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P346245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996311	Glufosinate	0.871	Spike	P	0 - 30
1996311	Glyphosate	4.07	Spike	P	0 - 30
1996311	Sucralose	5.54	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P346197

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996248	Color (true)	0.474	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P346303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996248	Total Alkalinity	0.972	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P346475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996252	TDS	2.46	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P346304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996248	Fluoride	0.516	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P346584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996054	Organic Carbon	0.171	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: 1996311
Field Sample ID: G3SD0078

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	87.2	P	30 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1996311
Field Sample ID: G3SD0078

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	127	P	30 - 160
EPA 8321B	Carbamazepine-d10	84.9	P	30 - 160
EPA 8321B	Diuron-d6	53.8	P	30 - 160
EPA 8321B	Endothall-d6	124	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	106	P	40 - 160
EPA 8321B	Primidone-d5	115	P	30 - 160
EPA 8321B	Sucralose-d6	134	P	40 - 160

Lab Sample ID: 1996312
Field Sample ID: G3SD0055

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	110	P	30 - 160
EPA 8321B	Acetaminophen-d4	122	P	30 - 160
EPA 8321B	Carbamazepine-d10	76.4	P	30 - 160
EPA 8321B	Diuron-d6	48.7	P	30 - 160
EPA 8321B	Endothall-d6	78.2	P	40 - 160
EPA 8321B	Glyphosate 13C 15N	88.2	P	40 - 160
EPA 8321B	Primidone-d5	104	P	30 - 160
EPA 8321B	Sucralose-d6	119	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84266
Included Lab Sample IDs: 1996296, 1996299, 1996302

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	99.0	P/P	90 - 110
O-Phosphate-P	99.0	97.6	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A84269
Included Lab Sample IDs: 1996294, 1996300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84275
Included Lab Sample IDs: 1996294, 1996297, 1996300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 8321B
Run ID: A84278
Included Lab Sample IDs: 1996311, 1996312

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A84278

Included Lab Sample IDs: 1996311, 1996312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	97.0	91.0	P/P	50 - 150
Bentazon	117	104	P/P	50 - 150
MCP	92.7	95.7	P/P	50 - 150
Triclopyr	95.1	87.6	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A84302

Included Lab Sample IDs: 1996295, 1996298, 1996301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO ₂ NO ₃ -N	102	102	P/P	90 - 110
NO ₂ NO ₃ -N	102	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A84316

Included Lab Sample IDs: 1996294, 1996297, 1996300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A84316

Included Lab Sample IDs: 1996294, 1996297, 1996300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A84339

Included Lab Sample IDs: 1996294, 1996300

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

Reference Method: EPA 8321B

Run ID: A84402

Included Lab Sample IDs: 1996311, 1996312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	105	109	P/P	60 - 150
Endothall	127	114	P/P	60 - 150
Glufosinate	103	98.8	P/P	60 - 150
Glyphosate	100	109	P/P	60 - 150
Sucralose	112	112	P/P	60 - 150

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84427

Included Lab Sample IDs: 1996295, 1996298

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84427

Included Lab Sample IDs: 1996295, 1996298

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

Reference Method: SM 5310 B-00

Run ID: A84443

Included Lab Sample IDs: 1996295, 1996298, 1996301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84445

Included Lab Sample IDs: 1996301

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

Reference Method: EPA 8321B

Run ID: A84454

Included Lab Sample IDs: 1996311, 1996312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	72.7	71.9	P/P	60 - 150
Carbamazepine	95.0	91.2	P/P	60 - 150
Diuron	84.3	85.9	P/P	60 - 150
Fenuron	101	99.4	P/P	60 - 150
Fluridone	96.3	96.8	P/P	60 - 160
Hydrocodone	105	101	P/P	60 - 150
Imazapyr	84.8	97.3	P/P	50 - 150
Imidacloprid	99.2	95.1	P/P	60 - 150
Linuron	91.6	88.4	P/P	60 - 150
Primidone	103	103	P/P	60 - 150
Pyraclostrobin	87.3	82.6	P/P	60 - 150

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A84469

Included Lab Sample IDs: 1996295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	107	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A84494

Included Lab Sample IDs: 1996298, 1996301

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84507
Included Lab Sample IDs: 1996295, 1996298, 1996301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.9	99.2	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 SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				5.94	
EPA 300.0 Rev. 2.1	Chloride	101	105		0.228	
	Sulfate	101	101		0.222	
EPA 350.1 Rev. 2.0	Ammonia-N	104	99.6 102			1.82
	Ammonia-N	99.5	97.2 96.9			0.142
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.9	106 98.2			5.01
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101 101			0.0
	NO2NO3-N	102	102 102			0.295
EPA 365.1 Rev. 2.0	Total-P	101	99.8 98.0			1.71
	Total-P	103	100 103			2.26
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	98.1 98.1			0.0
	O-Phosphate-P	99.9	96.3 97.0			0.606
EPA 8321B	2,4-D	81.0	66.2 43.6			10.9
	Acetaminophen	104	128 98.4			26.2
	AMPA	103	55.1 61.2			5.49
	Bentazon	74.7	11.1 3.35			20.9
	Carbamazepine	72.5	59.6 57.9			2.85
	Diuron	62.7	45.7 41.0			7.58
	Endothall	91.8	122 121			1.43
	Fenuron	105	70.7 55.9			23.5
	Fluridone	75.6	61.9 56.1			8.68
	Glufosinate	105	95.3 96.2			0.871
	Glyphosate	119	105 115			4.07
	Hydrocodone	96.3	79.6 76.6			3.88
	Imazapyr	89.2	104 99.3			2.21
	Imidacloprid	109	119 134			7.73
	Linuron	72.7	60.5 51.1			16.8
	MCPP	86.8	89.8 85.3			5.07
	Primidone	96.7	93.0 78.9			15.4
	Pyraclostrobin	69.3	81.3 70.8			13.7
	Sucralose	116	123 116			5.54
	Triclopyr	78.4	104 103			0.503
SM 2120 B	Color (true)				0.474	
SM 2320 B-97	Total Alkalinity	104			0.972	
SM 2540 C-97	TDS				2.46	
SM 4500 F-C-97	Fluoride	95.7	95.6 96.1			0.516
SM 5310 B-00	Organic Carbon	97.1	97.9 97.7			0.171

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1996294, 1996297, 1996300
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1996294, 1996300
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1996294, 1996300
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1996295, 1996298, 1996301
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1996295, 1996298, 1996301
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1996295, 1996298, 1996301
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1996295, 1996298, 1996301
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1996296, 1996299, 1996302
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1996311, 1996312
SM 2120 B / E31780	True Color measured at 450 nm	1996294, 1996300
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1996294, 1996297, 1996300
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1996294, 1996300
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1996294, 1996297, 1996300
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1996294, 1996297, 1996300
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1996295, 1996298, 1996301

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	05/31/2018			05/31/2018 15:23	William L. Brown IV	1996294, 1996297, 1996300
EPA 300.0 Rev. 2.1	05/31/2018			06/04/2018 19:54	Lipi Saha	1996294
	05/31/2018			06/04/2018 20:06	Lipi Saha	1996300
EPA 350.1 Rev. 2.0	05/31/2018			06/08/2018 12:19	Adrian Shelby	1996295
	05/31/2018			06/11/2018 12:35	Julia Storbeck	1996298
	05/31/2018			06/11/2018 12:40	Julia Storbeck	1996301
EPA 351.2 Rev. 2.0	05/31/2018	06/06/2018 10:40	Adrian Shelby	06/12/2018 09:04	Joseph Suarez	1996295
	05/31/2018	06/06/2018 10:40	Adrian Shelby	06/12/2018 09:06	Joseph Suarez	1996298
	05/31/2018	06/06/2018 10:40	Adrian Shelby	06/12/2018 09:07	Joseph Suarez	1996301
EPA 353.2 Rev. 2.0	05/31/2018			06/01/2018 13:23	Lauren Bottorf	1996295
	05/31/2018			06/01/2018 13:25	Lauren Bottorf	1996298
	05/31/2018			06/01/2018 13:35	Lauren Bottorf	1996301
EPA 365.1 Rev. 2.0	05/31/2018	06/05/2018 11:00	Sima Feizi	06/07/2018 11:43	Beverly Y. Sanders	1996295
	05/31/2018	06/05/2018 11:00	Sima Feizi	06/07/2018 11:44	Beverly Y. Sanders	1996298
	05/31/2018	06/05/2018 11:00	Sima Feizi	06/07/2018 16:03	Beverly Y. Sanders	1996301
EPA 365.1 Rev. 2.0 dissolved	05/31/2018			05/31/2018 13:33	Megan Treadwell	1996302
	05/31/2018			05/31/2018 13:43	Megan Treadwell	1996296
	05/31/2018			05/31/2018 13:44	Megan Treadwell	1996299
EPA 8321B	05/31/2018	06/01/2018 10:00	Hoor Shaik	06/01/2018 23:17	Juyoung Kim	1996311
	05/31/2018	06/01/2018 10:00	Hoor Shaik	06/01/2018 23:52	Juyoung Kim	1996312
	05/31/2018	06/01/2018 10:00	Hoor Shaik	06/07/2018 23:28	Juyoung Kim	1996311
	05/31/2018	06/01/2018 10:00	Hoor Shaik	06/08/2018 00:03	Juyoung Kim	1996312
	05/31/2018	06/01/2018 16:00	Hoor Shaik	06/05/2018 07:53	Mohammad Ghaffari	1996311
	05/31/2018	06/01/2018 16:00	Hoor Shaik	06/05/2018 08:11	Mohammad Ghaffari	1996312
SM 2120 B	05/31/2018			05/31/2018 14:57	Tanya Welborn	1996294
	05/31/2018			05/31/2018 14:58	Tanya Welborn	1996300
SM 2320 B-97	05/31/2018			06/01/2018 17:41	Dale L. Simmons	1996294
	05/31/2018			06/01/2018 17:51	Dale L. Simmons	1996297
	05/31/2018			06/01/2018 18:02	Dale L. Simmons	1996300
SM 2540 C-97	05/31/2018			06/01/2018 15:40	William L. Brown IV	1996294, 1996300
SM 2540 D-97	05/31/2018			06/01/2018 14:30	William L. Brown IV	1996294, 1996297, 1996300
SM 4500 F-C-97	05/31/2018			06/01/2018 17:41	Dale L. Simmons	1996294
	05/31/2018			06/01/2018 17:51	Dale L. Simmons	1996297
	05/31/2018			06/01/2018 18:02	Dale L. Simmons	1996300
SM 5310 B-00	05/31/2018			06/07/2018 02:53	Megan Treadwell	1996295
	05/31/2018			06/07/2018 03:10	Megan Treadwell	1996298
	05/31/2018			06/07/2018 03:24	Megan Treadwell	1996301