

Chemical Analysis Report

SO-DIST-2017-11-14-01

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

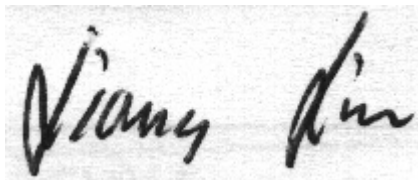
Event Description: **SMP: Lee County Streams**
Request ID: **RQ-2017-10-30-02**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Chase Conley

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 04-DEC-2017 17:19

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: Hendry Creek @ Old Gladiolus Dr.

Collection Date/Time: 11/13/2017 10:30

Field ID: G1SD111317-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945828	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P335265	
	SM 2320 B-97	Total Alkalinity	252		mg CaCO3/L	P335625	
	SM 2540 D-97	TSS	3	I	mg/L	P335731	
	SM 4500 F-C-97	Fluoride	0.28		mg F/L	P335629	
1945830	EPA 350.1 Rev. 2.0	Ammonia-N	0.048		mg N/L	P336091	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P335875	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.071		mg N/L	P335700	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P335449	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P335610	
1945832	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P335244	

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: Hendry Creek @ Old Gladiolus Dr.

Collection Date/Time: 11/13/2017 10:30

Field ID: G1SD111317-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945854	EPA 8321B	Sucralose**	0.25		ug/L	P336107	
	USGS O-2060-01	2,4-D	0.0028	I	ug/L	P335308	MS
		Diuron	8.5E-04	I	ug/L	P335308	
		Fenuron	0.0080	U	ug/L	P335308	
		Imidacloprid	0.011		ug/L	P335308	
		Bentazon	0.018		ug/L	P335308	MS
		Linuron	0.0040	U	ug/L	P335308	
		Acetaminophen**	0.0080	U	ug/L	P335308	
		MCP	0.0020	U	ug/L	P335308	MS
		Carbamazepine**	4.2E-04	I	ug/L	P335308	
		Triclopyr**	0.0040	U	ug/L	P335308	MS
		Primidone**	0.0040	U	ug/L	P335308	
		Fluridone**	0.010		ug/L	P335308	

Ref. Method and Comment:

USGS O-2060-01: Fenuron was detected in the method blank slightly above the MDL.

Sample Location: Imperial River near US 41

Collection Date/Time: 11/13/2017 11:40

Field ID: G1SD111317-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945829	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P335265	
	SM 2320 B-97	Total Alkalinity	151		mg CaCO3/L	P335625	
	SM 2540 D-97	TSS	3	IA	mg/L	P335731	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P335629	
1945831	EPA 350.1 Rev. 2.0	Ammonia-N	0.10		mg N/L	P336091	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P335875	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.097		mg N/L	P335700	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P335449	

Field ID: G1SD111317-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945831	SM 5310 B-00	Organic Carbon	17		mg C/L	P335610	
1945833	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P335244	

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: Imperial River near US 41

Collection Date/Time: 11/13/2017 11:40

Field ID: G1SD111317-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945855	EPA 8321B	Sucralose**	0.087		ug/L	P335805	
	USGS O-2060-01	2,4-D	0.0041	I	ug/L	P335308	MS
		Diuron	8.0E-04	U	ug/L	P335308	
		Fenuron	0.0080	U	ug/L	P335308	
		Imidacloprid	0.0047		ug/L	P335308	
		Bentazon	0.012		ug/L	P335308	MS
		Linuron	0.0040	U	ug/L	P335308	
		Acetaminophen**	0.0080	U	ug/L	P335308	
		MCP	0.0020	U	ug/L	P335308	MS
		Carbamazepine**	4.0E-04	U	ug/L	P335308	
		Triclopyr**	0.0040	U	ug/L	P335308	MS
		Primidone**	0.0040	U	ug/L	P335308	
		Fluridone**	0.0044		ug/L	P335308	

Ref. Method and Comment:

USGS O-2060-01: Fenuron was detected in the method blank slightly above the MDL.

Sample Location: Imperial River at Orr Rd in Bonita

Collection Date/Time: 11/13/2017 12:55

Field ID: G1SD111317-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945822	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P335265	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P335298	
		Sulfate	1.7		mg SO4/L	P335300	
	SM 2120 B	Color (true)	85		PCU	P335270	
	SM 2320 B-97	Total Alkalinity	133		mg CaCO3/L	P335625	
	SM 2540 C-97	TDS	186		mg/L	P335710	
	SM 2540 D-97	TSS	4	I	mg/L	P335728	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P335629	
1945824	EPA 350.1 Rev. 2.0	Ammonia-N	0.17		mg N/L	P336092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P335875	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.026		mg N/L	P335700	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P335449	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P335610	
1945826	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P335243	

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: Imperial River at Orr Rd in Bonita

Collection Date/Time: 11/13/2017 12:55

Field ID: G1SD111317-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945856	EPA 8321B	Sucralose**	0.010	U	ug/L	P335805	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P335308	MS
		Diuron	8.9E-04	I	ug/L	P335308	
		Fenuron	0.0080	U	ug/L	P335308	
		Imidacloprid	0.0038		ug/L	P335308	
		Bentazon	0.0062		ug/L	P335308	MS
		Linuron	0.0040	U	ug/L	P335308	
		Acetaminophen**	0.0080	U	ug/L	P335308	
		MCPD	0.0020	U	ug/L	P335308	MS
		Carbamazepine**	4.0E-04	U	ug/L	P335308	
		Triclopyr**	0.0040	U	ug/L	P335308	MS
		Primidone**	0.0040	U	ug/L	P335308	
		Fluridone**	0.0014	I	ug/L	P335308	

Ref. Method and Comment:
USGS O-2060-01: Fenuron was detected in the method blank slightly above the MDL.

Sample Location: Oak Creek @ Oak Creek Preserve

Collection Date/Time: 11/13/2017 12:10

Field ID: G1SD111317-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1945823	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P335265	
	EPA 300.0 Rev. 2.1	Chloride	37		mg Cl/L	P335298	
		Sulfate	15		mg SO4/L	P335300	
	SM 2120 B	Color (true)	26	A	PCU	P335271	
	SM 2320 B-97	Total Alkalinity	313		mg CaCO3/L	P335625	
	SM 2540 C-97	TDS	399		mg/L	P335710	
	SM 2540 D-97	TSS	2	I	mg/L	P335728	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P335629	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.059		mg N/L	P336092	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P335875	
1945825	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P335700	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P335449	
	SM 5310 B-00	Organic Carbon	8.1		mg C/L	P335610	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.021		mg P/L	P335243	
	dissolved						

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: P335265

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335298

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335300

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336091

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336092

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335875

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335700

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335449

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335243

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335244

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: P335805

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P336107

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P335270

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P335271

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P335625

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

Reference Method: SM 2540 C-97
Batch ID: P335710

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P335728

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P335731

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P335629

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: P335610

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

Reference Method: USGS O-2060-01
Batch ID: P335308

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	8.0E-04	U	ug/L
Fenuron	0.011	I	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335298

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335300

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: P336091

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335700

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335449

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335243

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335244

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

Reference Method: EPA 8321B
Batch ID: P335805

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	73.8		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P336107

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	67.4		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P335625

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P335629

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P335610

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
Batch ID: P335308

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	68.9	66.4	P/P	40 - 150
Acetaminophen	114	125	P/P	30 - 150
Bentazon	63.7	66.4	P/P	30 - 150
Carbamazepine	132	140	P/P	40 - 150
Diuron	107	103	P/P	40 - 150
Fenuron	140	129	P/P	40 - 150
Fluridone	133	143	P/P	40 - 150
Imidacloprid	108	116	P/P	40 - 160
Linuron	100	107	P/P	40 - 150
MCPD	76.5	70.8	P/P	40 - 150
Primidone	99.8	106	P/P	40 - 150
Triclopyr	74.0	71.2	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335298

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945742	Chloride	96.5		P	90 - 110
1945795	Chloride	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335300

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945742	Sulfate	97.3		P	90 - 110
1945795	Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1944928	Ammonia-N	94.8	96.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945778	Ammonia-N	99.9	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335875

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945803	Kjeldahl Nitrogen	105	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945824	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945839	Total-P	98.8	96.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335243

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945744	O-Phosphate-P	99.4	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945779	O-Phosphate-P	94.9	96.8	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P335805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1947930	Sucralose	107	115	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P336107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949632	Sucralose	76.2	82.2	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P335629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945798	Fluoride	100	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P335610

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945758	Organic Carbon	100	102	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P335308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945852	2,4-D	30.7	34.0	F/F	40 - 150
1945852	Acetaminophen	116	121	P/P	30 - 150
1945852	Bentazon	26.0	29.2	F/F	30 - 150
1945852	Carbamazepine	66.3	70.9	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P335308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1945852	Diuron	44.7	48.4	P/P	40 - 150
1945852	Fenuron	55.0	57.5	P/P	40 - 150
1945852	Fluridone	65.0	69.3	P/P	40 - 150
1945852	Imidacloprid	135	137	P/P	40 - 160
1945852	Linuron	83.5	83.7	P/P	40 - 150
1945852	MCP	35.7	39.0	F/F	40 - 150
1945852	Primidone	73.0	63.4	P/P	40 - 150
1945852	Triclopyr	30.4	31.1	F/F	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P335265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945742	Turbidity	3.87	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945795	Chloride	0.212	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335300

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945795	Sulfate	0.0847	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1944928	Ammonia-N	1.25	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945778	Ammonia-N	6.00	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945803	Kjeldahl Nitrogen	2.42	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945824	NO2NO3-N	0.426	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P335449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945839	Total-P	2.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945744	O-Phosphate-P	0.648	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945779	O-Phosphate-P	1.65	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P335805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1947930	Sucralose	6.99	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P336107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949632	Sucralose	2.51	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P335270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945742	Color (true)	3.65	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P335271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945823	Color (true)	2.26	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P335625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945798	Total Alkalinity	0.644	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P335710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945800	TDS	2.67	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P335629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945798	Fluoride	0.479	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P335610

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945758	Organic Carbon	0.842	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P335308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1945852	2,4-D	10.3	Spike	P	0 - 30
1945852	Acetaminophen	4.53	Spike	P	0 - 30
1945852	Bentazon	8.03	Spike	P	0 - 30
1945852	Carbamazepine	6.41	Spike	P	0 - 30
1945852	Diuron	7.92	Spike	P	0 - 30
1945852	Fenuron	4.39	Spike	P	0 - 30
1945852	Fluridone	6.37	Spike	P	0 - 30
1945852	Imidacloprid	0.766	Spike	P	0 - 30
1945852	Linuron	0.129	Spike	P	0 - 30
1945852	MCP	8.88	Spike	P	0 - 30
1945852	Primidone	14.1	Spike	P	0 - 30
1945852	Triclopyr	2.37	Spike	P	0 - 30
LFB	2,4-D	3.65	LCS	P	0 - 30
LFB	Acetaminophen	9.48	LCS	P	0 - 30
LFB	Bentazon	4.15	LCS	P	0 - 30
LFB	Carbamazepine	5.82	LCS	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P335308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
LFB	Diuron	4.60	LCS	P	0 - 30
LFB	Fenuron	8.40	LCS	P	0 - 30
LFB	Fluridone	7.15	LCS	P	0 - 30
LFB	Imidacloprid	7.86	LCS	P	0 - 30
LFB	Linuron	6.22	LCS	P	0 - 30
LFB	MCP	7.70	LCS	P	0 - 30
LFB	Primidone	5.86	LCS	P	0 - 30
LFB	Triclopyr	3.92	LCS	P	0 - 30

* 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: 1945854
Field Sample ID: G1SD111317-1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	97.5	P	30 - 160
EPA 8321B	Carbamazepine-d10	83.5	P	30 - 160
EPA 8321B	Diuron-d6	57.2	P	30 - 160
EPA 8321B	Primidone-d5	82.8	P	30 - 160
EPA 8321B	Sucralose-d6	147	P	40 - 160
EPA 8321B	Sucralose-d6	129	P	40 - 160
USGS O-2060-01	2,4-D-d3	37.7	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	97.5	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	83.5	P	30 - 160
USGS O-2060-01	Diuron-d6	57.2	P	30 - 160
USGS O-2060-01	Primidone-d5	82.8	P	30 - 160
USGS O-2060-01	Sucralose-d6	147	P	40 - 160
USGS O-2060-01	Sucralose-d6	129	P	40 - 160

Lab Sample ID: 1945855
Field Sample ID: G1SD111317-2

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	118	P	30 - 160
EPA 8321B	Carbamazepine-d10	66.3	P	30 - 160
EPA 8321B	Diuron-d6	44.8	P	30 - 160
EPA 8321B	Primidone-d5	60.4	P	30 - 160
EPA 8321B	Sucralose-d6	124	P	40 - 160
USGS O-2060-01	2,4-D-d3	31.0	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	118	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	66.3	P	30 - 160
USGS O-2060-01	Diuron-d6	44.8	P	30 - 160
USGS O-2060-01	Primidone-d5	60.4	P	30 - 160
USGS O-2060-01	Sucralose-d6	124	P	40 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1945856
Field Sample ID: G1SD111317-3

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	127	P	30 - 160
EPA 8321B	Carbamazepine-d10	72.1	P	30 - 160
EPA 8321B	Diuron-d6	43.2	P	30 - 160
EPA 8321B	Primidone-d5	75.9	P	30 - 160
EPA 8321B	Sucralose-d6	127	P	40 - 160
USGS O-2060-01	2,4-D-d3	36.2	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	127	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	72.1	P	30 - 160
USGS O-2060-01	Diuron-d6	43.2	P	30 - 160
USGS O-2060-01	Primidone-d5	75.9	P	30 - 160
USGS O-2060-01	Sucralose-d6	127	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A80230
Included Lab Sample IDs: 1945822, 1945823

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Sulfate	99.9	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A80251
Included Lab Sample IDs: 1945826, 1945827, 1945832, 1945833

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	103	104	P/P	90 - 110
O-Phosphate-P	103	103	P/P	90 - 110
O-Phosphate-P	104	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A80257
Included Lab Sample IDs: 1945822, 1945823, 1945828, 1945829

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

Reference Method: SM 2120 B
Run ID: A80259
Included Lab Sample IDs: 1945822, 1945823

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	85 - 115
Color (true)	95.0	102	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A80378

Included Lab Sample IDs: 1945824, 1945825, 1945830, 1945831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.6	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A80383

Included Lab Sample IDs: 1945822, 1945823, 1945828, 1945829

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A80383

Included Lab Sample IDs: 1945822, 1945823, 1945828, 1945829

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	103	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80391

Included Lab Sample IDs: 1945824, 1945825, 1945830, 1945831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	103	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A80422

Included Lab Sample IDs: 1945854, 1945855, 1945856

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	95.7	92.9	P/P	50 - 150
Acetaminophen	94.8	96.6	P/P	60 - 150
Bentazon	136	137	P/P	50 - 150
Carbamazepine	123	127	P/P	60 - 150
Diuron	107	116	P/P	60 - 150
Fenuron	92.5	86.9	P/P	60 - 150
Fluridone	136	138	P/P	60 - 160
Imidacloprid	87.9	91.3	P/P	60 - 150
Linuron	102	107	P/P	60 - 150
MCP	101	99.2	P/P	50 - 150
Primidone	89.0	73.7	P/P	60 - 150
Triclopyr	95.5	100	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80428

Included Lab Sample IDs: 1945824, 1945825, 1945830, 1945831

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A80568

Included Lab Sample IDs: 1945854, 1945855, 1945856

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	107	72.7	P/P	60 - 150
Sucralose	100	108	P/P	60 - 150

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80585

Included Lab Sample IDs: 1945824, 1945825, 1945830, 1945831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.2	94.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80596

Included Lab Sample IDs: 1945824, 1945825, 1945830, 1945831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	101	P/P	90 - 110
Ammonia-N	103	102	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						3.87	
EPA 300.0 Rev. 2.1	Chloride	96.6		96.6	96.5		0.212	
	Sulfate	97.6		99.4	97.3		0.0847	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8		94.8	96.1			1.25
	Ammonia-N	94.0		99.9	109			6.00
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109		105	102			2.42
EPA 353.2 Rev. 2.0	NO2NO3-N	106		104	104			0.426
EPA 365.1 Rev. 2.0	Total-P	102		98.8	96.3			2.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.3		99.4	98.6			0.648
	O-Phosphate-P	98.4		94.9	96.8			1.65
EPA 8321B	Sucralose	73.8		107	115			6.99
	Sucralose	67.4		76.2	82.2			2.51
SM 2120 B	Color (true)						3.65	
	Color (true)						2.26	
SM 2320 B-97	Total Alkalinity	103					0.644	
SM 2540 C-97	TDS						2.67	
SM 4500 F-C-97	Fluoride	100		100	101			0.479
SM 5310 B-00	Organic Carbon	98.4		100	102			0.842
USGS O-2060-01	2,4-D	68.9	66.4	30.7	34.0	3.65		10.3
	Acetaminophen	114	125	116	121	9.48		4.53
	Bentazon	63.7	66.4	26.0	29.2	4.15		8.03
	Carbamazepine	132	140	66.3	70.9	5.82		6.41
	Diuron	107	103	44.7	48.4	4.60		7.92

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		Precision	
						LCS	MS
USGS O-2060-01	Fenuron	140	129	55.0	57.5	8.40	4.39
	Fluridone	133	143	65.0	69.3	7.15	6.37
	Imidacloprid	108	116	135	137	7.86	0.766
	Linuron	100	107	83.5	83.7	6.22	0.129
	MCP	76.5	70.8	35.7	39.0	7.70	8.88
	Primidone	99.8	106	73.0	63.4	5.86	14.1
	Triclopyr	74.0	71.2	30.4	31.1	3.92	2.37

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1945822, 1945823, 1945828, 1945829
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1945822, 1945823
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1945822, 1945823
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1945824, 1945825, 1945830, 1945831
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1945824, 1945825, 1945830, 1945831
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1945824, 1945825, 1945830, 1945831
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1945824, 1945825, 1945830, 1945831
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1945826, 1945827, 1945832, 1945833
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1945854, 1945855, 1945856
SM 2120 B / E31780	True Color measured at 450 nm	1945822, 1945823
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1945822, 1945823, 1945828, 1945829
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1945822, 1945823
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1945822, 1945823, 1945828, 1945829
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1945822, 1945823, 1945828, 1945829
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1945824, 1945825, 1945830, 1945831
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1945854, 1945855, 1945856
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1945854, 1945855, 1945856

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	11/14/2017			11/14/2017 16:23	DeAsia Armster	1945822, 1945823, 1945828, 1945829
EPA 300.0 Rev. 2.1	11/14/2017			11/14/2017	Julia Storbeck	1945822, 1945823
EPA 350.1 Rev. 2.0	11/14/2017			11/29/2017	Sofia Elnemr	1945824, 1945825, 1945830, 1945831
EPA 351.2 Rev. 2.0	11/14/2017	11/27/2017	Adrian Shelby	11/28/2017	Joseph Suarez	1945824, 1945825, 1945830, 1945831
EPA 353.2 Rev. 2.0	11/14/2017			11/21/2017	Lauren Bottorf	1945824, 1945825, 1945830, 1945831
EPA 365.1 Rev. 2.0	11/14/2017	11/16/2017	Sima Feizi	11/20/2017	Lipi Saha	1945824, 1945825, 1945830, 1945831
EPA 365.1 Rev. 2.0 dissolved	11/14/2017			11/14/2017 14:02	Megan Treadwell	1945826
	11/14/2017			11/14/2017 14:03	Megan Treadwell	1945827
	11/14/2017			11/14/2017 14:13	Megan Treadwell	1945833
	11/14/2017			11/14/2017 14:33	Megan Treadwell	1945832
EPA 8321B	11/14/2017	11/28/2017	Juyoung Kim	11/28/2017	Juyoung Kim	1945855, 1945856
	11/14/2017	11/30/2017	Juyoung Kim	11/30/2017	Juyoung Kim	1945854
SM 2120 B	11/14/2017			11/14/2017 15:55	Tanya Welborn	1945822
	11/14/2017			11/14/2017 15:59	Tanya Welborn	1945823
SM 2320 B-97	11/14/2017			11/18/2017	Dale L. Simmons	1945822, 1945823, 1945828, 1945829
SM 2540 C-97	11/14/2017			11/17/2017	Yijie Li	1945822, 1945823
SM 2540 D-97	11/14/2017			11/17/2017	Yijie Li	1945822, 1945823, 1945828, 1945829
SM 4500 F-C-97	11/14/2017			11/18/2017	Dale L. Simmons	1945822, 1945823, 1945828, 1945829
SM 5310 B-00	11/14/2017			11/18/2017	Ping Hua	1945824, 1945825, 1945830, 1945831
USGS O-2060-01	11/14/2017	11/17/2017	Hoor Shaik	11/17/2017	Juyoung Kim	1945854, 1945855, 1945856