

Chemical Analysis Report

NE-DIST-2017-08-31-01

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

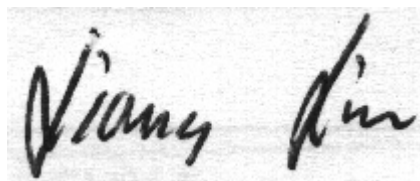
Event Description: **Suw.Springs**
Request ID: **RQ-2017-08-21-18**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
Attn: Jeremy Parrish

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 28-SEP-2017 13:49

A handwritten signature in black ink, appearing to read "Liang Lin", 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: Blue Spring

Collection Date/Time: 08/30/2017 12:05

Field ID: G1NE0868 08302017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926802	EPA 180.1 Rev. 2.0	Turbidity	0.30		NTU	P331154	
	EPA 300.0 Rev. 2.1	Chloride	5.2		mg Cl/L	P331488	
		Sulfate	1.3		mg SO4/L	P331494	
	SM 2120 B	Color (true)	2.5	U	PCU	P331146	
	SM 2320 B-97	Total Alkalinity	115	A	mg CaCO3/L	P331523	
	SM 2540 C-97	TDS	123		mg/L	P331662	
	SM 2540 D-97	TSS	2	U	mg/L	P331310	
	SM 4500 F-C-97	Fluoride	0.068	I	mg F/L	P331741	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P331458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P331163	
1926806	EPA 353.2 Rev. 2.0	NO2NO3-N	0.75		mg N/L	P331250	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P331193	
	SM 5310 B-00	Organic Carbon	0.75	I	mg C/L	P331406	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.030		mg P/L	P331138	
	dissolved						

Ref. Method and Comment:

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Cow Creek @ SR 138

Collection Date/Time: 08/30/2017 10:10

Field ID: G1NE0565 08302017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926803	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P331154	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P331488	
		Sulfate	0.20	U	mg SO4/L	P331494	
	SM 2120 B	Color (true)	490		PCU	P331146	
	SM 2320 B-97	Total Alkalinity	58	Q	mg CaCO3/L	P331631	
	SM 2540 C-97	TDS	131		mg/L	P331662	
	SM 2540 D-97	TSS	2	I	mg/L	P331310	
	SM 4500 F-C-97	Fluoride	0.037	I	mg F/L	P331632	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P331458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P331163	
1926807	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P331250	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P331196	
	SM 5310 B-00	Organic Carbon	40		mg C/L	P331406	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.032		mg P/L	P331138	
	dissolved						

Ref. Method and Comment:

SM 2320 B-97: Sample analyzed after expiration date because of laboratory closure for Hurricane Irma.

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Cow Creek @ SR 138

Collection Date/Time: 08/30/2017 10:10

Field ID: G1NE0565 08302017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926861	EPA 8321B	Sucralose**	0.020	U	ug/L	P331186	MS, RPD

Field ID: G1NE0565 08302017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926861	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P331187	
		Diuron	8.0E-04	U	ug/L	P331187	
		Fenuron	0.0080	U	ug/L	P331187	
		Imidacloprid	8.0E-04	U	ug/L	P331187	MS
		Bentazon	8.0E-04	U	ug/L	P331187	MS
		Linuron	0.0040	U	ug/L	P331187	
		Acetaminophen**	0.0080	U	ug/L	P331187	
		MCP	0.0020	U	ug/L	P331187	
		Carbamazepine**	4.0E-04	U	ug/L	P331187	
		Triclopyr**	0.0040	U	ug/L	P331187	
		Primidone**	0.0040	U	ug/L	P331187	
		Fluridone**	4.0E-04	U	ug/L	P331187	

Ref. Method and Comment:
 EPA 8321B: MDL elevated due to matrix interference.

Sample Location: Hart Springs

Collection Date/Time: 08/30/2017 11:00

Field ID: G1NE0013 08302017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926804	EPA 180.1 Rev. 2.0	Turbidity	0.30		NTU	P331154	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P331488	
		Sulfate	37		mg SO4/L	P331494	
	SM 2120 B	Color (true)	2.5	U	PCU	P331146	
	SM 2320 B-97	Total Alkalinity	211	Q	mg CaCO3/L	P331631	
	SM 2540 C-97	TDS	298	A	mg/L	P331662	
	SM 2540 D-97	TSS	2	UA	mg/L	P331310	
	SM 4500 F-C-97	Fluoride	0.085	I	mg F/L	P331632	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P331458	
		Kjeldahl Nitrogen	0.16	I	mg N/L	P331163	
1926808	EPA 353.2 Rev. 2.0	NO2NO3-N	3.4		mg N/L	P331250	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P331196	
	SM 5310 B-00	Organic Carbon	0.73	I	mg C/L	P331406	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.062		mg P/L	P331138	

Ref. Method and Comment:
 SM 2320 B-97: Sample analyzed after expiration date because of laboratory closure for Hurricane Irma.
 SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
 SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Wacassassa R @ SR 24

Collection Date/Time: 08/30/2017 12:35

Field ID: G1NE0829 08302017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926805	EPA 180.1 Rev. 2.0	Turbidity	2.6	A	NTU	P331155	
	EPA 300.0 Rev. 2.1	Chloride	5.8		mg Cl/L	P331488	
		Sulfate	0.29	I	mg SO4/L	P331494	
	SM 2120 B	Color (true)	450		PCU	P331146	
	SM 2320 B-97	Total Alkalinity	77	Q	mg CaCO3/L	P331631	

Field ID: G1NE0829 08302017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926805	SM 2540 C-97	TDS	146		mg/L	P331663	
	SM 2540 D-97	TSS	2	U	mg/L	P331311	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P331632	
1926809	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P331459	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P331163	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P331250	
	EPA 365.1 Rev. 2.0	Total-P	0.060		mg P/L	P331196	
	SM 5310 B-00	Organic Carbon	37		mg C/L	P331406	
1926813	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P331138	

Ref. Method and Comment:

SM 2320 B-97: Sample analyzed after expiration date because of laboratory closure for Hurricane Irma.

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

SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Wacassassa R @ SR 24

Collection Date/Time: 08/30/2017 12:35

Field ID: G1NE0829 08302017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1926862	EPA 8321B	Sucralose**	0.020	U	ug/L	P331186	MS, RPD
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P331187	
		Diuron	8.0E-04	U	ug/L	P331187	
		Fenuron	0.0080	U	ug/L	P331187	
		Imidacloprid	8.0E-04	U	ug/L	P331187	MS
		Bentazon	8.0E-04	U	ug/L	P331187	MS
		Linuron	0.0040	U	ug/L	P331187	
		Acetaminophen**	0.0080	U	ug/L	P331187	
		MCP	0.0020	U	ug/L	P331187	
		Carbamazepine**	4.0E-04	U	ug/L	P331187	
		Triclopyr**	0.0040	U	ug/L	P331187	
		Primidone**	0.0040	U	ug/L	P331187	
		Fluridone**	4.0E-04	U	ug/L	P331187	

Ref. Method and Comment:

EPA 8321B: MDL elevated due to matrix interference.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P331154

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P331155

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: P331488

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331494

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331458

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331459

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331163

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331250

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331193

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331196

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331138

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: P331186

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P331146

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P331523

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

Reference Method: SM 2320 B-97
Batch ID: P331631

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

Reference Method: SM 2540 C-97
Batch ID: P331662

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P331663

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P331310

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P331311

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P331632

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P331741

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P331406

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

Reference Method: USGS O-2060-01
Batch ID: P331187

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	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCPP	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: P331488

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331494

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331458

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331459

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331163

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	90.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331196

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	93.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331138

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	105		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P331186

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	96.6		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P331523

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

Reference Method: SM 2320 B-97
Batch ID: P331631

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P331632

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.4		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P331741

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P331406

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.3		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P331187

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	53.0		P	40 - 150
Acetaminophen	134		P	30 - 150
Bentazon	41.4		P	40 - 150
Carbamazepine	124		P	40 - 150
Diuron	103		P	40 - 150
Fenuron	114		P	40 - 150
Fluridone	68.5		P	40 - 150
Imidacloprid	94.9		P	40 - 160
Linuron	86.9		P	40 - 150
MCP	52.9		P	40 - 150
Primidone	111		P	40 - 150
Triclopyr	54.0		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331488

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926719	Chloride	103		P	90 - 110
1926721	Chloride	96.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331494

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926719	Sulfate	101		P	90 - 110
1926721	Sulfate	96.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331458

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926726	Ammonia-N	96.5	95.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926809	Ammonia-N	105	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331163

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926808	Kjeldahl Nitrogen	107	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926728	NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926726	Total-P	94.1	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926835	Total-P	90.7	92.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926810	O-Phosphate-P	96.6	97.8	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P331186

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927171	Sucralose	34.7	9.82	F/F	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P331632

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1926832	Fluoride	97.9	98.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P331741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1928615	Fluoride	96.9	96.9	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P331187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1927171	2,4-D	58.1	60.9	P/P	40 - 150
1927171	Acetaminophen	64.5	63.0	P/P	30 - 150
1927171	Bentazon	30.9	29.1	F/F	40 - 150
1927171	Carbamazepine	100	98.5	P/P	40 - 150
1927171	Diuron	80.4	79.7	P/P	40 - 150
1927171	Fenuron	89.9	91.9	P/P	40 - 150
1927171	Fluridone	54.5	54.6	P/P	40 - 150
1927171	Imidacloprid	228	228	F/F	40 - 160
1927171	Linuron	95.7	94.0	P/P	40 - 150
1927171	MCP	51.0	51.3	P/P	40 - 150
1927171	Primidone	111	107	P/P	40 - 150
1927171	Triclopyr	48.6	50.6	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P331154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926719	Turbidity	2.72	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P331155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926805	Turbidity	3.82	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331488

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926719	Chloride	0.171	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331494

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926719	Sulfate	2.96	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331458

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926726	Ammonia-N	1.04	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P331459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926809	Ammonia-N	4.24	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P331163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926808	Kjeldahl Nitrogen	1.70	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P331250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926728	NO2NO3-N	0.243	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926726	Total-P	2.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P331196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926835	Total-P	1.63	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926810	O-Phosphate-P	0.944	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P331186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927171	Sucralose	39.6	Spike	F	0 - 30

Reference Method: SM 2120 B
Batch ID: P331146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926828	Color (true)	2.05	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P331523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926802	Total Alkalinity	0.386	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P331631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926832	Total Alkalinity	0.696	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P331662

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926804	TDS	0.336	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P331663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926878	TDS	0.830	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P331632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926832	Fluoride	0.500	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P331741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1928615	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P331406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1926725	Organic Carbon	0.119	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P331187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927171	2,4-D	3.87	Spike	P	0 - 30
1927171	Acetaminophen	2.42	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P331187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1927171	Bentazon	5.87	Spike	P	0 - 30
1927171	Carbamazepine	1.73	Spike	P	0 - 30
1927171	Diuron	0.775	Spike	P	0 - 30
1927171	Fenuron	2.22	Spike	P	0 - 30
1927171	Fluridone	0.257	Spike	P	0 - 30
1927171	Imidacloprid	0.0876	Spike	P	0 - 30
1927171	Linuron	1.86	Spike	P	0 - 30
1927171	MCPP	0.743	Spike	P	0 - 30
1927171	Primidone	3.77	Spike	P	0 - 30
1927171	Triclopyr	4.03	Spike	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: 1926861
Field Sample ID: G1NE0565 08302017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	60.2	P	30 - 160
EPA 8321B	Carbamazepine-d10	66.6	P	30 - 160
EPA 8321B	Diuron-d6	53.3	P	30 - 160
EPA 8321B	Primidone-d5	81.2	P	30 - 160
EPA 8321B	Sucralose-d6	50.1	P	40 - 160
USGS O-2060-01	2,4-D-d3	56.7	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	60.2	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	66.6	P	30 - 160
USGS O-2060-01	Diuron-d6	53.3	P	30 - 160
USGS O-2060-01	Primidone-d5	81.2	P	30 - 160
USGS O-2060-01	Sucralose-d6	50.1	P	40 - 160

Lab Sample ID: 1926862
Field Sample ID: G1NE0829 08302017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	56.5	P	30 - 160
EPA 8321B	Carbamazepine-d10	65.0	P	30 - 160
EPA 8321B	Diuron-d6	52.7	P	30 - 160
EPA 8321B	Primidone-d5	79.6	P	30 - 160
EPA 8321B	Sucralose-d6	61.9	P	40 - 160
USGS O-2060-01	2,4-D-d3	53.6	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	56.5	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	65.0	P	30 - 160
USGS O-2060-01	Diuron-d6	52.7	P	30 - 160
USGS O-2060-01	Primidone-d5	79.6	P	30 - 160
USGS O-2060-01	Sucralose-d6	61.9	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A78735

Included Lab Sample IDs: 1926810, 1926811, 1926812, 1926813

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	104	P/P	90 - 110
O-Phosphate-P	102	102	P/P	90 - 110
O-Phosphate-P	104	101	P/P	90 - 110
O-Phosphate-P	99.3	102	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A78736

Included Lab Sample IDs: 1926802, 1926803, 1926804, 1926805

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	85 - 115
Color (true)	101	101	P/P	85 - 115
Color (true)	101	103	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A78737

Included Lab Sample IDs: 1926802, 1926803, 1926804, 1926805

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78773

Included Lab Sample IDs: 1926807, 1926808, 1926809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	102	P/P	90 - 110
Total-P	103	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78775

Included Lab Sample IDs: 1926806, 1926807, 1926808, 1926809

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78782

Included Lab Sample IDs: 1926806

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.0	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78796

Included Lab Sample IDs: 1926806, 1926807, 1926808, 1926809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	101	P/P	90 - 110
Kjeldahl Nitrogen	97.6	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A78834

Included Lab Sample IDs: 1926806, 1926807, 1926808, 1926809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.5	98.1	P/P	90 - 110
Organic Carbon	98.1	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78858

Included Lab Sample IDs: 1926806, 1926807, 1926808, 1926809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	97.8	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A78859

Included Lab Sample IDs: 1926861, 1926862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	103	97.4	P/P	60 - 150

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A78862

Included Lab Sample IDs: 1926802, 1926803, 1926804, 1926805

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.9	106	P/P	90 - 110
Sulfate	99.2	105	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A78870

Included Lab Sample IDs: 1926802

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

Reference Method: SM 2320 B-97

Run ID: A78909

Included Lab Sample IDs: 1926803, 1926804, 1926805

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A78909

Included Lab Sample IDs: 1926803, 1926804, 1926805

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A78959

Included Lab Sample IDs: 1926802

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A78959

Included Lab Sample IDs: 1926802

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	98.0	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A79030

Included Lab Sample IDs: 1926861, 1926862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	92.8	91.8	P/P	50 - 150
Acetaminophen	105	104	P/P	60 - 150
Bentazon	102	96.8	P/P	50 - 150
Carbamazepine	121	117	P/P	60 - 150
Diuron	105	103	P/P	60 - 150
Fenuron	101	101	P/P	60 - 150
Fluridone	103	102	P/P	60 - 160
Imidacloprid	97.2	96.9	P/P	60 - 150
Linuron	103	100	P/P	60 - 150
MCPP	93.4	88.5	P/P	50 - 150
Primidone	99.1	94.6	P/P	60 - 150
Triclopyr	105	92.6	P/P	50 - 150

* 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						2.72	
	Turbidity						3.82	
EPA 300.0 Rev. 2.1	Chloride	97.2		103	96.1		0.171	
	Sulfate	95.4		101	96.2		2.96	
EPA 350.1 Rev. 2.0	Ammonia-N	100		96.5	95.0			1.04
	Ammonia-N	100		105	99.4			4.24
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106		107	109			1.70
EPA 353.2 Rev. 2.0	NO2NO3-N	105		101				0.243
EPA 365.1 Rev. 2.0	Total-P	90.7		94.1	92.0			2.02
	Total-P	93.5		90.7	92.2			1.63
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105		96.6	97.8			0.944
EPA 8321B	Sucralose	96.6		34.7	9.82			39.6
SM 2120 B	Color (true)						2.05	
SM 2320 B-97	Total Alkalinity	103					0.386	
	Total Alkalinity	99.6					0.696	
SM 2540 C-97	TDS						0.336	
	TDS						0.830	
SM 4500 F-C-97	Fluoride	95.4		97.9	98.5			0.500
	Fluoride	95.4		96.9	96.9			0.0
SM 5310 B-00	Organic Carbon	97.3						0.119
USGS O-2060-01	2,4-D	53.0		58.1	60.9			3.87

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision LCS	SMP	MS
USGS O-2060-01	Acetaminophen	134	64.5	63.0			2.42
	Bentazon	41.4	30.9	29.1			5.87
	Carbamazepine	124	100	98.5			1.73
	Diuron	103	80.4	79.7			0.775
	Fenuron	114	89.9	91.9			2.22
	Fluridone	68.5	54.5	54.6			0.257
	Imidacloprid	94.9	228	228			0.0876
	Linuron	86.9	95.7	94.0			1.86
	MCP	52.9	51.0	51.3			0.743
	Primidone	111	111	107			3.77
	Triclopyr	54.0	48.6	50.6			4.03

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1926802, 1926803, 1926804, 1926805
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1926802, 1926803, 1926804, 1926805
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1926802, 1926803, 1926804, 1926805
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1926806, 1926807, 1926808, 1926809
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1926806, 1926807, 1926808, 1926809
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1926806, 1926807, 1926808, 1926809
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1926806, 1926807, 1926808, 1926809
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1926810, 1926811, 1926812, 1926813
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1926861, 1926862
SM 2120 B / E31780	True Color measured at 450 nm	1926802, 1926803, 1926804, 1926805
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1926802, 1926803, 1926804, 1926805
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1926802, 1926803, 1926804, 1926805
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1926802, 1926803, 1926804, 1926805
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1926802, 1926803, 1926804, 1926805
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1926806, 1926807, 1926808, 1926809
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1926861, 1926862
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1926861, 1926862

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	08/31/2017			08/31/2017 15:53	DeAsia Armster	1926802, 1926803, 1926804, 1926805
EPA 300.0 Rev. 2.1	08/31/2017			09/06/2017	Julia Storbeck	1926802, 1926803, 1926804, 1926805
EPA 350.1 Rev. 2.0	08/31/2017			09/06/2017	Sofia Elnemr	1926806, 1926807, 1926808, 1926809
EPA 351.2 Rev. 2.0	08/31/2017	09/01/2017	Adrian Shelby	09/06/2017	Joseph Suarez	1926806, 1926807, 1926808, 1926809
EPA 353.2 Rev. 2.0	08/31/2017			09/05/2017	Beverly Y. Sanders	1926806, 1926807, 1926808, 1926809
EPA 365.1 Rev. 2.0	08/31/2017	09/01/2017	Sima Feizi	09/05/2017	Lipi Saha	1926806, 1926807, 1926808, 1926809
EPA 365.1 Rev. 2.0 dissolved	08/31/2017			08/31/2017 13:47	Megan Treadwell	1926810
	08/31/2017			08/31/2017 14:27	Megan Treadwell	1926811
	08/31/2017			08/31/2017 14:32	Megan Treadwell	1926813
	08/31/2017			08/31/2017 14:47	Megan Treadwell	1926812
EPA 8321B	08/31/2017	09/06/2017	Hoor Shaik	09/07/2017	Julie Michelle Frank	1926861, 1926862
SM 2120 B	08/31/2017			08/31/2017 15:36	Tanya Welborn	1926802
	08/31/2017			08/31/2017 15:37	Tanya Welborn	1926804
	08/31/2017			08/31/2017 16:02	Tanya Welborn	1926803
	08/31/2017			08/31/2017 16:05	Tanya Welborn	1926805
SM 2320 B-97	08/31/2017			09/07/2017	Dale L. Simmons	1926802
	08/31/2017			09/13/2017	Dale L. Simmons	1926803, 1926804, 1926805
SM 2540 C-97	08/31/2017			09/01/2017	DeAsia Armster	1926802, 1926803, 1926804, 1926805
SM 2540 D-97	08/31/2017			09/01/2017	DeAsia Armster	1926802, 1926803, 1926804, 1926805
SM 4500 F-C-97	08/31/2017			09/13/2017	Dale L. Simmons	1926803, 1926804, 1926805
	08/31/2017			09/15/2017	Dale L. Simmons	1926802
SM 5310 B-00	08/31/2017			09/06/2017	Ping Hua	1926806, 1926807, 1926808, 1926809
USGS O-2060-01	08/31/2017	09/06/2017	Hoor Shaik	09/19/2017	Julie Michelle Frank	1926861, 1926862