

Chemical Analysis Report

NE-DIST-2017-04-12-02

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

Event Description: **Suwannee Springs**
Request ID: **RQ-2017-04-10-06**
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, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 09-MAY-2017 15:34

A handwritten signature in black ink, appearing to read "Liang Lin", is written on a light-colored, textured 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: Cannon Crk @ Cannon Crk Rd W CR 47

Collection Date/Time: 04/11/2017 09:30

Field ID: G1NE0617 04112017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1887804	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P323266	
	EPA 300.0 Rev. 2.1	Chloride	8.9		mg Cl/L	P323744	
		Sulfate	2.6		mg SO4/L	P323746	
	SM 2120 B	Color (true)	230		PCU	P323260	
	SM 2320 B-97	Total Alkalinity	41		mg CaCO3/L	P323886	
	SM 2540 C-97	TDS	105		mg/L	P323655	
	SM 2540 D-97	TSS	3	I	mg/L	P323887	
	SM 4500 F-C-97	Fluoride	0.056	I	mg F/L	P324305	
1887808	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P323273	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P323365	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P323398	
	EPA 365.1 Rev. 2.0	Total-P	0.090		mg P/L	P323423	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P323369	
1887812	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.033		mg P/L	P323295	

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: Cannon Crk @ Cannon Crk Rd W CR 47

Collection Date/Time: 04/11/2017 09:30

Field ID: G1NE0617 04112017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1887838	EPA 8321B	Sucralose**	0.038	I	ug/L	P323139	
	USGS O-2060-01	2,4-D	0.078		ug/L	P323221	
		Diuron	0.0040	U	ug/L	P323221	
		Fenuron	0.0080	U	ug/L	P323221	
		Imidacloprid	0.031		ug/L	P323221	
		Bentazon	0.0040	U	ug/L	P323221	
		Linuron	0.0040	U	ug/L	P323221	MS
		Acetaminophen**	0.010	U	ug/L	P323221	
		MCP	0.0040	U	ug/L	P323221	
		Carbamazepine**	4.0E-04	U	ug/L	P323221	
		Triclopyr**	0.10		ug/L	P323221	
		Primidone**	0.0080	U	ug/L	P323221	
		Fluridone**	4.0E-04	U	ug/L	P323221	RPD

Ref. Method and Comment:

USGS O-2060-01: MS accuracy for bentazon and triclopyr could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Hart Springs Duplicate

Collection Date/Time: 04/11/2017 10:45

Field ID: G1NE0013 04112017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1887805	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P323266	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P323745	
		Sulfate	37		mg SO4/L	P323747	
	SM 2120 B	Color (true)	3.0	I	PCU	P323260	

Field ID: G1NE0013 04112017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1887805	SM 2320 B-97	Total Alkalinity	221	A	mg CaCO3/L	P323886	
	SM 2540 C-97	TDS	288		mg/L	P323655	
	SM 2540 D-97	TSS	2	I	mg/L	P323887	
	SM 4500 F-C-97	Fluoride	0.085	I	mg F/L	P324305	
1887809	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P323273	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P323365	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.3		mg N/L	P323398	
	EPA 365.1 Rev. 2.0	Total-P	0.069		mg P/L	P323423	
	SM 5310 B-00	Organic Carbon	0.58	I	mg C/L	P323369	
1887813	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.066		mg P/L	P323295	

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: Blue Spring

Collection Date/Time: 04/11/2017 11:30

Field ID: G1NE0868 04112017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1887806	EPA 180.1 Rev. 2.0	Turbidity	0.30		NTU	P323266	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P323745	
		Sulfate	1.3		mg SO4/L	P323747	
	SM 2120 B	Color (true)	2.5	U	PCU	P323260	
1887810	SM 2320 B-97	Total Alkalinity	115		mg CaCO3/L	P323886	
	SM 2540 C-97	TDS	122		mg/L	P323655	
	SM 2540 D-97	TSS	2	I	mg/L	P323887	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P324305	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P323273	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P323365	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.77		mg N/L	P323698	
1887814	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P323511	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P323369	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P323295	

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: Hart Springs

Collection Date/Time: 04/11/2017 10:40

Field ID: G1NE0013 04112017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1887807	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P323266	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P323745	
		Sulfate	37		mg SO4/L	P323747	
	SM 2120 B	Color (true)	2.5	U	PCU	P323260	
1887808	SM 2320 B-97	Total Alkalinity	220		mg CaCO3/L	P323886	
	SM 2540 C-97	TDS	293		mg/L	P323655	
	SM 2540 D-97	TSS	2	U	mg/L	P323887	
	SM 4500 F-C-97	Fluoride	0.084	I	mg F/L	P324680	

Field ID: G1NE0013 04112017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1887811	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P323273	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P323365	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.3		mg N/L	P323398	
	EPA 365.1 Rev. 2.0	Total-P	0.070		mg P/L	P323424	
	SM 5310 B-00	Organic Carbon	0.61	I	mg C/L	P323369	
1887815	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.065		mg P/L	P323295	

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: P323266

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P323744

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P323745

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P323746

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P323747

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P323273

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P323365

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: P323398

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323698

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323423

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323424

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323511

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323295

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

Reference Method: EPA 8321B
Batch ID: P323139

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P323260

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P323886

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
 Batch ID: P323655

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P323887

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P324305

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
 Batch ID: P324680

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P323369

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

Reference Method: USGS O-2060-01
 Batch ID: P323221

Component	Result	Code	Units
2,4-D	0.0040	U	ug/L
Acetaminophen	0.010	U	ug/L
Bentazon	0.0040	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	0.0040	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	0.0040	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0040	U	ug/L
Primidone	0.0080	U	ug/L
Triclopyr	0.010	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P323744

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: P323745

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323746

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323747

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323273

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: P323365

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323398

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323698

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323423

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: P323424

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323511

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323295

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

Reference Method: EPA 8321B
Batch ID: P323139

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	104		P	40 - 140

Reference Method: SM 2320 B-97
Batch ID: P323886

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P324305

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P324680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P323369

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	106		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P323221

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	97.2		P	40 - 140
Acetaminophen	51.2		P	40 - 140
Bentazon	140		P	40 - 140
Carbamazepine	90.4		P	40 - 140
Diuron	76.0		P	40 - 140
Fenuron	86.8		P	40 - 140
Fluridone	96.0		P	40 - 140
Imidacloprid	76.4		P	40 - 160
Linuron	50.0		P	40 - 140
MCP	90.0		P	40 - 140

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: USGS O-2060-01
Batch ID: P323221

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Primidone	96.4		P	40 - 140
Triclopyr	96.8		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323744

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887330	Chloride	101		P	90 - 110
1887605	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887928	Chloride	100		P	90 - 110
1888029	Chloride	99.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323746

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887330	Sulfate	97.8		P	90 - 110
1887605	Sulfate	98.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887928	Sulfate	93.4		P	90 - 110
1888029	Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887751	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323365

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887755	Kjeldahl Nitrogen	100	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887755	NO2NO3-N	98.0	98.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323698

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888467	NO2NO3-N	102	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323423

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887809	Total-P	101	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323424

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887937	Total-P	98.7	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323511

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888668	Total-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887692	O-Phosphate-P	95.8	97.1	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P323139

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887573	Sucralose	87.3	98.0	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P324305

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887806	Fluoride	95.8	93.6	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P324680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887807	Fluoride	99.2	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P323369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887685	Organic Carbon	104	105	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P323221

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1887741	2,4-D	135	127	P/P	40 - 140
1887741	Acetaminophen	70.4	56.8	P/P	40 - 140
1887741	Carbamazepine	66.0	63.6	P/P	40 - 140
1887741	Diuron	63.3	66.5	P/P	40 - 140
1887741	Fenuron	60.8	52.8	P/P	40 - 140
1887741	Fluridone	59.6	42.8	P/P	40 - 140
1887741	Imidacloprid	112	98.4	P/P	40 - 160
1887741	Linuron	40.0	47.2	F/P	40 - 140
1887741	MCPD	131	116	P/P	40 - 140
1887741	Primidone	50.0	51.2	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P323266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887746	Turbidity	10.7	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887605	Chloride	0.0681	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888029	Chloride	0.0975	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323746

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887605	Sulfate	0.682	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888029	Sulfate	0.113	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887751	Ammonia-N	0.572	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323365

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887755	Kjeldahl Nitrogen	1.53	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887755	NO2NO3-N	0.509	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323698

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888467	NO2NO3-N	2.48	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323423

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887809	Total-P	4.26	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323424

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887937	Total-P	4.99	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323511

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888668	Total-P	1.48	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887692	O-Phosphate-P	1.08	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P323139

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887573	Sucralose	11.5	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P323260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887927	Color (true)	2.96	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P323886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887805	Total Alkalinity	1.58	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P323655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887750	TDS	0.830	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P324305

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887806	Fluoride	2.00	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P324680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887807	Fluoride	1.01	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P323369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887685	Organic Carbon	0.381	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P323221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887741	2,4-D	5.51	Spike	P	0 - 30
1887741	Acetaminophen	21.4	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P323221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1887741	Bentazon	8.61	Spike	P	0 - 30
1887741	Carbamazepine	3.70	Spike	P	0 - 30
1887741	Diuron	3.43	Spike	P	0 - 30
1887741	Fenuron	14.1	Spike	P	0 - 30
1887741	Fluridone	30.4	Spike	F	0 - 30
1887741	Imidacloprid	12.6	Spike	P	0 - 30
1887741	Linuron	16.6	Spike	P	0 - 30
1887741	MCPD	12.6	Spike	P	0 - 30
1887741	Primidone	2.37	Spike	P	0 - 30
1887741	Triclopyr	0.612	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: 1887838
Field Sample ID: G1NE0617 04112017

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	84.5	P	40 - 150
USGS O-2060-01	2,4-D-d3	133	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	58.2	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	51.2	P	40 - 160
USGS O-2060-01	Diuron-d6	35.0	P	30 - 150
USGS O-2060-01	Primidone-d5	40.6	P	40 - 150

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A75747
Included Lab Sample IDs: 1887804, 1887805, 1887806, 1887807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	85 - 115
Color (true)	99.7	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A75748
Included Lab Sample IDs: 1887804, 1887805, 1887806, 1887807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.0	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A75750

Included Lab Sample IDs: 1887808, 1887809, 1887810, 1887811

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A75755

Included Lab Sample IDs: 1887812, 1887813, 1887814, 1887815

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	97.6	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A75775

Included Lab Sample IDs: 1887808, 1887809, 1887810, 1887811

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

Reference Method: EPA 8321B

Run ID: A75783

Included Lab Sample IDs: 1887838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	108	102	P/P	60 - 150

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75786

Included Lab Sample IDs: 1887808, 1887809, 1887811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	92.5	92.5	P/P	90 - 110
NO2NO3-N	95.5	95.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75791

Included Lab Sample IDs: 1887808, 1887809, 1887810, 1887811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75815

Included Lab Sample IDs: 1887808, 1887809, 1887811

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75873

Included Lab Sample IDs: 1887810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75875

Included Lab Sample IDs: 1887810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	97.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75903

Included Lab Sample IDs: 1887804, 1887805, 1887806, 1887807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	101	99.7	P/P	90 - 110
Sulfate	94.5	98.4	P/P	90 - 110
Sulfate	98.4	93.9	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A75952

Included Lab Sample IDs: 1887804, 1887805, 1887806, 1887807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	105	P/P	90 - 110
Total Alkalinity	105	102	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A75985

Included Lab Sample IDs: 1887838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	92.6	104	P/P	50 - 150
Bentazon	89.8	88.6	P/P	50 - 150
MCP	107	107	P/P	50 - 150
Triclopyr	118	83.8	P/P	50 - 150

Reference Method: USGS O-2060-01

Run ID: A76024

Included Lab Sample IDs: 1887838

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	146	143	P/P	60 - 150
Carbamazepine	128	136	P/P	60 - 150
Diuron	114	115	P/P	60 - 150
Fenuron	125	126	P/P	60 - 150
Fluridone	129	132	P/P	60 - 150
Imidacloprid	105	112	P/P	60 - 150
Linuron	76.0	66.0	P/P	60 - 150
Primidone	96.4	95.2	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A76090

Included Lab Sample IDs: 1887804, 1887805, 1887806

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	97.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76201

Included Lab Sample IDs: 1887807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	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				10.7	
EPA 300.0 Rev. 2.1	Chloride	101	100	101	0.0681	
	Chloride	100	99.5	100	0.0975	
	Sulfate	95.4	98.2	97.8	0.682	
	Sulfate	97.5	97.3	93.4	0.113	
EPA 350.1 Rev. 2.0	Ammonia-N	99.5	101	102		0.572
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	100	102		1.53
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	98.0	98.5		0.509
	NO2NO3-N	100	102	99.5		2.48
EPA 365.1 Rev. 2.0	Total-P	101	101	106		4.26
	Total-P	101	98.7	105		4.99
	Total-P	104	102	104		1.48
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	95.8	97.1		1.08
EPA 8321B	Sucralose	104	87.3	98.0		11.5
SM 2120 B	Color (true)				2.96	
SM 2320 B-97	Total Alkalinity	104			1.58	
SM 2540 C-97	TDS				0.830	
SM 4500 F-C-97	Fluoride	95.9	95.8	93.6		2.00
	Fluoride	97.6	99.2	100		1.01
SM 5310 B-00	Organic Carbon	106	104	105		0.381
USGS O-2060-01	2,4-D	97.2	135	127		5.51
	Acetaminophen	51.2	70.4	56.8		21.4
	Bentazon	140				8.61
	Carbamazepine	90.4	66.0	63.6		3.70
	Diuron	76.0	63.3	66.5		3.43
	Fenuron	86.8	60.8	52.8		14.1
	Fluridone	96.0	59.6	42.8		30.4
	Imidacloprid	76.4	112	98.4		12.6
	Linuron	50.0	40.0	47.2		16.6
	MCPD	90.0	131	116		12.6
	Primidone	96.4	50.0	51.2		2.37
	Triclopyr	96.8				0.612

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1887804, 1887805, 1887806, 1887807
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1887804, 1887805, 1887806, 1887807
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1887804, 1887805, 1887806, 1887807
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1887808, 1887809, 1887810, 1887811
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1887808, 1887809, 1887810, 1887811
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1887808, 1887809, 1887810, 1887811
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1887808, 1887809, 1887810, 1887811
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1887812, 1887813, 1887814, 1887815
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1887838
SM 2120 B / E31780	True Color measured at 450 nm	1887804, 1887805, 1887806, 1887807
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1887804, 1887805, 1887806, 1887807
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1887804, 1887805, 1887806, 1887807
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1887804, 1887805, 1887806, 1887807
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1887804, 1887805, 1887806, 1887807
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1887808, 1887809, 1887810, 1887811
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1887838
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1887838

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	04/12/2017			04/12/2017 15:06	Sima Feizi	1887804, 1887805, 1887806, 1887807
EPA 300.0 Rev. 2.1	04/12/2017			04/20/2017	Ping Hua	1887804, 1887805, 1887806, 1887807
EPA 350.1 Rev. 2.0	04/12/2017			04/12/2017	Julie Michelle Frank	1887808, 1887809, 1887810, 1887811
EPA 351.2 Rev. 2.0	04/12/2017	04/13/2017	Adrian Shelby	04/14/2017	Joseph Suarez	1887808, 1887809, 1887810, 1887811
EPA 353.2 Rev. 2.0	04/12/2017			04/14/2017	Beverly Y. Sanders	1887808, 1887809, 1887811
	04/12/2017			04/19/2017	Beverly Y. Sanders	1887810
EPA 365.1 Rev. 2.0	04/12/2017	04/14/2017	Vijayalakshmi Reddy	04/17/2017	Lipi Saha	1887808, 1887809, 1887811
	04/12/2017	04/17/2017	Vijayalakshmi Reddy	04/19/2017	Lipi Saha	1887810
EPA 365.1 Rev. 2.0 dissolved	04/12/2017			04/12/2017 14:36	Anthony C. Onicha	1887812
	04/12/2017			04/12/2017 14:37	Anthony C. Onicha	1887813
	04/12/2017			04/12/2017 14:38	Anthony C. Onicha	1887814
	04/12/2017			04/12/2017 14:39	Anthony C. Onicha	1887815
EPA 8321B	04/12/2017	04/12/2017	Mohammad Ghaffari	04/13/2017	Mohammad Ghaffari	1887838
SM 2120 B	04/12/2017			04/12/2017 15:07	Julia Storbeck	1887805
	04/12/2017			04/12/2017 15:08	Julia Storbeck	1887807
	04/12/2017			04/12/2017 15:13	Julia Storbeck	1887806
	04/12/2017			04/12/2017 15:31	Julia Storbeck	1887804
SM 2320 B-97	04/12/2017			04/22/2017	Dale L. Simmons	1887804, 1887805, 1887806, 1887807
SM 2540 C-97	04/12/2017			04/14/2017	Yijie Li	1887804, 1887805, 1887806, 1887807
SM 2540 D-97	04/12/2017			04/14/2017	Yijie Li	1887804, 1887805, 1887806, 1887807
SM 4500 F-C-97	04/12/2017			05/01/2017	Dale L. Simmons	1887804, 1887805, 1887806
	04/12/2017			05/03/2017	Dale L. Simmons	1887807
SM 5310 B-00	04/12/2017			04/13/2017	Julie Michelle Frank	1887808, 1887809, 1887810, 1887811
USGS O-2060-01	04/12/2017	04/16/2017	Fe-Val Siddell	04/22/2017	Juyoung Kim	1887838
	04/12/2017	04/16/2017	Fe-Val Siddell	04/25/2017	Juyoung Kim	1887838