

Chemical Analysis Report

CEN-DIST-2017-03-29-01

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

Event Description: **Rose / Strickland X2 / Spruce / UnBranch 2642**

Request ID: **RQ-2017-03-27-43**

Customer: **CEN-DIST**

Project ID: **TMDL**

Send Reports to:

FL Dept. of Environmental Protection
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3319 Maguire Blvd., Suite 232
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 24-APR-2017 10:54



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: Metals, 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: Strickland Bay @ 875m East (Downstream) of RR crossing **Collection Date/Time: 03/28/2017 11:06**

Field ID: G5CE0074

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883946	EPA 180.1 Rev. 2.0	Turbidity	4.1	A	NTU	P322462	
	SM 2320 B-97	Total Alkalinity	131		mg CaCO3/L	P322917	
	SM 2540 D-97	TSS	7	I	mg/L	P323021	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P323077	
1883947	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P322498	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40	I	mg N/L	P322455	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P322649	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P322556	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P322513	
1883948	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P322444	
1884000	EPA 200.7 Rev. 4.4	Iron	210	I	ug/L	P322769	
	EPA 200.8 Rev. 5.4	Arsenic	2.12		ug/L	P322769	
		Cadmium	0.080	U	ug/L	P322769	
		Chromium	1.6	U	ug/L	P322769	
		Copper	0.80	U	ug/L	P322769	
		Lead	0.32	I	ug/L	P322769	
		Nickel	0.80	U	ug/L	P322769	
		Silver	0.040	U	ug/L	P322769	
		Zinc	7.6	I	ug/L	P322769	

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: Strickland Bay @ 100m SW of US1 Bridge **Collection Date/Time: 03/28/2017 11:24**

Field ID: G5CE0090

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883949	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P322462	
	SM 2320 B-97	Total Alkalinity	136		mg CaCO3/L	P322917	
	SM 2540 D-97	TSS	8	I	mg/L	P323021	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P323077	
1883950	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P322498	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40	I	mg N/L	P322455	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P322650	
	EPA 365.1 Rev. 2.0	Total-P	0.046		mg P/L	P322556	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P322513	
1883951	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P322444	
1883998	EPA 8321B	Sucralose**	0.26		ug/L	P322307	
	USGS O-2060-01	2,4-D	0.0040	U	ug/L	P322308	
		Diuron	0.0040	U	ug/L	P322308	MS
		Fenuron	0.0080	U	ug/L	P322308	
		2,4,5-T	0.0040	U	ug/L	P322308	
		Acifluorfen	0.010	U	ug/L	P322308	RPD
		Imidacloprid	0.0040	U	ug/L	P322308	

Field ID: G5CE0090

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883998	USGS O-2060-01	Bentazon	0.023		ug/L	P322308	MS
		Linuron	0.0040	U	ug/L	P322308	
		Acetaminophen**	0.010	U	ug/L	P322308	
		Carbamazepine**	0.0011	I	ug/L	P322308	
		Silvex	0.0040	U	ug/L	P322308	
		Primidone**	0.0080	U	ug/L	P322308	
		Fluridone**	0.0013	I	ug/L	P322308	
1884001	EPA 200.7 Rev. 4.4	Iron	220	I	ug/L	P322769	
	EPA 200.8 Rev. 5.4	Arsenic	2.17		ug/L	P322769	
		Cadmium	0.080	U	ug/L	P322769	
		Chromium	1.6	U	ug/L	P322769	
		Copper	0.80	U	ug/L	P322769	
		Lead	0.31	I	ug/L	P322769	
		Nickel	0.80	U	ug/L	P322769	
		Silver	0.040	U	ug/L	P322769	
		Zinc	4.0	U	ug/L	P322769	

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: Rose Bay @ 125m NE of Boat Ramp

Collection Date/Time: 03/28/2017 11:54

Field ID: G5CE0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883955	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P322462	
	SM 2320 B-97	Total Alkalinity	136		mg CaCO3/L	P322917	
	SM 2540 D-97	TSS	6	I	mg/L	P323021	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P323077	
1883956	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P322498	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P322455	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P322650	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P322556	
	SM 5310 B-00	Organic Carbon	3.6		mg C/L	P322513	
1883957	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.025		mg P/L	P322444	
1883999	EPA 8321B	Sucralose**	0.43		ug/L	P322307	
	USGS O-2060-01	2,4-D	0.0041	I	ug/L	P322308	
		Diuron	0.0040	U	ug/L	P322308	MS
		Fenuron	0.0080	U	ug/L	P322308	
		2,4,5-T	0.0040	U	ug/L	P322308	
		Acifluorfen	0.010	U	ug/L	P322308	RPD
		Imidacloprid	0.0040	U	ug/L	P322308	
		Bentazon	0.040		ug/L	P322308	MS
		Linuron	0.0040	U	ug/L	P322308	
		Acetaminophen**	0.010	U	ug/L	P322308	
		Carbamazepine**	0.0019		ug/L	P322308	
		Silvex	0.0040	U	ug/L	P322308	

Field ID: G5CE0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883999	USGS O-2060-01	Primidone**	0.0080	U	ug/L	P322308	
		Fluridone**	0.0019		ug/L	P322308	

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: Unnamed Branch @ 750m US of confluence w/ Tomoka River **Collection Date/Time: 03/28/2017 12:55**

Field ID: G5CE0017

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1883952	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P322462	
	SM 2320 B-97	Total Alkalinity	155		mg CaCO3/L	P322917	
	SM 2540 D-97	TSS	4	I	mg/L	P323021	
	SM 4500 F-C-97	Fluoride	0.66		mg F/L	P323077	
1883953	EPA 350.1 Rev. 2.0	Ammonia-N	0.073		mg N/L	P322422	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.93		mg N/L	P322455	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P322650	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P322556	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P322513	
1883954	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.072		mg P/L	P322444	

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: P322462

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P322769

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P322769

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L
Zinc	1.0	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322422

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322498

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322455

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322649

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322650

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322556

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322444

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

Reference Method: EPA 8321B
Batch ID: P322307

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2320 B-97
Batch ID: P322917

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P323021

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P323077

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P322513

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

Reference Method: USGS O-2060-01
Batch ID: P322308

Component	Result	Code	Units
2,4,5-T	0.0040	U	ug/L
2,4-D	0.0040	U	ug/L
Acetaminophen	0.010	U	ug/L
Acifluorfen	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
Primidone	0.0080	U	ug/L
Silvex	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322769

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322769

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	101		P	85 - 115
Copper	99.5		P	85 - 115
Lead	101		P	85 - 115
Nickel	101		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322769

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Silver	103		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322422

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322498

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322455

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322649

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322650

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322556

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322444

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

Reference Method: EPA 8321B
Batch ID: P322307

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	88.9		P	40 - 140

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P322917

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

Reference Method: SM 4500 F-C-97
Batch ID: P323077

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P322513

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P322308

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4,5-T	80.8		P	40 - 140
2,4-D	110		P	40 - 140
Acetaminophen	94.4		P	40 - 140
Acifluorfen	138		P	40 - 140
Bentazon	52.4		P	40 - 140
Carbamazepine	98.0		P	40 - 140
Diuron	63.6		P	40 - 140
Fenuron	92.8		P	40 - 140
Fluridone	104		P	40 - 140
Imidacloprid	66.0		P	40 - 160
Linuron	88.8		P	40 - 140
Primidone	79.6		P	40 - 140
Silvex	76.4		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322769

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884148	Iron	104	106	P/P	70 - 130
1885599	Iron	109		P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322769

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884148	Arsenic	110	108	P/P	80 - 120
1884148	Cadmium	100	102	P/P	80 - 120
1884148	Chromium	97.4	94.6	P/P	80 - 120
1884148	Copper	91.8	92.8	P/P	80 - 120
1884148	Lead	108	107	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322769

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884148	Nickel	99.8	98.2	P/P	80 - 120
1884148	Silver	94.9	96.4	P/P	80 - 120
1884148	Zinc	93.6	94.2	P/P	80 - 120
1885599	Arsenic	112		P	80 - 120
1885599	Cadmium	105		P	80 - 120
1885599	Chromium	99.2		P	80 - 120
1885599	Copper	99.2		P	80 - 120
1885599	Lead	105		P	80 - 120
1885599	Nickel	101		P	80 - 120
1885599	Silver	97.6		P	80 - 120
1885599	Zinc	101		P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322422

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883510	Ammonia-N	99.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322498

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883962	Ammonia-N	110	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883950	Kjeldahl Nitrogen	99.2	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322649

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883640	NO2NO3-N	104	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883950	NO2NO3-N	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322556

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883953	Total-P	95.7	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322444

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P322444

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883969	O-Phosphate-P	98.1	100	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P322307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883895	Sucralose	113	115	P/P	40 - 140

Reference Method: SM 4500 F-C-97
 Batch ID: P323077

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1884088	Fluoride	92.1	92.8	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P322513

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883947	Organic Carbon	91.7	92.1	P/P	85 - 115

Reference Method: USGS O-2060-01
 Batch ID: P322308

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1883897	2,4,5-T	82.0	80.8	P/P	40 - 140
1883897	2,4-D	130	128	P/P	40 - 140
1883897	Acetaminophen	52.8	49.2	P/P	40 - 140
1883897	Acifluorfen	41.2	67.2	P/P	40 - 140
1883897	Bentazon	153	175	F/F	40 - 140
1883897	Carbamazepine	49.6	45.2	P/P	40 - 140
1883897	Diuron	40.8	37.6	P/F	40 - 140
1883897	Fenuron	48.8	42.8	P/P	40 - 140
1883897	Fluridone	59.9	47.9	P/P	40 - 140
1883897	Imidacloprid	96.4	79.2	P/P	40 - 160
1883897	Linuron	52.4	60.0	P/P	40 - 140
1883897	Primidone	43.2	40.4	P/P	40 - 140
1883897	Silvex	124	132	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P322462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883946	Turbidity	3.43	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884148	Iron	2.22	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884148	Arsenic	1.78	Spike	P	0 - 20
1884148	Cadmium	1.82	Spike	P	0 - 20
1884148	Chromium	2.90	Spike	P	0 - 20
1884148	Copper	1.01	Spike	P	0 - 20
1884148	Lead	0.403	Spike	P	0 - 20
1884148	Nickel	1.66	Spike	P	0 - 20
1884148	Silver	1.54	Spike	P	0 - 20
1884148	Zinc	0.602	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322422

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883510	Ammonia-N	0.829	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322498

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883962	Ammonia-N	5.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883950	Kjeldahl Nitrogen	0.0360	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883640	NO2NO3-N	1.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883950	NO2NO3-N	1.46	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P322556

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883953	Total-P	7.93	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P322444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883969	O-Phosphate-P	2.12	Spike	P	0 - 20

Reference Method: EPA 8321B

Batch ID: P322307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883895	Sucralose	1.55	Spike	P	0 - 30

Reference Method: SM 2320 B-97

Batch ID: P322917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884088	Total Alkalinity	0.131	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97

Batch ID: P323077

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1884088	Fluoride	0.480	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00

Batch ID: P322513

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883947	Organic Carbon	0.397	Spike	P	0 - 20

Reference Method: USGS O-2060-01

Batch ID: P322308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883897	2,4,5-T	1.47	Spike	P	0 - 30
1883897	2,4-D	1.86	Spike	P	0 - 30
1883897	Acetaminophen	7.06	Spike	P	0 - 30
1883897	Acifluorfen	48.0	Spike	F	0 - 30
1883897	Bentazon	10.1	Spike	P	0 - 30
1883897	Carbamazepine	9.28	Spike	P	0 - 30
1883897	Diuron	8.16	Spike	P	0 - 30
1883897	Fenuron	13.1	Spike	P	0 - 30
1883897	Fluridone	22.1	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P322308

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1883897	Imidacloprid	19.6	Spike	P	0 - 30
1883897	Linuron	13.5	Spike	P	0 - 30
1883897	Primidone	6.70	Spike	P	0 - 30
1883897	Silvex	6.27	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: 1883998
Field Sample ID: G5CE0090

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	106	P	40 - 150
USGS O-2060-01	2,4-D-d3	111	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	91.2	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	85.4	P	40 - 160
USGS O-2060-01	Diuron-d6	93.0	P	40 - 150
USGS O-2060-01	Primidone-d5	122	P	40 - 150

Lab Sample ID: 1883999
Field Sample ID: G5CE0073

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	108	P	40 - 150
USGS O-2060-01	2,4-D-d3	103	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	64.4	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	77.4	P	40 - 160
USGS O-2060-01	Diuron-d6	78.4	P	40 - 150
USGS O-2060-01	Primidone-d5	103	P	40 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A75437
Included Lab Sample IDs: 1883953

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A75452
Included Lab Sample IDs: 1883948, 1883951, 1883954, 1883957

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A75456

Included Lab Sample IDs: 1883946, 1883949, 1883952, 1883955

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

Reference Method: EPA 8321B

Run ID: A75457

Included Lab Sample IDs: 1883998, 1883999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	106	104	P/P	60 - 150

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A75470

Included Lab Sample IDs: 1883947, 1883950, 1883956

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

Reference Method: SM 5310 B-00

Run ID: A75475

Included Lab Sample IDs: 1883947, 1883950, 1883953, 1883956

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	95.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75489

Included Lab Sample IDs: 1883947, 1883950, 1883953, 1883956

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	100	P/P	90 - 110
Kjeldahl Nitrogen	98.0	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75520

Included Lab Sample IDs: 1883947, 1883950, 1883953, 1883956

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75523

Included Lab Sample IDs: 1883953

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	107	106	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75528

Included Lab Sample IDs: 1883947, 1883950, 1883956

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

Reference Method: SM 2320 B-97

Run ID: A75625

Included Lab Sample IDs: 1883946, 1883949, 1883952, 1883955

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75631

Included Lab Sample IDs: 1884000, 1884001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	100	98.9	P/P	90 - 110
Cadmium	98.6	99.4	P/P	90 - 110
Chromium	100	104	P/P	90 - 110
Copper	99.3	93.5	P/P	90 - 110
Lead	98.7	97.6	P/P	90 - 110
Nickel	100	94.7	P/P	90 - 110
Silver	97.6	98.5	P/P	90 - 110
Zinc	100	95.3	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A75643

Included Lab Sample IDs: 1884000, 1884001

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

Reference Method: USGS O-2060-01

Run ID: A75654

Included Lab Sample IDs: 1883998, 1883999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	106	115	P/P	60 - 150
Carbamazepine	117	114	P/P	60 - 150
Diuron	94.8	87.2	P/P	60 - 150
Fenuron	112	111	P/P	60 - 150
Fluridone	109	115	P/P	60 - 150
Imidacloprid	96.4	88.0	P/P	60 - 150
Linuron	97.6	112	P/P	60 - 150
Primidone	119	104	P/P	60 - 150

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75667

Included Lab Sample IDs: 1884000

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	97.6	94.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A75705

Included Lab Sample IDs: 1883998, 1883999

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4,5-T	97.8	105	P/P	50 - 150
2,4-D	136	128	P/P	50 - 150
Acifluorfen	106	117	P/P	50 - 150
Bentazon	75.0	105	P/P	50 - 150
Silvex	80.0	85.2	P/P	50 - 150

Reference Method: SM 4500 F-C-97

Run ID: A75710

Included Lab Sample IDs: 1883946, 1883949, 1883952, 1883955

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.5	97.6	P/P	90 - 110
Fluoride	97.6	97.5	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						3.43	
EPA 200.7 Rev. 4.4	Iron	103	104	106	109			2.22
EPA 200.8 Rev. 5.4	Arsenic	101	110	108	112			1.78
	Cadmium	102	100	102	105			1.82
	Chromium	101	97.4	94.6	99.2			2.90
	Copper	99.5	91.8	92.8	99.2			1.01
	Lead	101	108	107	105			0.403
	Nickel	101	99.8	98.2	101			1.66
	Silver	103	94.9	96.4	97.6			1.54
	Zinc	101	93.6	94.2	101			0.602
EPA 350.1 Rev. 2.0	Ammonia-N	101	99.5	100				0.829
	Ammonia-N	103	110	104				5.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.0	99.2	99.1				0.0360
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104	102				1.46
	NO2NO3-N	99.5	104	102				1.46
EPA 365.1 Rev. 2.0	Total-P	106	95.7	105				7.93
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.1	100				2.12
EPA 8321B	Sucralose	88.9	113	115				1.55
SM 2320 B-97	Total Alkalinity	104					0.131	
SM 4500 F-C-97	Fluoride	99.4	92.1	92.8				0.480
SM 5310 B-00	Organic Carbon	98.0	91.7	92.1				0.397
USGS O-2060-01	2,4,5-T	80.8	82.0	80.8				1.47
	2,4-D	110	130	128				1.86
	Acetaminophen	94.4	52.8	49.2				7.06
	Acifluorfen	138	41.2	67.2				48.0
	Bentazon	52.4	153	175				10.1
	Carbamazepine	98.0	49.6	45.2				9.28

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision LCS	SMP	MS
USGS O-2060-01	Diuron	63.6	40.8	37.6			8.16
	Fenuron	92.8	48.8	42.8			13.1
	Fluridone	104	59.9	47.9			22.1
	Imidacloprid	66.0	96.4	79.2			19.6
	Linuron	88.8	52.4	60.0			13.5
	Primidone	79.6	43.2	40.4			6.70
	Silvex	76.4	124	132			6.27

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1883946, 1883949, 1883952, 1883955
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1884000, 1884001
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1884000, 1884001
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1883947, 1883950, 1883953, 1883956
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1883947, 1883950, 1883953, 1883956
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1883947, 1883950, 1883953, 1883956
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1883947, 1883950, 1883953, 1883956
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1883948, 1883951, 1883954, 1883957
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1883998, 1883999
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1883946, 1883949, 1883952, 1883955
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1883946, 1883949, 1883952, 1883955
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1883946, 1883949, 1883952, 1883955
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1883947, 1883950, 1883953, 1883956
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1883998, 1883999
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1883998, 1883999

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	03/29/2017			03/29/2017 17:01	Blanca Fach	1883946, 1883949, 1883952, 1883955
EPA 200.7 Rev. 4.4	03/29/2017	04/04/2017	Elliott D. Healy	04/06/2017	Martin Acosta	1884000, 1884001
EPA 200.8 Rev. 5.4	03/29/2017	04/04/2017	Elliott D. Healy	04/06/2017	Betina Topolski	1884000, 1884001
	03/29/2017	04/04/2017	Elliott D. Healy	04/07/2017	Betina Topolski	1884000
EPA 350.1 Rev. 2.0	03/29/2017			03/29/2017	Julie Michelle Frank	1883953
	03/29/2017			03/30/2017	Julie Michelle Frank	1883947, 1883950, 1883956
EPA 351.2 Rev. 2.0	03/29/2017	03/30/2017	Adrian Shelby	03/31/2017	Joseph Suarez	1883947, 1883950, 1883953, 1883956
EPA 353.2 Rev. 2.0	03/29/2017			04/03/2017	Beverly Y. Sanders	1883947, 1883950, 1883953, 1883956
EPA 365.1 Rev. 2.0	03/29/2017	03/31/2017	Adrian Shelby	04/03/2017	Lipi Saha	1883947, 1883950, 1883953, 1883956
EPA 365.1 Rev. 2.0 dissolved	03/29/2017			03/29/2017 14:23	Anthony C. Onicha	1883948
	03/29/2017			03/29/2017 14:24	Anthony C. Onicha	1883951
	03/29/2017			03/29/2017 14:25	Anthony C. Onicha	1883954, 1883957
EPA 8321B	03/29/2017	03/29/2017	Mohammad Ghaffari	03/29/2017	Mohammad Ghaffari	1883998, 1883999
SM 2320 B-97	03/29/2017			04/06/2017	Dale L. Simmons	1883946, 1883949, 1883952, 1883955
SM 2540 D-97	03/29/2017			03/31/2017	Yijie Li	1883946, 1883949, 1883952, 1883955
SM 4500 F-C-97	03/29/2017			04/10/2017	Dale L. Simmons	1883946, 1883949, 1883952, 1883955
SM 5310 B-00	03/29/2017			03/30/2017	Julie Michelle Frank	1883947, 1883950, 1883953, 1883956
USGS O-2060-01	03/29/2017	03/30/2017	Hoor Shaik	04/07/2017	Juyoung Kim	1883998, 1883999
	03/29/2017	03/30/2017	Hoor Shaik	04/11/2017	Juyoung Kim	1883998, 1883999