

Chemical Analysis Report

SE-DIST-2017-03-23-01

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

Event Description: **SMP-Broward 1 Run**
Request ID: **RQ-2017-03-06-26**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 20-APR-2017 16:11



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: C-10 Canal @ Stirling Rd.

Collection Date/Time: 03/22/2017 10:45

Field ID: G4SE0036

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1882473	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P322102	
	SM 2320 B-97	Total Alkalinity	170		mg CaCO3/L	P322241	
	SM 2540 D-97	TSS	4	I	mg/L	P322742	
	SM 4500 F-C-97	Fluoride	0.73		mg F/L	P322245	
1882474	EPA 350.1 Rev. 2.0	Ammonia-N	0.044		mg N/L	P322189	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P322082	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.19		mg N/L	P322374	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P322129	
	SM 5310 B-00	Organic Carbon	4.5		mg C/L	P322167	
1882475	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.028		mg P/L	P322055	
1882487	EPA 8321B	Sucralose**	2.2		ug/L	P322018	
	USGS O-2060-01	2,4-D	0.0040	U	ug/L	P321946	
		Diuron	0.014	I	ug/L	P321946	MS
		Fenuron	0.016	U	ug/L	P321946	MS
		2,4,5-T	0.0040	U	ug/L	P321946	
		Acifluorfen	0.010	U	ug/L	P321946	
		Imidacloprid	0.0080	U	ug/L	P321946	
		Bentazon	0.052		ug/L	P321946	MS
		Linuron	0.0040	U	ug/L	P321946	
		Acetaminophen**	0.020	U	ug/L	P321946	
		Carbamazepine**	0.0075		ug/L	P321946	
		Silvex	0.0040	U	ug/L	P321946	MS
		Primidone**	0.016	U	ug/L	P321946	
		Fluridone**	8.0E-04	U	ug/L	P321946	MS

Ref. Method and Comment:

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

USGS O-2060-01: MDL's for some parameters elevated due to matrix interference.

Sample Location: West Lake Middle North Sheridan

Collection Date/Time: 03/22/2017 11:10

Field ID: G4SE0037

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1882467	EPA 180.1 Rev. 2.0	Turbidity	8.1		NTU	P322102	
	SM 2320 B-97	Total Alkalinity	142		mg CaCO3/L	P322241	
	SM 2540 D-97	TSS	11		mg/L	P322741	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P322245	
1882468	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P322189	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P322082	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P322374	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P322129	
	SM 5310 B-00	Organic Carbon	2.8		mg C/L	P322167	
1882469	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P322055	

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: Dania Cutoff Canal @ US1

Collection Date/Time: 03/22/2017 11:50

Field ID: 28030552

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1882470	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P322102	
	SM 2320 B-97	Total Alkalinity	142		mg CaCO3/L	P322241	
	SM 2540 D-97	TSS	5	I	mg/L	P322742	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P322245	
1882471	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P322189	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P322082	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P322374	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P322129	
	SM 5310 B-00	Organic Carbon	2.8		mg C/L	P322167	
1882472	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P322055	
1882486	EPA 8321B	Sucralose**	0.65	J	ug/L	P322018	SUR
	USGS O-2060-01	2,4-D	0.0040	U	ug/L	P321946	
		Diuron	0.0040	U	ug/L	P321946	MS
		Fenuron	0.0080	U	ug/L	P321946	MS
		2,4,5-T	0.0040	U	ug/L	P321946	
		Acifluorfen	0.010	U	ug/L	P321946	
		Imidacloprid	0.0040	U	ug/L	P321946	
		Bentazon	0.034		ug/L	P321946	MS
		Linuron	0.0040	U	ug/L	P321946	
		Acetaminophen**	0.010	U	ug/L	P321946	
		Carbamazepine**	6.5E-04	I	ug/L	P321946	
		Silvex	0.0040	U	ug/L	P321946	MS
		Primidone**	0.0080	U	ug/L	P321946	
		Fluridone**	4.0E-04	U	ug/L	P321946	MS
1882488	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P322332	
	EPA 200.8 Rev. 5.4	Arsenic	1.92		ug/L	P322332	
		Cadmium	0.080	U	ug/L	P322332	
		Chromium	1.6	U	ug/L	P322332	
		Copper	5.6		ug/L	P322332	
		Lead	0.29	I	ug/L	P322332	
		Nickel	0.80	U	ug/L	P322332	
		Silver	0.040	U	ug/L	P322332	
		Zinc	17		ug/L	P322332	

Ref. Method and Comment:

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

EPA 8321B: Refer to the narrative for an explanation of QC Codes.

EPA 200.8 Rev. 5.4: The copper result was confirmed in the undigested sample on 04/18/2017.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P322102

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322332

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322332

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322189

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322082

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322374

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322129

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322055

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

Reference Method: EPA 8321B
Batch ID: P322018

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
 Batch ID: P322241

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

Reference Method: SM 2540 D-97
 Batch ID: P322741

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P322742

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P322245

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P322167

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

Reference Method: USGS O-2060-01
 Batch ID: P321946

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: P322332

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322332

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322332

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.0		P	85 - 115
Cadmium	94.3		P	85 - 115
Chromium	94.0		P	85 - 115
Copper	95.7		P	85 - 115
Lead	98.1		P	85 - 115
Nickel	97.8		P	85 - 115
Silver	101		P	85 - 115
Zinc	94.7		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322189

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322082

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322374

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322129

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: P322055

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

Reference Method: EPA 8321B
Batch ID: P322018

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	71.4		P	40 - 140

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P322241

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

Reference Method: SM 4500 F-C-97
Batch ID: P322245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P322167

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.3		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P321946

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4,5-T	95.2		P	40 - 140
2,4-D	80.4		P	40 - 140
Acetaminophen	52.8		P	40 - 140
Acifluorfen	64.8		P	40 - 140
Bentazon	101		P	40 - 140
Carbamazepine	122		P	40 - 140
Diuron	111		P	40 - 140
Fenuron	114		P	40 - 140
Fluridone	99.2		P	40 - 140
Imidacloprid	88.4		P	40 - 160
Linuron	102		P	40 - 140
Primidone	86.8		P	40 - 140
Silvex	131		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881698	Iron	95.0	93.2	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881698	Arsenic	107	111	P/P	70 - 130
1881698	Cadmium	90.8	97.2	P/P	70 - 130
1881698	Chromium	93.1	94.0	P/P	70 - 130
1881698	Copper	95.4	96.5	P/P	70 - 130
1881698	Lead	107	106	P/P	70 - 130
1881698	Nickel	97.6	98.1	P/P	70 - 130

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881698	Silver	97.0	97.3	P/P	70 - 130
1881698	Zinc	94.9	86.5	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322189

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882446	Ammonia-N	105	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322082

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882447	Kjeldahl Nitrogen	96.6	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322374

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882448	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322129

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882446	Total-P	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882318	O-Phosphate-P	96.0	101	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P322018

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882187	Sucralose	76.0	77.3	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P322245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882599	Fluoride	95.6	97.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P322167

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882428	Organic Carbon	95.5	97.2	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P321946

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881998	2,4,5-T	105	103	P/P	40 - 140
1881998	2,4-D	101	109	P/P	40 - 140
1881998	Acetaminophen	42.8	46.8	P/P	40 - 140
1881998	Acifluorfen	76.4	103	P/P	40 - 140
1881998	Bentazon	143	146	F/F	40 - 140
1881998	Carbamazepine	43.6	44.8	P/P	40 - 140
1881998	Diuron	36.5	35.8	F/F	40 - 140
1881998	Fenuron	28.7	31.6	F/F	40 - 140
1881998	Fluridone	28.4	34.2	F/F	40 - 140
1881998	Imidacloprid	62.0	69.6	P/P	40 - 160
1881998	Linuron	56.8	61.6	P/P	40 - 140
1881998	Primidone	53.6	47.2	P/P	40 - 140
1881998	Silvex	176	181	F/F	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P322102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882402	Turbidity	3.65	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P322332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881698	Iron	1.88	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P322332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881698	Arsenic	3.29	Spike	P	0 - 20
1881698	Cadmium	6.83	Spike	P	0 - 20
1881698	Chromium	0.886	Spike	P	0 - 20
1881698	Copper	1.19	Spike	P	0 - 20
1881698	Lead	1.01	Spike	P	0 - 20
1881698	Nickel	0.517	Spike	P	0 - 20
1881698	Silver	0.301	Spike	P	0 - 20
1881698	Zinc	8.22	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P322189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882446	Ammonia-N	1.71	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322082

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882447	Kjeldahl Nitrogen	0.333	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322374

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882448	NO2NO3-N	0.601	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882446	Total-P	2.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882318	O-Phosphate-P	5.47	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P322018

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882187	Sucralose	1.41	Spike	P	0 - 30

Reference Method: SM 2320 B-97
Batch ID: P322241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882599	Total Alkalinity	0.432	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P322245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882599	Fluoride	1.42	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P322167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882428	Organic Carbon	1.60	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P321946

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881998	2,4,5-T	1.93	Spike	P	0 - 30
1881998	2,4-D	5.73	Spike	P	0 - 30
1881998	Acetaminophen	8.93	Spike	P	0 - 30
1881998	Acifluorfen	29.8	Spike	P	0 - 30
1881998	Bentazon	1.83	Spike	P	0 - 30
1881998	Carbamazepine	2.71	Spike	P	0 - 30
1881998	Diuron	1.88	Spike	P	0 - 30
1881998	Fenuron	9.56	Spike	P	0 - 30
1881998	Fluridone	18.5	Spike	P	0 - 30
1881998	Imidacloprid	11.6	Spike	P	0 - 30
1881998	Linuron	8.11	Spike	P	0 - 30
1881998	Primidone	12.7	Spike	P	0 - 30
1881998	Silvex	2.69	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: 1882486
Field Sample ID: 28030552

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	192	F	40 - 150
USGS O-2060-01	2,4-D-d3	108	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	40.2	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	129	P	40 - 160
USGS O-2060-01	Diuron-d6	75.4	P	40 - 150
USGS O-2060-01	Primidone-d5	77.0	P	40 - 150

Lab Sample ID: 1882487
Field Sample ID: G4SE0036

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	134	P	40 - 150
USGS O-2060-01	2,4-D-d3	96.0	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	97.2	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	118	P	40 - 160
USGS O-2060-01	Diuron-d6	98.8	P	40 - 150
USGS O-2060-01	Primidone-d5	123	P	40 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A75303
Included Lab Sample IDs: 1882469, 1882472, 1882475

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A75303

Included Lab Sample IDs: 1882469, 1882472, 1882475

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.9	P/P	90 - 110
O-Phosphate-P	98.9	98.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A75322

Included Lab Sample IDs: 1882467, 1882470, 1882473

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

Reference Method: SM 5310 B-00

Run ID: A75347

Included Lab Sample IDs: 1882468, 1882471, 1882474

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.6	95.6	P/P	90 - 110
Organic Carbon	95.6	93.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A75351

Included Lab Sample IDs: 1882468, 1882471, 1882474

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.8	P/P	90 - 110
Ammonia-N	100	100	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A75373

Included Lab Sample IDs: 1882486, 1882487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	105	119	P/P	60 - 150

Reference Method: SM 2320 B-97

Run ID: A75378

Included Lab Sample IDs: 1882467, 1882470, 1882473

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

Reference Method: SM 4500 F-C-97

Run ID: A75378

Included Lab Sample IDs: 1882467, 1882470, 1882473

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.2	97.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75381

Included Lab Sample IDs: 1882468, 1882471, 1882474

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75386

Included Lab Sample IDs: 1882468, 1882471, 1882474

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.5	100	P/P	90 - 110
Kjeldahl Nitrogen	96.6	93.5	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A75398

Included Lab Sample IDs: 1882486, 1882487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Linuron	129	143	P/P	60 - 150

Reference Method: USGS O-2060-01

Run ID: A75408

Included Lab Sample IDs: 1882486, 1882487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4,5-T	103	88.2	P/P	50 - 150
2,4-D	95.6	98.8	P/P	50 - 150
Acifluorfen	128	84.4	P/P	50 - 150
Bentazon	95.8	75.2	P/P	50 - 150
Silvex	95.8	94.0	P/P	50 - 150

Reference Method: USGS O-2060-01

Run ID: A75428

Included Lab Sample IDs: 1882486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	135	132	P/P	60 - 150
Carbamazepine	130	132	P/P	60 - 150
Diuron	130	140	P/P	60 - 150
Fenuron	126	131	P/P	60 - 150
Fluridone	120	120	P/P	60 - 150
Imidacloprid	97.6	99.6	P/P	60 - 150
Primidone	78.0	82.8	P/P	60 - 150

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75429

Included Lab Sample IDs: 1882468, 1882471, 1882474

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75535

Included Lab Sample IDs: 1882488

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	98.2	P/P	90 - 110
Cadmium	94.9	95.0	P/P	90 - 110
Chromium	95.6	96.1	P/P	90 - 110
Copper	97.7	99.5	P/P	90 - 110
Lead	99.2	98.7	P/P	90 - 110
Nickel	98.4	99.8	P/P	90 - 110
Silver	101	99.5	P/P	90 - 110
Zinc	96.9	97.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A75546

Included Lab Sample IDs: 1882488

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

Reference Method: USGS O-2060-01

Run ID: A75564

Included Lab Sample IDs: 1882487

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	121	114	P/P	60 - 150
Carbamazepine	134	143	P/P	60 - 150
Diuron	127	120	P/P	60 - 150
Fenuron	128	130	P/P	60 - 150
Fluridone	112	104	P/P	60 - 150
Imidacloprid	116	112	P/P	60 - 150
Primidone	109	128	P/P	60 - 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				3.65	
EPA 200.7 Rev. 4.4	Iron	104	95.0 93.2			1.88
EPA 200.8 Rev. 5.4	Arsenic	97.0	107 111			3.29
	Cadmium	94.3	90.8 97.2			6.83
	Chromium	94.0	93.1 94.0			0.886
	Copper	95.7	95.4 96.5			1.19
	Lead	98.1	107 106			1.01
	Nickel	97.8	97.6 98.1			0.517
	Silver	101	97.0 97.3			0.301
	Zinc	94.7	94.9 86.5			8.22
EPA 350.1 Rev. 2.0	Ammonia-N	105	105 102			1.71
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.1	96.6 96.2			0.333

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104	104		0.601
EPA 365.1 Rev. 2.0	Total-P	104	104	106		2.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.8	96.0	101		5.47
EPA 8321B	Sucralose	71.4	76.0	77.3		1.41
SM 2320 B-97	Total Alkalinity	104			0.432	
SM 4500 F-C-97	Fluoride	94.3	95.6	97.6		1.42
SM 5310 B-00	Organic Carbon	99.3	95.5	97.2		1.60
USGS O-2060-01	2,4,5-T	95.2	105	103		1.93
	2,4-D	80.4	101	109		5.73
	Acetaminophen	52.8	42.8	46.8		8.93
	Acifluorfen	64.8	76.4	103		29.8
	Bentazon	101	143	146		1.83
	Carbamazepine	122	43.6	44.8		2.71
	Diuron	111	36.5	35.8		1.88
	Fenuron	114	28.7	31.6		9.56
	Fluridone	99.2	28.4	34.2		18.5
	Imidacloprid	88.4	62.0	69.6		11.6
	Linuron	102	56.8	61.6		8.11
	Primidone	86.8	53.6	47.2		12.7
	Silvex	131	176	181		2.69

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1882467, 1882470, 1882473
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1882488
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1882488
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1882468, 1882471, 1882474
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1882468, 1882471, 1882474
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1882468, 1882471, 1882474
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1882468, 1882471, 1882474
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1882469, 1882472, 1882475
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1882486, 1882487
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1882467, 1882470, 1882473
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1882467, 1882470, 1882473
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1882467, 1882470, 1882473
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1882468, 1882471, 1882474
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1882486, 1882487
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1882486, 1882487

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	03/23/2017			03/23/2017 17:09	Sima Feizi	1882467, 1882470, 1882473
EPA 200.7 Rev. 4.4	03/23/2017	03/28/2017	Elliott D. Healy	04/03/2017	Joshua Ayres	1882488
EPA 200.8 Rev. 5.4	03/23/2017	03/28/2017	Elliott D. Healy	04/03/2017	Betina Topolski	1882488
EPA 350.1 Rev. 2.0	03/23/2017			03/24/2017	Julie Michelle Frank	1882468, 1882471, 1882474
EPA 351.2 Rev. 2.0	03/23/2017	03/24/2017	Adrian Shelby	03/27/2017	Joseph Suarez	1882468, 1882471, 1882474
EPA 353.2 Rev. 2.0	03/23/2017			03/29/2017	Beverly Y. Sanders	1882468, 1882471, 1882474
EPA 365.1 Rev. 2.0	03/23/2017	03/24/2017	Vijayalakshmi Reddy	03/27/2017	Lipi Saha	1882468, 1882471, 1882474
EPA 365.1 Rev. 2.0 dissolved	03/23/2017			03/23/2017 12:37	Anthony C. Onicha	1882469
	03/23/2017			03/23/2017 12:42	Anthony C. Onicha	1882472
	03/23/2017			03/23/2017 12:43	Anthony C. Onicha	1882475
EPA 8321B	03/23/2017	03/23/2017	Mohammad Ghaffari	03/26/2017	Mohammad Ghaffari	1882486, 1882487
SM 2320 B-97	03/23/2017			03/25/2017	Dale L. Simmons	1882467, 1882470, 1882473
SM 2540 D-97	03/23/2017			03/28/2017	Yijie Li	1882467, 1882470, 1882473
SM 4500 F-C-97	03/23/2017			03/25/2017	Dale L. Simmons	1882467, 1882470, 1882473
SM 5310 B-00	03/23/2017			03/24/2017	Julie Michelle Frank	1882468, 1882471, 1882474
USGS O-2060-01	03/23/2017	03/24/2017	Hoor Shaik	03/25/2017	Juyoung Kim	1882486, 1882487
	03/23/2017	03/24/2017	Hoor Shaik	03/26/2017	Juyoung Kim	1882486, 1882487
	03/23/2017	03/24/2017	Hoor Shaik	03/28/2017	Juyoung Kim	1882486
	03/23/2017	03/24/2017	Hoor Shaik	03/29/2017	Juyoung Kim	1882487