

Chemical Analysis Report

SW-DIST-2018-11-28-01

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

Event Description: **Reference Streams**
Request ID: **RQ-2018-11-12-22**
Customer: **SW-DIST**
Project ID: **SCIREF**

Send Reports to:
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13051 N. Telecom Parkway
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 18-DEC-2018 13:43

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: Anclothe River Ref ANCLOGBUNK

Collection Date/Time: 11/27/2018 12:00

Field ID: 24040072

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2044067	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P355268	
	EPA 300.0	Bromide	0.075		mg Br/L	P356203	
	EPA 300.0 Rev. 2.1	Chloride	21	A	mg Cl/L	P355688	
		Sulfate	14	A	mg SO4/L	P355690	
	SM 2120 B	Color (true)	53		PCU	P355254	
	SM 2320 B-97	Total Alkalinity	141		mg CaCO3/L	P355560	
	SM 2540 C-97	TDS	220	A	mg/L	P355727	
	SM 2540 D-97	TSS	3	IA	mg/L	P355821	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P355563	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.054		mg N/L	P355446	
2044068	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P355312	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P355335	
	EPA 365.1 Rev. 2.0	Total-P	0.067		mg P/L	P355321	
	SM 5310 B-00	Organic Carbon	8.5		mg C/L	P355514	
2044069	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.050		mg P/L	P355299	
2044075	EPA 200.7 Rev. 4.4	Calcium	59.2		mg/L	P355476	
		Iron	440		ug/L	P355476	
		Magnesium	4.96		mg/L	P355476	
		Potassium	1.9		mg/L	P355476	
		Sodium	11.8		mg/L	P355476	
		Zinc	5.0	U	ug/L	P355476	
		Chromium	0.40	U	ug/L	P355476	
	EPA 200.8 Rev. 5.4	Nickel	0.25	I	ug/L	P355476	

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: Anclothe River Ref ANCLOGBUNK

Collection Date/Time: 11/27/2018 12:00

Field ID: 24040072

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2044074	EPA 8321B	2,4-D	0.0020	U	ug/L	P355221	
		Bentazon	0.064		ug/L	P355221	
		MCP	0.0020	U	ug/L	P355221	
		Triclopyr**	0.0040	U	ug/L	P355221	
		Imidacloprid	0.0041	I	ug/L	P355221	MS
		Diuron	0.0024	I	ug/L	P355221	
		Pyraclostrobin**	0.0020	U	ug/L	P355221	
		Primidone**	0.0040	U	ug/L	P355221	
		Linuron	0.0040	U	ug/L	P355221	
		Acetaminophen**	0.0080	U	ug/L	P355221	
		Fenuron	0.016	U	ug/L	P355221	
		Imazapyr**	0.11		ug/L	P355221	
		Carbamazepine**	8.0E-04	U	ug/L	P355221	
		Fluridone**	0.0083		ug/L	P355221	
		Hydrocodone**	8.0E-04	U	ug/L	P355221	
		Naproxen**	0.0080	U	ug/L	P355221	
		Ibuprofen**	0.020	U	ug/L	P355221	
		Sucralose**	0.44		ug/L	P355225	
		Acesulfame K**	0.10	U	ug/L	P355225	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355268

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355476

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355476

Component	Result	Code	Units
Chromium	0.40	U	ug/L
Nickel	0.20	U	ug/L

Reference Method: EPA 300.0
Batch ID: P356203

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355688

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355690

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355446

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355312

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: P355335

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355321

Component	Result	Code	Units
Total-P	0.005	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355299

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

Reference Method: EPA 8321B
Batch ID: P355221

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	4.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Ibuprofen	0.020	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0020	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P355225

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P355254

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P355560

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

Reference Method: SM 2540 C-97
Batch ID: P355727

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P355821

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P355563

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P355514

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355476

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	102		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	98.5		P	85 - 115
Sodium	103		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355476

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	106		P	85 - 115
Nickel	104		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P356203

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355688

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355690

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355446

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355312

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355335

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355321

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355299

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.3		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P355221

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	95.0		P	40 - 150
Acetaminophen	105		P	30 - 150
Bentazon	113		P	30 - 150
Carbamazepine	92.0		P	40 - 150
Diuron	74.8		P	40 - 150
Fenuron	95.9		P	40 - 150
Fluridone	102		P	40 - 150
Hydrocodone	91.1		P	40 - 150
Ibuprofen	72.7		P	40 - 150
Imazapyr	105		P	40 - 150
Imidacloprid	101		P	40 - 160
Linuron	71.7		P	40 - 150
MCPP	111		P	40 - 150
Naproxen	88.0		P	40 - 150
Primidone	95.6		P	40 - 150
Pyraclostrobin	56.6		P	40 - 150
Triclopyr	69.9		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P355225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	102		P	40 - 150
Sucralose	114		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P355254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	104		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P355560

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.7		P	98 - 107

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P355563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355514

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044650	Calcium	94.0		P	80 - 120
2044650	Iron	104		P	80 - 120
2044650	Magnesium	97.8		P	80 - 120
2044650	Potassium	101		P	80 - 120
2044650	Sodium	93.7		P	80 - 120
2044650	Zinc	99.9		P	80 - 120
2045110	Calcium	99.4		P	80 - 120
2045110	Iron	105	103	P/P	80 - 120
2045110	Magnesium	107	102	P/P	80 - 120
2045110	Potassium	103	103	P/P	80 - 120
2045110	Sodium	98.9		P	80 - 120
2045110	Zinc	104	102	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044650	Chromium	96.1		P	80 - 120
2044650	Nickel	102		P	80 - 120
2045110	Chromium	106	106	P/P	80 - 120
2045110	Nickel	104	105	P/P	80 - 120

Reference Method: EPA 300.0
Batch ID: P356203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043835	Bromide	97.4	96.2	P/P	90 - 110
2044067	Bromide	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355688

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044067	Chloride	99.8		P	90 - 110
2044319	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355690

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044067	Sulfate	100		P	90 - 110
2044319	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044031	Ammonia-N	105	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044032	Kjeldahl Nitrogen	98.0	94.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043998	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355321

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044068	Total-P	102	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355299

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2044069	O-Phosphate-P	93.8	94.6	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P355221

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043959	2,4-D	92.1	104	P/P	40 - 150
2043959	Acetaminophen	115	114	P/P	30 - 150
2043959	Bentazon	73.3	75.9	P/P	30 - 150
2043959	Carbamazepine	82.0	86.1	P/P	40 - 150
2043959	Diuron	61.3	65.9	P/P	40 - 150
2043959	Fenuron	98.7	104	P/P	40 - 150
2043959	Fluridone	109	119	P/P	40 - 150
2043959	Hydrocodone	65.4	79.8	P/P	40 - 150
2043959	Ibuprofen	67.7	71.1	P/P	40 - 150
2043959	Imazapyr	99.9	103	P/P	40 - 150
2043959	Imidacloprid	168	180	F/F	40 - 160
2043959	Linuron	67.5	73.0	P/P	40 - 150
2043959	MCP	110	128	P/P	40 - 150
2043959	Naproxen	68.0	69.0	P/P	40 - 150
2043959	Primidone	94.1	101	P/P	40 - 150
2043959	Pyraclostrobin	61.4	69.3	P/P	40 - 150
2043959	Triclopyr	51.7	68.6	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P355225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043566	Acesulfame K	99.8	100	P/P	40 - 150
2043566	Sucralose	114	113	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P355563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043988	Fluoride	100	99.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2043995	Organic Carbon	98.2	97.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044175	Turbidity	2.46	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045110	Calcium	0.512	Spike	P	0 - 20
2045110	Iron	1.48	Spike	P	0 - 20
2045110	Magnesium	2.31	Spike	P	0 - 20
2045110	Potassium	0.237	Spike	P	0 - 20
2045110	Sodium	0.146	Spike	P	0 - 20
2045110	Zinc	1.22	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045110	Chromium	0.0723	Spike	P	0 - 20
2045110	Nickel	0.391	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P356203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043835	Bromide	1.09	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044067	Chloride	0.205	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044067	Sulfate	0.600	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044031	Ammonia-N	1.79	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044032	Kjeldahl Nitrogen	2.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043998	NO2NO3-N	0.484	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044068	Total-P	2.00	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044069	O-Phosphate-P	0.557	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P355221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043959	2,4-D	10.7	Spike	P	0 - 30
2043959	Acetaminophen	0.693	Spike	P	0 - 30
2043959	Bentazon	3.50	Spike	P	0 - 30
2043959	Carbamazepine	4.83	Spike	P	0 - 30
2043959	Diuron	7.10	Spike	P	0 - 30
2043959	Fenuron	5.25	Spike	P	0 - 30
2043959	Fluridone	8.56	Spike	P	0 - 30
2043959	Hydrocodone	19.8	Spike	P	0 - 30
2043959	Ibuprofen	4.94	Spike	P	0 - 30
2043959	Imazapyr	2.92	Spike	P	0 - 30
2043959	Imidacloprid	6.95	Spike	P	0 - 30
2043959	Linuron	7.89	Spike	P	0 - 30
2043959	MCP	14.8	Spike	P	0 - 30
2043959	Naproxen	1.41	Spike	P	0 - 30
2043959	Primidone	6.64	Spike	P	0 - 30
2043959	Pyraclostrobin	12.1	Spike	P	0 - 30
2043959	Triclopyr	28.1	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P355225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P355225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043566	Acesulfame K	0.180	Spike	P	0 - 30
2043566	Sucralose	1.25	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P355254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044030	Color (true)	1.30	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P355560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043988	Total Alkalinity	0.379	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P355727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2044067	TDS	3.19	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P355563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043988	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P355514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2043995	Organic Carbon	0.556	Spike	P	0 - 20

* 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: 2044074
Field Sample ID: 24040072

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	91.3	P	30 - 160
EPA 8321B	Acetaminophen-d4	120	P	30 - 160
EPA 8321B	Carbamazepine-d10	73.4	P	30 - 160
EPA 8321B	Diuron-d6	70.3	P	30 - 160
EPA 8321B	Endothall-d6	96.8	P	40 - 160
EPA 8321B	Ibuprofen-d3	78.3	P	30 - 160
EPA 8321B	Primidone-d5	93.3	P	30 - 160
EPA 8321B	Sucralose-d6	126	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A88016
Included Lab Sample IDs: 2044067

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	105	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A88018
Included Lab Sample IDs: 2044067

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A88035
Included Lab Sample IDs: 2044069

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A88043
Included Lab Sample IDs: 2044068

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A88056
Included Lab Sample IDs: 2044068

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A88077
Included Lab Sample IDs: 2044068

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

Reference Method: EPA 8321B
Run ID: A88078
Included Lab Sample IDs: 2044074

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	100	98.8	P/P	50 - 150
Acetaminophen	106	130	P/P	60 - 160
Bentazon	121	133	P/P	50 - 160
Carbamazepine	110	103	P/P	60 - 160
Diuron	99.4	107	P/P	60 - 150
Fenuron	101	97.1	P/P	60 - 150
Fluridone	108	107	P/P	60 - 160
Hydrocodone	99.9	94.8	P/P	60 - 150
Ibuprofen	95.6	76.3	P/P	50 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A88078
Included Lab Sample IDs: 2044074

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Imazapyr	102	115	P/P	50 - 150
Imidacloprid	99.7	96.8	P/P	60 - 160
Linuron	96.8	102	P/P	60 - 150
MCPP	96.8	94.2	P/P	50 - 150
Naproxen	94.6	80.6	P/P	50 - 160
Primidone	93.7	98.4	P/P	60 - 160
Pyraclostrobin	98.9	97.9	P/P	60 - 150
Triclopyr	102	83.9	P/P	50 - 160

Reference Method: EPA 8321B
Run ID: A88079
Included Lab Sample IDs: 2044074

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	71.2	63.2	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A88081
Included Lab Sample IDs: 2044074

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	116	123	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A88087
Included Lab Sample IDs: 2044068

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A88113
Included Lab Sample IDs: 2044067

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

Reference Method: SM 5310 B-00
Run ID: A88116
Included Lab Sample IDs: 2044068

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.0	93.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A88134
Included Lab Sample IDs: 2044067

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.5	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A88134

Included Lab Sample IDs: 2044067

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A88138

Included Lab Sample IDs: 2044075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.3	100	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	101	100	P/P	90 - 110
Potassium	99.9	99.2	P/P	90 - 110
Sodium	100	101	P/P	90 - 110
Zinc	101	106	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A88217

Included Lab Sample IDs: 2044075

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	103	104	P/P	90 - 110
Nickel	101	103	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A88325

Included Lab Sample IDs: 2044067

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	99.0	104	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			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					2.46	
EPA 200.7 Rev. 4.4	Calcium	101	94.0	99.4			0.512
	Iron	102	104	105	103		1.48
	Magnesium	104	97.8	107	102		2.31
	Potassium	98.5	101	103	103		0.237
	Sodium	103	93.7	98.9			0.146
	Zinc	100	99.9	104	102		1.22
EPA 200.8 Rev. 5.4	Chromium	106	96.1	106	106		0.0723
	Nickel	104	102	104	105		0.391
EPA 300.0	Bromide	106	97.4	96.2	101		1.09
EPA 300.0 Rev. 2.1	Chloride	102	99.8	100		0.205	
	Sulfate	101	100	101		0.600	
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	105	103			1.79
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	98.0	94.9			2.61
EPA 353.2 Rev. 2.0	NO2NO3-N	102	100	101			0.484
EPA 365.1 Rev. 2.0	Total-P	101	102	99.3			2.00
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.3	93.8	94.6			0.557
EPA 8321B	2,4-D	95.0	92.1	104			10.7
	Acesulfame K	102	99.8	100			0.180
	Acetaminophen	105	115	114			0.693
	Bentazon	113	73.3	75.9			3.50
	Carbamazepine	92.0	82.0	86.1			4.83
	Diuron	74.8	61.3	65.9			7.10
	Fenuron	95.9	98.7	104			5.25
	Fluridone	102	109	119			8.56
	Hydrocodone	91.1	65.4	79.8			19.8
	Ibuprofen	72.7	67.7	71.1			4.94
	Imazapyr	105	99.9	103			2.92
	Imidacloprid	101	168	180			6.95
	Linuron	71.7	67.5	73.0			7.89
	MCPP	111	110	128			14.8
	Naproxen	88.0	68.0	69.0			1.41
	Primidone	95.6	94.1	101			6.64
	Pyraclostrobin	56.6	61.4	69.3			12.1
	Sucralose	114	114	113			1.25
	Triclopyr	69.9	51.7	68.6			28.1
SM 2120 B	Color (true)	104				1.30	
SM 2320 B-97	Total Alkalinity	98.7				0.379	
SM 2540 C-97	TDS					3.19	
SM 4500 F-C-97	Fluoride	97.2	100	99.7			0.470
SM 5310 B-00	Organic Carbon	98.0	98.2	97.4			0.556

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2044067
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2044075
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2044075
EPA 300.0 / E31780	Bromide in aqueous matrices	2044067
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2044067

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2044067
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2044068
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2044068
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2044068
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2044068
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2044069
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2044074
SM 2120 B / E31780	True Color measured at 450 nm	2044067
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2044067
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2044067
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2044067
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2044067
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2044068

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	11/28/2018			11/28/2018 15:24	Megan Treadwell	2044067
EPA 200.7 Rev. 4.4	11/28/2018	12/03/2018 13:40	Elliott D. Healy	12/04/2018 17:09	Betina Topolski	2044075
EPA 200.8 Rev. 5.4	11/28/2018	12/03/2018 13:40	Elliott D. Healy	12/07/2018 03:53	Robert K Palmer	2044075
EPA 300.0	11/28/2018			12/13/2018 18:20	Lipi Saha	2044067
EPA 300.0 Rev. 2.1	11/28/2018			12/04/2018 21:46	Lipi Saha	2044067
EPA 350.1 Rev. 2.0	11/28/2018			11/30/2018 13:50	Ping Hua	2044068
EPA 351.2 Rev. 2.0	11/28/2018	11/29/2018 13:00	Adrian Shelby	11/30/2018 10:33	Joseph Suarez	2044068
EPA 353.2 Rev. 2.0	11/28/2018			11/29/2018 14:24	Lauren Bottorf	2044068
EPA 365.1 Rev. 2.0	11/28/2018	11/29/2018 11:45	Sima Feizi	12/03/2018 10:02	Beverly Y. Sanders	2044068
EPA 365.1 Rev. 2.0 dissolved	11/28/2018			11/28/2018 17:54	Jhamieka S. Greenwood	2044069
EPA 8321B	11/28/2018	11/29/2018 10:00	Hoor Shaik	12/01/2018 20:07	Juyoung Kim	2044074
	11/28/2018	11/29/2018 11:00	Rebecca Ware	11/29/2018 18:56	Rebecca Ware	2044074
	11/28/2018	11/29/2018 11:00	Rebecca Ware	11/30/2018 15:42	Rebecca Ware	2044074
SM 2120 B	11/28/2018			11/28/2018 14:35	Chelsea Hernandez	2044067
SM 2320 B-97	11/28/2018			12/04/2018 07:30	Dale L. Simmons	2044067
SM 2540 C-97	11/28/2018			11/30/2018 16:02	Yijie Li	2044067
SM 2540 D-97	11/28/2018			11/30/2018 16:02	Yijie Li	2044067
SM 4500 F-C-97	11/28/2018			12/04/2018 07:30	Dale L. Simmons	2044067
SM 5310 B-00	11/28/2018			12/03/2018 06:12	Megan Treadwell	2044068