

Chemical Analysis Report

NE-DIST-2018-12-20-01

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

Event Description: **LSJR-Misc.**
Request ID: **RQ-2018-12-17-07**
Customer: **NE-DIST**
Project ID: **SMP**

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

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 08-JAN-2019 11:59



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: DEER CREEK @ TALLYRAND AVE

Collection Date/Time: 12/19/2018 09:15

Field ID: 20030792

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2050249	EPA 8321B	2,4-D	0.0042	I	ug/L	P356425	
		Sucralose**	0.021	I	ug/L	P356416	
		Bentazon	0.0019	I	ug/L	P356425	
		MCP	0.0020	U	ug/L	P356425	
		Triclopyr**	0.0040	U	ug/L	P356425	
		Imidacloprid	0.0025	I	ug/L	P356425	MS
		Diuron	0.019		ug/L	P356425	
		Pyraclostrobin**	0.0020	U	ug/L	P356425	
		Primidone**	0.0040	U	ug/L	P356425	
		Linuron	0.0040	U	ug/L	P356425	
		Acetaminophen**	0.017	I	ug/L	P356425	
		Fenuron	0.016	U	ug/L	P356425	
		Imazapyr**	0.12		ug/L	P356425	
		Carbamazepine**	8.0E-04	U	ug/L	P356425	
		Fluridone**	4.0E-04	U	ug/L	P356425	
		Hydrocodone**	8.0E-04	U	ug/L	P356425	
		Naproxen**	0.0080	U	ug/L	P356425	
		Ibuprofen**	0.020	U	ug/L	P356425	
		Acesulfame K**	0.10	U	ug/L	P356416	MS

Sample Location: DEER CREEK @ TALLYRAND AVE

Collection Date/Time: 12/19/2018 09:25

Field ID: 20030792dup

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2050250	EPA 8321B	2,4-D	0.0038	I	ug/L	P356425	
		Sucralose**	0.022	I	ug/L	P356416	
		Bentazon	0.0018	I	ug/L	P356425	
		MCP	0.0020	U	ug/L	P356425	
		Triclopyr**	0.0040	U	ug/L	P356425	
		Imidacloprid	0.0021	I	ug/L	P356425	MS
		Diuron	0.019		ug/L	P356425	
		Pyraclostrobin**	0.0020	U	ug/L	P356425	
		Primidone**	0.0040	U	ug/L	P356425	
		Linuron	0.0040	U	ug/L	P356425	
		Acetaminophen**	0.017	I	ug/L	P356425	
		Fenuron	0.016	U	ug/L	P356425	
		Imazapyr**	0.13		ug/L	P356425	
		Carbamazepine**	8.0E-04	U	ug/L	P356425	
		Fluridone**	4.0E-04	U	ug/L	P356425	
		Hydrocodone**	8.0E-04	U	ug/L	P356425	
		Naproxen**	0.0080	U	ug/L	P356425	
		Ibuprofen**	0.020	U	ug/L	P356425	
		Acesulfame K**	0.10	U	ug/L	P356416	MS

Sample Location: MILL LOG AT RUSSELL RD

Collection Date/Time: 12/19/2018 10:35

Field ID: G2NE1150

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2050221	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P356502	
	EPA 300.0 Rev. 2.1	Chloride	24	A	mg Cl/L	P356721	
		Sulfate	17	A	mg SO4/L	P356723	
	SM 2120 B	Color (true)	140		PCU	P356472	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P356661	
	SM 2540 C-97	TDS	135		mg/L	P356692	
	SM 2540 D-97	TSS	2	U	mg/L	P356584	
	SM 4500 F-C-97	Fluoride	0.079	I	mg F/L	P356662	
2050222	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P356623	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P356576	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.091		mg N/L	P356514	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P356680	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P356718	
2050223	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.25		mg P/L	P356473	
2050256	EPA 200.7 Rev. 4.4	Calcium	12.6		mg/L	P356486	
		Iron	580		ug/L	P356486	
		Magnesium	4.29		mg/L	P356486	
		Potassium	8.3		mg/L	P356486	
		Sodium	13.3		mg/L	P356486	
		Zinc	12	I	ug/L	P356486	
	EPA 200.8 Rev. 5.4	Arsenic	0.61		ug/L	P356486	
		Cadmium	0.033	I	ug/L	P356486	
		Chromium	0.79	I	ug/L	P356486	
		Copper	0.57	I	ug/L	P356486	
		Lead	0.33		ug/L	P356486	
		Nickel	0.77	I	ug/L	P356486	
		Silver	0.010	U	ug/L	P356486	

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: P356502

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P356486

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: P356486

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356721

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356723

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356623

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356576

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: P356514

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356680

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356473

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

Reference Method: EPA 8321B
Batch ID: P356416

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

Reference Method: EPA 8321B
Batch ID: P356425

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: SM 2120 B
Batch ID: P356472

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P356661

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

Reference Method: SM 2540 C-97
Batch ID: P356692

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P356584

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P356662

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P356718

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: P356486

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	108		P	85 - 115
Magnesium	106		P	85 - 115
Potassium	106		P	85 - 115
Sodium	105		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P356486

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	108		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	104		P	85 - 115
Copper	106		P	85 - 115
Lead	105		P	85 - 115
Nickel	106		P	85 - 115
Silver	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356721

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356723

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356623

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356576

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356514

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356680

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: P356473

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

Reference Method: EPA 8321B
Batch ID: P356416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	103		P	40 - 150
Sucralose	111		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P356425

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	74.0		P	40 - 150
Acetaminophen	129		P	30 - 150
Bentazon	67.6		P	30 - 150
Carbamazepine	86.5		P	40 - 150
Diuron	75.9		P	40 - 150
Fenuron	109		P	40 - 150
Fluridone	110		P	40 - 150
Hydrocodone	95.3		P	40 - 150
Ibuprofen	58.5		P	40 - 150
Imazapyr	86.0		P	40 - 150
Imidacloprid	90.6		P	40 - 160
Linuron	71.9		P	40 - 150
MCPP	96.5		P	40 - 150
Naproxen	59.5		P	40 - 150
Primidone	92.5		P	40 - 150
Pyraclostrobin	57.9		P	40 - 150
Triclopyr	63.2		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P356472

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

Reference Method: SM 2320 B-97
Batch ID: P356661

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P356662

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P356718

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P356486

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2049747	Calcium	104		P	80 - 120
2049747	Iron	108		P	80 - 120
2049747	Magnesium	109		P	80 - 120
2049747	Potassium	110		P	80 - 120
2049747	Sodium	106		P	80 - 120
2049747	Zinc	103		P	80 - 120
2050256	Calcium	111		P	80 - 120
2050256	Iron	110	111	P/P	80 - 120
2050256	Magnesium	110		P	80 - 120
2050256	Potassium	106		P	80 - 120
2050256	Sodium	107		P	80 - 120
2050256	Zinc	110	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P356486

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2049747	Arsenic	106		P	80 - 120
2049747	Cadmium	105		P	80 - 120
2049747	Chromium	99.9		P	80 - 120
2049747	Copper	102		P	80 - 120
2049747	Lead	102		P	80 - 120
2049747	Nickel	102		P	80 - 120
2049747	Silver	102		P	80 - 120
2050256	Arsenic	108	108	P/P	80 - 120
2050256	Cadmium	106	106	P/P	80 - 120
2050256	Chromium	102	103	P/P	80 - 120
2050256	Copper	106	106	P/P	80 - 120
2050256	Lead	104	106	P/P	80 - 120
2050256	Nickel	105	105	P/P	80 - 120
2050256	Silver	102	103	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356721

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2050014	Chloride	96.6		P	90 - 110
2050221	Chloride	94.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356723

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2050014	Sulfate	96.0		P	90 - 110
2050221	Sulfate	91.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356623

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2050061	Ammonia-N	103	98.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2050150	Kjeldahl Nitrogen	115	99.5	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2050222	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2050298	Total-P	98.2	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2050062	O-Phosphate-P	93.2	95.0	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P356416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2049724	Acesulfame K	37.1	42.0	F/P	40 - 150
2049724	Sucralose	88.5	90.5	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P356425

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2050054	2,4-D	86.7	86.3	P/P	40 - 150
2050054	Acetaminophen	149	139	P/P	30 - 150
2050054	Bentazon	41.3	39.4	P/P	30 - 150
2050054	Carbamazepine	81.5	72.8	P/P	40 - 150
2050054	Diuron	63.9	67.5	P/P	40 - 150
2050054	Fenuron	117	116	P/P	40 - 150
2050054	Fluridone	112	116	P/P	40 - 150
2050054	Hydrocodone	103	112	P/P	40 - 150
2050054	Ibuprofen	61.8	73.8	P/P	40 - 150
2050054	Imazapyr	106	93.1	P/P	40 - 150
2050054	Imidacloprid	186	192	F/F	40 - 160
2050054	Linuron	66.0	74.4	P/P	40 - 150
2050054	MCP	108	107	P/P	40 - 150
2050054	Naproxen	52.3	60.1	P/P	40 - 150
2050054	Primidone	104	109	P/P	40 - 150
2050054	Pyraclostrobin	73.0	76.6	P/P	40 - 150
2050054	Triclopyr	67.8	61.4	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P356662

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2050297	Fluoride	98.7	98.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P356718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2050119	Organic Carbon	92.0	92.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P356502

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050118	Turbidity	3.08	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P356486

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050256	Calcium	1.18	Spike	P	0 - 20
2050256	Iron	0.744	Spike	P	0 - 20
2050256	Magnesium	0.314	Spike	P	0 - 20
2050256	Potassium	0.294	Spike	P	0 - 20
2050256	Sodium	1.71	Spike	P	0 - 20
2050256	Zinc	3.56	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P356486

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050256	Arsenic	0.500	Spike	P	0 - 20
2050256	Cadmium	0.424	Spike	P	0 - 20
2050256	Chromium	0.875	Spike	P	0 - 20
2050256	Copper	0.443	Spike	P	0 - 20
2050256	Lead	1.87	Spike	P	0 - 20
2050256	Nickel	0.0617	Spike	P	0 - 20
2050256	Silver	0.848	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050221	Chloride	1.45	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P356723

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050221	Sulfate	1.36	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P356623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050061	Ammonia-N	3.32	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P356576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050150	Kjeldahl Nitrogen	9.76	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P356514

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050222	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P356680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050298	Total-P	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P356473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050062	O-Phosphate-P	1.71	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P356416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2049724	Acesulfame K	12.4	Spike	P	0 - 30
2049724	Sucralose	1.83	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P356425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050054	2,4-D	0.388	Spike	P	0 - 30
2050054	Acetaminophen	6.39	Spike	P	0 - 30
2050054	Bentazon	4.10	Spike	P	0 - 30
2050054	Carbamazepine	11.3	Spike	P	0 - 30
2050054	Diuron	4.84	Spike	P	0 - 30
2050054	Fenuron	0.815	Spike	P	0 - 30
2050054	Fluridone	4.05	Spike	P	0 - 30
2050054	Hydrocodone	8.40	Spike	P	0 - 30
2050054	Ibuprofen	17.6	Spike	P	0 - 30
2050054	Imazapyr	10.4	Spike	P	0 - 30
2050054	Imidacloprid	2.88	Spike	P	0 - 30
2050054	Linuron	11.9	Spike	P	0 - 30
2050054	MCP	1.03	Spike	P	0 - 30
2050054	Naproxen	13.9	Spike	P	0 - 30
2050054	Primidone	4.39	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P356425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050054	Pyraclostrobin	4.72	Spike	P	0 - 30
2050054	Triclopyr	9.84	Spike	P	0 - 30

Reference Method: SM 2120 B
 Batch ID: P356472

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050118	Color (true)	0.280	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P356661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050297	Total Alkalinity	0.165	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P356692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050149	TDS	2.95	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P356662

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050297	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P356718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2050119	Organic Carbon	0.548	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: 2050249
Field Sample ID: 20030792

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	83.9	P	30 - 160
EPA 8321B	Acetaminophen-d4	158	P	30 - 160
EPA 8321B	Carbamazepine-d10	59.7	P	30 - 160
EPA 8321B	Diuron-d6	61.1	P	30 - 160
EPA 8321B	Endothall-d6	73.8	P	40 - 160
EPA 8321B	Endothall-d6	73.8	P	40 - 160
EPA 8321B	Ibuprofen-d3	70.0	P	60 - 160
EPA 8321B	Primidone-d5	124	P	30 - 160
EPA 8321B	Sucralose-d6	52.4	P	40 - 160
EPA 8321B	Sucralose-d6	52.4	P	40 - 160

Lab Sample ID: 2050250
Field Sample ID: 20030792dup

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	78.3	P	30 - 160
EPA 8321B	Acetaminophen-d4	157	P	30 - 160
EPA 8321B	Carbamazepine-d10	74.0	P	30 - 160
EPA 8321B	Diuron-d6	64.2	P	30 - 160
EPA 8321B	Endothall-d6	78.7	P	40 - 160
EPA 8321B	Endothall-d6	78.7	P	40 - 160
EPA 8321B	Ibuprofen-d3	70.7	P	60 - 160
EPA 8321B	Primidone-d5	125	P	30 - 160
EPA 8321B	Sucralose-d6	46.7	P	40 - 160
EPA 8321B	Sucralose-d6	46.7	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A88469

Included Lab Sample IDs: 2050223

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.3	97.2	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A88470

Included Lab Sample IDs: 2050221

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A88486

Included Lab Sample IDs: 2050221

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88490

Included Lab Sample IDs: 2050222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88500

Included Lab Sample IDs: 2050222

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

Reference Method: EPA 8321B

Run ID: A88541

Included Lab Sample IDs: 2050249, 2050250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	84.9	91.9	P/P	50 - 150
2,4-D	94.0	84.9	P/P	50 - 150
Acetaminophen	125	145	P/P	60 - 160
Acetaminophen	155	125	P/P	60 - 160
Bentazon	110	123	P/P	50 - 160
Bentazon	116	110	P/P	50 - 160
Carbamazepine	113	112	P/P	60 - 150
Carbamazepine	117	113	P/P	60 - 150
Diuron	113	117	P/P	60 - 150
Diuron	117	118	P/P	60 - 150
Fenuron	122	124	P/P	60 - 150
Fenuron	124	112	P/P	60 - 150
Fluridone	116	118	P/P	60 - 160
Fluridone	118	110	P/P	60 - 160
Hydrocodone	113	113	P/P	60 - 150
Hydrocodone	113	90.4	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A88541

Included Lab Sample IDs: 2050249, 2050250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ibuprofen	101	104	P/P	50 - 160
Ibuprofen	104	95.9	P/P	50 - 160
Imazapyr	101	102	P/P	50 - 150
Imazapyr	99.1	101	P/P	50 - 150
Imidacloprid	92.4	97.6	P/P	60 - 150
Imidacloprid	95.5	92.4	P/P	60 - 150
Linuron	108	109	P/P	60 - 150
Linuron	109	105	P/P	60 - 150
MCP	82.2	85.9	P/P	50 - 150
MCP	85.9	82.2	P/P	50 - 150
Naproxen	66.6	74.5	P/P	50 - 160
Naproxen	81.7	66.6	P/P	50 - 160
Primidone	107	112	P/P	60 - 150
Primidone	112	106	P/P	60 - 150
Pyraclostrobin	120	126	P/P	60 - 150
Pyraclostrobin	124	120	P/P	60 - 150
Triclopyr	83.7	84.9	P/P	50 - 150
Triclopyr	92.6	83.7	P/P	50 - 150

Reference Method: SM 2320 B-97

Run ID: A88542

Included Lab Sample IDs: 2050221

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88542

Included Lab Sample IDs: 2050221

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A88546

Included Lab Sample IDs: 2050221

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	99.2	99.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A88547

Included Lab Sample IDs: 2050256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	103	P/P	90 - 110
Iron	99.3	104	P/P	90 - 110
Magnesium	100	105	P/P	90 - 110
Potassium	97.4	103	P/P	90 - 110
Sodium	99.0	105	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A88547

Included Lab Sample IDs: 2050256

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88560

Included Lab Sample IDs: 2050222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	103	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A88576

Included Lab Sample IDs: 2050222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	94.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A88579

Included Lab Sample IDs: 2050249, 2050250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	94.5	99.7	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88585

Included Lab Sample IDs: 2050222

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

Reference Method: EPA 8321B

Run ID: A88606

Included Lab Sample IDs: 2050249, 2050250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	106	105	P/P	60 - 160

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A88617

Included Lab Sample IDs: 2050256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	105	105	P/P	90 - 110
Cadmium	103	103	P/P	90 - 110
Chromium	104	104	P/P	90 - 110
Copper	107	107	P/P	90 - 110
Lead	107	106	P/P	90 - 110
Nickel	105	106	P/P	90 - 110
Silver	101	102	P/P	90 - 110

Quality Assurance Report

Calibration Verification

* 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						3.08	
EPA 200.7 Rev. 4.4	Calcium	107	104	111				1.18
	Iron	108	108	110	111			0.744
	Magnesium	106	109	110				0.314
	Potassium	106	110	106				0.294
	Sodium	105	106	107				1.71
	Zinc	103	103	110	106			3.56
EPA 200.8 Rev. 5.4	Arsenic	108	106	108	108			0.500
	Cadmium	103	105	106	106			0.424
	Chromium	104	99.9	102	103			0.875
	Copper	106	102	106	106			0.443
	Lead	105	102	104	106			1.87
	Nickel	106	102	105	105			0.0617
	Silver	102	102	102	103			0.848
EPA 300.0 Rev. 2.1	Chloride	99.3	94.6	96.6			1.45	
	Sulfate	97.5	91.8	96.0			1.36	
EPA 350.1 Rev. 2.0	Ammonia-N	100	103	98.5				3.32
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	115	99.5				9.76
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	100				0.0
EPA 365.1 Rev. 2.0	Total-P	101	98.2	99.8				1.49
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.2	93.2	95.0				1.71
EPA 8321B	2,4-D	74.0	86.7	86.3				0.388
	Acesulfame K	103	37.1	42.0				12.4
	Acetaminophen	129	149	139				6.39
	Bentazon	67.6	41.3	39.4				4.10
	Carbamazepine	86.5	81.5	72.8				11.3
	Diuron	75.9	63.9	67.5				4.84
	Fenuron	109	117	116				0.815
	Fluridone	110	112	116				4.05
	Hydrocodone	95.3	103	112				8.40
	Ibuprofen	58.5	61.8	73.8				17.6
	Imazapyr	86.0	106	93.1				10.4
	Imidacloprid	90.6	186	192				2.88
	Linuron	71.9	66.0	74.4				11.9
	MCPP	96.5	108	107				1.03
	Naproxen	59.5	52.3	60.1				13.9
	Primidone	92.5	104	109				4.39
	Pyraclostrobin	57.9	73.0	76.6				4.72
	Sucralose	111	88.5	90.5				1.83
	Triclopyr	63.2	67.8	61.4				9.84
SM 2120 B	Color (true)	101					0.280	
SM 2320 B-97	Total Alkalinity	101					0.165	
SM 2540 C-97	TDS						2.95	
SM 4500 F-C-97	Fluoride	96.3	98.7	98.7				0.0
SM 5310 B-00	Organic Carbon	95.4	92.0	92.9				0.548

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2050221
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2050256

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2050256
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2050221
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2050221
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2050222
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2050222
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2050222
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2050222
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2050223
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2050249, 2050250
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2050249, 2050250
SM 2120 B / E31780	True Color measured at 450 nm	2050221
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2050221
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2050221
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2050221
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2050221
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2050222

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	12/20/2018			12/20/2018 15:16	Megan Treadwell	2050221
EPA 200.7 Rev. 4.4	12/20/2018	12/20/2018 18:00	Elliott D. Healy	12/27/2018 17:34	Martin Acosta	2050256
EPA 200.8 Rev. 5.4	12/20/2018	12/20/2018 18:00	Elliott D. Healy	01/03/2019 00:59	Allison Taylor	2050256
EPA 300.0 Rev. 2.1	12/20/2018			12/28/2018 21:43	Lipi Saha	2050221
EPA 350.1 Rev. 2.0	12/20/2018			12/21/2018 10:41	Ping Hua	2050222
EPA 351.2 Rev. 2.0	12/20/2018	12/26/2018 10:45	Adrian Shelby	12/27/2018 17:21	Chelsea Hernandez	2050222
EPA 353.2 Rev. 2.0	12/20/2018			12/21/2018 10:17	Lauren Bottorf	2050222
EPA 365.1 Rev. 2.0	12/20/2018	12/28/2018 11:30	Joseph Suarez	01/02/2019 09:18	Beverly Y. Sanders	2050222
EPA 365.1 Rev. 2.0 dissolved	12/20/2018			12/20/2018 14:44	Jhamieka S. Greenwood	2050223
EPA 8321B	12/20/2018	12/20/2018 14:00	Rebecca Ware	01/02/2019 23:28	Rebecca Ware	2050249
	12/20/2018	12/20/2018 14:00	Rebecca Ware	01/02/2019 23:42	Rebecca Ware	2050250
	12/20/2018	12/20/2018 14:00	Rebecca Ware	12/20/2018 18:27	Rebecca Ware	2050249
	12/20/2018	12/20/2018 14:00	Rebecca Ware	12/20/2018 18:41	Rebecca Ware	2050250
	12/20/2018	12/21/2018 14:00	Hoor Shaik	12/27/2018 14:47	Juyoung Kim	2050249
	12/20/2018	12/21/2018 14:00	Hoor Shaik	12/27/2018 15:56	Juyoung Kim	2050250
SM 2120 B	12/20/2018			12/20/2018 15:57	Chelsea Hernandez	2050221
SM 2320 B-97	12/20/2018			12/27/2018 22:52	Dale L. Simmons	2050221
SM 2540 C-97	12/20/2018			12/21/2018 11:15	Yijie Li	2050221
SM 2540 D-97	12/20/2018			12/21/2018 11:15	Yijie Li	2050221
SM 4500 F-C-97	12/20/2018			12/27/2018 22:52	Dale L. Simmons	2050221
SM 5310 B-00	12/20/2018			12/21/2018 21:34	Megan Treadwell	2050222