

Chemical Analysis Report

NW-DIST-2018-08-24-01

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

Event Description: **Shoal River**
Request ID: **RQ-2018-08-20-13**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 11-SEP-2018 15:49

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Nutrients and Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Shoal River below Juniper Creek

Collection Date/Time: 08/23/2018 10:30

Field ID: G4NW0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020141	EPA 180.1 Rev. 2.0	Turbidity	6.8		NTU	P350731	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P350933	
		Sulfate	0.87		mg SO4/L	P350935	
	SM 2120 B	Color (true)	91		PCU	P350730	
	SM 2320 B-97	Total Alkalinity	3.1		mg CaCO3/L	P351143	
	SM 2540 C-97	TDS	36		mg/L	P351068	
	SM 2540 D-97	TSS	8	I	mg/L	P351030	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P351052	
2020143	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P350916	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35		mg N/L	P350828	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P350859	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P350954	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P350877	
2020145	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P350726	
2020158	EPA 8321B	2,4-D	0.0020	U	ug/L	P350709	MS
		Sucralose**	0.10		ug/L	P350691	
		Bentazon	8.0E-04	U	ug/L	P350709	
		MCP	0.0020	U	ug/L	P350709	MS
		Triclopyr**	0.0040	U	ug/L	P350709	MS
		Imidacloprid	0.0040	I	ug/L	P350709	
		Diuron	0.0020	U	ug/L	P350709	
		Pyraclostrobin**	0.0020	U	ug/L	P350709	
		Primidone**	0.0040	U	ug/L	P350709	
		Linuron	0.0040	U	ug/L	P350709	
		Acetaminophen**	0.0080	U	ug/L	P350709	
		Fenuron	0.016	U	ug/L	P350709	
		Imazapyr**	0.019		ug/L	P350709	
		Carbamazepine**	8.0E-04	U	ug/L	P350709	
		Fluridone**	4.0E-04	U	ug/L	P350709	
		Hydrocodone**	8.0E-04	U	ug/L	P350709	
		Naproxen**	0.0080	U	ug/L	P350709	
		Ibuprofen**	0.020	U	ug/L	P350709	

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: Shoal River below Titi Creek

Collection Date/Time: 08/23/2018 11:00

Field ID: G4NW0410

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020142	EPA 180.1 Rev. 2.0	Turbidity	7.2		NTU	P350731	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P350987	
		Sulfate	0.92		mg SO4/L	P350990	
	SM 2120 B	Color (true)	82		PCU	P350730	
	SM 2320 B-97	Total Alkalinity	3.1		mg CaCO3/L	P351143	
	SM 2540 C-97	TDS	33		mg/L	P351068	
	SM 2540 D-97	TSS	9	I	mg/L	P351030	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P351052	
2020144	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P350917	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.38		mg N/L	P350828	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P350859	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P350954	
	SM 5310 B-00	Organic Carbon	6.3		mg C/L	P350877	
2020146	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P350726	
2020159	EPA 8321B	2,4-D	0.0020	U	ug/L	P350709	MS
		Sucralose**	0.11		ug/L	P350691	
		Bentazon	8.0E-04	U	ug/L	P350709	
		MCP	0.0020	U	ug/L	P350709	MS
		Triclopyr**	0.0040	U	ug/L	P350709	MS
		Imidacloprid	0.0037	I	ug/L	P350709	
		Diuron	0.0020	U	ug/L	P350709	
		Pyraclostrobin**	0.0020	U	ug/L	P350709	
		Primidone**	0.0040	U	ug/L	P350709	
		Linuron	0.0040	U	ug/L	P350709	
		Acetaminophen**	0.0080	U	ug/L	P350709	
		Fenuron	0.016	U	ug/L	P350709	
		Imazapyr**	0.019		ug/L	P350709	
		Carbamazepine**	8.0E-04	U	ug/L	P350709	
		Fluridone**	4.0E-04	U	ug/L	P350709	
		Hydrocodone**	8.0E-04	U	ug/L	P350709	
		Naproxen**	0.0080	U	ug/L	P350709	
		Ibuprofen**	0.020	U	ug/L	P350709	

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: Yellow River above Metts Creek

Collection Date/Time: 08/23/2018 12:10

Field ID: G4NW0370

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2020147	EPA 180.1 Rev. 2.0	Turbidity	9.8		NTU	P350731	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P350987	
		Sulfate	0.82		mg SO4/L	P350990	
	SM 2120 B	Color (true)	93		PCU	P350730	
	SM 2320 B-97	Total Alkalinity	9.3		mg CaCO3/L	P351143	
	SM 2540 C-97	TDS	44		mg/L	P351068	
	SM 2540 D-97	TSS	9	I	mg/L	P351030	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P351052	
2020148	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P350917	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P350828	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P350859	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P350954	
	SM 5310 B-00	Organic Carbon	7.3		mg C/L	P350877	
2020149	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P350726	

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: P350731

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350933

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350935

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350987

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350990

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350916

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350917

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350828

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350859

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350954

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350726

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

Reference Method: EPA 8321B
Batch ID: P350691

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P350709

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
MCPP	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: P350730

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P351143

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

Reference Method: SM 2540 C-97
Batch ID: P351068

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P351068

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P351030

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P351052

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P350877

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350933

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350935

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350987

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350990

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350916

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350917

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350828

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350859

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350954

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P350691

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	122		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P350709

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	96.9		P	40 - 150
Acetaminophen	99.9		P	30 - 150
Bentazon	104		P	30 - 150
Carbamazepine	74.9		P	40 - 150
Diuron	69.4		P	40 - 150
Fenuron	82.4		P	40 - 150
Fluridone	78.6		P	40 - 150
Hydrocodone	87.9		P	40 - 150
Ibuprofen	107		P	40 - 150
Imazapyr	84.9		P	40 - 150
Imidacloprid	100		P	40 - 160
Linuron	64.0		P	40 - 150
MCPP	116		P	40 - 150
Naproxen	123		P	40 - 150
Primidone	101		P	40 - 150
Pyraclostrobin	71.7		P	40 - 150
Triclopyr	112		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P350730

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.6		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P351143

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P351052

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P350877

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

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P350877

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350933

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019572	Chloride	107		P	90 - 110
2019922	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350935

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019572	Sulfate	106		P	90 - 110
2019922	Sulfate	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020175	Chloride	97.6		P	90 - 110
2020467	Chloride	97.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350990

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020175	Sulfate	98.1		P	90 - 110
2020467	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019953	Ammonia-N	96.3	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350917

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020144	Ammonia-N	95.4	98.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350828

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020206	Kjeldahl Nitrogen	99.1	95.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P350859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020143	NO2NO3-N	96.5	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P350954

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

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P350954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020176	Total-P	96.2	95.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P350726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020078	O-Phosphate-P	96.5	97.5	P/P	90 - 110

Reference Method: EPA 8321B

Batch ID: P350691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019942	Sucralose	117	118	P/P	40 - 150

Reference Method: EPA 8321B

Batch ID: P350709

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019942	2,4-D	168	151	F/F	40 - 150
2019942	Acetaminophen	125	119	P/P	30 - 150
2019942	Bentazon	91.9	83.2	P/P	30 - 150
2019942	Carbamazepine	72.0	69.8	P/P	40 - 150
2019942	Diuron	61.8	61.6	P/P	40 - 150
2019942	Fenuron	57.7	55.8	P/P	40 - 150
2019942	Fluridone	80.4	67.4	P/P	40 - 150
2019942	Hydrocodone	82.9	79.2	P/P	40 - 150
2019942	Ibuprofen	95.9	90.0	P/P	40 - 150
2019942	Imazapyr	107	101	P/P	40 - 150
2019942	Imidacloprid	129	131	P/P	40 - 160
2019942	Linuron	67.0	59.5	P/P	40 - 150
2019942	MCPP	177	155	F/F	40 - 150
2019942	Naproxen	133	127	P/P	40 - 150
2019942	Primidone	80.9	69.3	P/P	40 - 150
2019942	Pyraclostrobin	71.2	70.6	P/P	40 - 150
2019942	Triclopyr	215	217	F/F	40 - 150

Reference Method: SM 4500 F-C-97

Batch ID: P351052

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020073	Fluoride	98.1	98.3	P/P	91 - 105

Reference Method: SM 5310 B-00

Batch ID: P350877

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2019917	Organic Carbon	97.9	97.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P350731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020076	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019572	Chloride	3.75	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019572	Sulfate	4.20	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020175	Chloride	8.28	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P350990

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020175	Sulfate	9.98	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019953	Ammonia-N	0.346	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P350917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020144	Ammonia-N	2.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P350828

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020206	Kjeldahl Nitrogen	2.19	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P350859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020143	NO2NO3-N	0.580	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P350954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020176	Total-P	1.19	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P350726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020078	O-Phosphate-P	0.674	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P350691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019942	Sucralose	0.944	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P350709

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019942	2,4-D	10.6	Spike	P	0 - 30
2019942	Acetaminophen	4.47	Spike	P	0 - 30
2019942	Bentazon	9.34	Spike	P	0 - 30
2019942	Carbamazepine	3.17	Spike	P	0 - 30
2019942	Diuron	0.337	Spike	P	0 - 30
2019942	Fenuron	3.43	Spike	P	0 - 30
2019942	Fluridone	17.6	Spike	P	0 - 30
2019942	Hydrocodone	4.54	Spike	P	0 - 30
2019942	Ibuprofen	6.34	Spike	P	0 - 30
2019942	Imazapyr	5.58	Spike	P	0 - 30
2019942	Imidacloprid	1.86	Spike	P	0 - 30
2019942	Linuron	11.9	Spike	P	0 - 30
2019942	MCP	13.3	Spike	P	0 - 30
2019942	Naproxen	4.53	Spike	P	0 - 30
2019942	Primidone	15.5	Spike	P	0 - 30
2019942	Pyraclostrobin	0.934	Spike	P	0 - 30
2019942	Triclopyr	1.07	Spike	P	0 - 30

Reference Method: SM 2120 B
 Batch ID: P350730

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

Reference Method: SM 2120 B
Batch ID: P350730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020175	Color (true)	1.69	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P351143

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020073	Total Alkalinity	0.102	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P351068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020073	TDS	4.03	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P351052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020073	Fluoride	0.477	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P350877

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2019917	Organic Carbon	0.666	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: 2020158

Field Sample ID: G4NW0024

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	137	P	30 - 160
EPA 8321B	Acetaminophen-d4	122	P	30 - 160
EPA 8321B	Carbamazepine-d10	78.2	P	30 - 160
EPA 8321B	Diuron-d6	69.3	P	30 - 160
EPA 8321B	Ibuprofen-d3	124	P	30 - 160
EPA 8321B	Primidone-d5	86.3	P	30 - 160
EPA 8321B	Sucralose-d6	133	P	40 - 160

Lab Sample ID: 2020159

Field Sample ID: G4NW0410

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	114	P	30 - 160
EPA 8321B	Acetaminophen-d4	119	P	30 - 160
EPA 8321B	Carbamazepine-d10	76.6	P	30 - 160
EPA 8321B	Diuron-d6	80.2	P	30 - 160
EPA 8321B	Ibuprofen-d3	95.3	P	30 - 160
EPA 8321B	Primidone-d5	81.7	P	30 - 160
EPA 8321B	Sucralose-d6	135	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A86105

Included Lab Sample IDs: 2020145, 2020146, 2020149

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	99.4	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A86107

Included Lab Sample IDs: 2020141, 2020142, 2020147

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.4	96.7	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86108

Included Lab Sample IDs: 2020141, 2020142, 2020147

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	102	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86155

Included Lab Sample IDs: 2020143, 2020144, 2020148

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	101	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A86162

Included Lab Sample IDs: 2020143, 2020144, 2020148

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.5	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86177

Included Lab Sample IDs: 2020143, 2020144, 2020148

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.6	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86185

Included Lab Sample IDs: 2020143, 2020144, 2020148

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A86194

Included Lab Sample IDs: 2020141, 2020142, 2020147

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	106	P/P	90 - 110
Chloride	107	107	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A86194

Included Lab Sample IDs: 2020141, 2020142, 2020147

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	103	104	P/P	90 - 110
Sulfate	105	106	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A86218

Included Lab Sample IDs: 2020158, 2020159

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	120	135	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A86219

Included Lab Sample IDs: 2020158, 2020159

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	96.9	87.1	P/P	50 - 150
Acetaminophen	106	109	P/P	60 - 160
Bentazon	103	94.6	P/P	50 - 160
Carbamazepine	99.0	109	P/P	60 - 160
Diuron	87.6	96.2	P/P	60 - 150
Fenuron	93.0	97.8	P/P	60 - 150
Fluridone	83.3	91.9	P/P	60 - 160
Hydrocodone	98.0	105	P/P	60 - 150
Ibuprofen	126	134	P/P	50 - 160
Imazapyr	76.9	79.5	P/P	50 - 150
Imidacloprid	88.3	85.2	P/P	60 - 150
Linuron	100	104	P/P	60 - 150
MCPP	102	98.8	P/P	50 - 150
Naproxen	112	93.1	P/P	50 - 160
Primidone	99.5	99.6	P/P	60 - 150
Pyraclostrobin	95.1	92.4	P/P	60 - 150
Triclopyr	109	97.9	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86233

Included Lab Sample IDs: 2020143, 2020144, 2020148

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

Reference Method: SM 4500 F-C-97

Run ID: A86252

Included Lab Sample IDs: 2020141, 2020142, 2020147

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	99.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A86303

Included Lab Sample IDs: 2020141, 2020142, 2020147

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

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				0.0	
EPA 300.0 Rev. 2.1	Chloride	107	107	104	3.75	
	Chloride	102	97.6	97.0	8.28	
	Sulfate	104	106	102	4.20	
	Sulfate	101	98.1	101	9.98	
	Ammonia-N	97.0	96.3	96.8		0.346
EPA 350.1 Rev. 2.0	Ammonia-N	97.4	95.4	98.4		2.59
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	99.1	95.0		2.19
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	96.5	97.5		0.580
EPA 365.1 Rev. 2.0	Total-P	97.2	96.2	95.0		1.19
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	96.5	97.5		0.674
EPA 8321B	2,4-D	96.9	168	151		10.6
	Acetaminophen	99.9	125	119		4.47
	Bentazon	104	91.9	83.2		9.34
	Carbamazepine	74.9	72.0	69.8		3.17
	Diuron	69.4	61.8	61.6		0.337
	Fenuron	82.4	57.7	55.8		3.43
	Fluridone	78.6	80.4	67.4		17.6
	Hydrocodone	87.9	82.9	79.2		4.54
	Ibuprofen	107	95.9	90.0		6.34
	Imazapyr	84.9	107	101		5.58
	Imidacloprid	100	129	131		1.86
	Linuron	64.0	67.0	59.5		11.9
	MCPP	116	177	155		13.3
	Naproxen	123	133	127		4.53
	Primidone	101	80.9	69.3		15.5
	Pyraclostrobin	71.7	71.2	70.6		0.934
	Sucralose	122	117	118		0.944
	Triclopyr	112	215	217		1.07
SM 2120 B	Color (true)	97.6			1.69	
SM 2320 B-97	Total Alkalinity	103			0.102	
SM 2540 C-97	TDS				4.03	
SM 4500 F-C-97	Fluoride	97.7	98.1	98.3		0.477
SM 5310 B-00	Organic Carbon	95.6	97.9	97.1		0.666

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2020141, 2020142, 2020147
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2020141, 2020142, 2020147
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2020141, 2020142, 2020147
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2020143, 2020144, 2020148
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2020143, 2020144, 2020148
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2020143, 2020144, 2020148
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2020143, 2020144, 2020148
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2020145, 2020146, 2020149
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2020158, 2020159

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2020158, 2020159
SM 2120 B / E31780	True Color measured at 450 nm	2020141, 2020142, 2020147
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2020141, 2020142, 2020147
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2020141, 2020142, 2020147
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2020141, 2020142, 2020147
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2020141, 2020142, 2020147
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2020143, 2020144, 2020148

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	08/24/2018			08/24/2018 16:07	Julia Storbeck	2020141, 2020142, 2020147
EPA 300.0 Rev. 2.1	08/24/2018			08/30/2018 03:47	Lipi Saha	2020141
	08/24/2018			08/30/2018 19:31	Lipi Saha	2020142
	08/24/2018			08/30/2018 19:43	Lipi Saha	2020147
EPA 350.1 Rev. 2.0	08/24/2018			08/29/2018 12:54	Ping Hua	2020143
	08/24/2018			08/29/2018 13:00	Ping Hua	2020144
	08/24/2018			08/29/2018 13:04	Ping Hua	2020148
EPA 351.2 Rev. 2.0	08/24/2018	08/28/2018 11:00	Adrian Shelby	08/29/2018 13:36	Joseph Suarez	2020143
	08/24/2018	08/28/2018 11:00	Adrian Shelby	08/29/2018 13:38	Joseph Suarez	2020144
	08/24/2018	08/28/2018 11:00	Adrian Shelby	08/29/2018 13:39	Joseph Suarez	2020148
EPA 353.2 Rev. 2.0	08/24/2018			08/28/2018 13:56	Lauren Bottorf	2020143
	08/24/2018			08/28/2018 14:02	Lauren Bottorf	2020144
	08/24/2018			08/28/2018 14:03	Lauren Bottorf	2020148
EPA 365.1 Rev. 2.0	08/24/2018	08/30/2018 11:37	Sima Feizi	08/31/2018 11:35	Beverly Y. Sanders	2020143
	08/24/2018	08/30/2018 11:37	Sima Feizi	08/31/2018 11:36	Beverly Y. Sanders	2020144
	08/24/2018	08/30/2018 11:37	Sima Feizi	08/31/2018 11:37	Beverly Y. Sanders	2020148
EPA 365.1 Rev. 2.0 dissolved	08/24/2018			08/24/2018 14:20	Lipi Saha	2020145
	08/24/2018			08/24/2018 14:21	Lipi Saha	2020146
	08/24/2018			08/24/2018 14:22	Lipi Saha	2020149
EPA 8321B	08/24/2018	08/29/2018 11:00	Hoor Shaik	08/30/2018 07:48	Juyoung Kim	2020158
	08/24/2018	08/29/2018 11:00	Hoor Shaik	08/30/2018 08:22	Juyoung Kim	2020159
	08/24/2018	08/29/2018 11:00	Hoor Shaik	08/31/2018 00:31	Juyoung Kim	2020158
	08/24/2018	08/29/2018 11:00	Hoor Shaik	08/31/2018 01:05	Juyoung Kim	2020159
	08/24/2018	08/29/2018 11:50	Mohammad Ghaffari	08/30/2018 12:58	Mohammad Ghaffari	2020158
	08/24/2018	08/29/2018 11:50	Mohammad Ghaffari	08/30/2018 13:13	Mohammad Ghaffari	2020159
SM 2120 B	08/24/2018			08/24/2018 16:00	Julia Storbeck	2020141
	08/24/2018			08/24/2018 16:01	Julia Storbeck	2020142
	08/24/2018			08/24/2018 16:02	Julia Storbeck	2020147
SM 2320 B-97	08/24/2018			09/05/2018 19:40	Dale L. Simmons	2020141
	08/24/2018			09/05/2018 19:48	Dale L. Simmons	2020142
	08/24/2018			09/05/2018 19:56	Dale L. Simmons	2020147
SM 2540 C-97	08/24/2018			08/28/2018 15:02	Yijie Li	2020141, 2020142, 2020147
SM 2540 D-97	08/24/2018			08/28/2018 15:02	Yijie Li	2020141, 2020142, 2020147
SM 4500 F-C-97	08/24/2018			08/31/2018 03:27	Dale L. Simmons	2020141
	08/24/2018			08/31/2018 03:39	Dale L. Simmons	2020142
	08/24/2018			08/31/2018 03:51	Dale L. Simmons	2020147
SM 5310 B-00	08/24/2018			08/29/2018 03:43	Megan Treadwell	2020143
	08/24/2018			08/29/2018 03:56	Megan Treadwell	2020144
	08/24/2018			08/29/2018 04:09	Megan Treadwell	2020148