

Chemical Analysis Report

NW-DIST-2018-07-13-01

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-2018-07-09-39**
Customer: **NW-DIST**
Project ID: **SMP**

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

Date Certified: 06-AUG-2018 16:57

A handwritten signature in black ink, appearing to read "Liang Lin", 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: 07/12/2018 11:25

Field ID: G4NW0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2007165	EPA 180.1 Rev. 2.0	Turbidity	6.3	A	NTU	P348432	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P348904	
		Sulfate	1.2		mg SO4/L	P348912	
	SM 2120 B	Color (true)	69		PCU	P348422	
	SM 2320 B-97	Total Alkalinity	3.5		mg CaCO3/L	P348680	
	SM 2540 C-97	TDS	18	I	mg/L	P348936	
	SM 2540 D-97	TSS	9	I	mg/L	P349041	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P348684	
2007167	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P348871	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32		mg N/L	P348836	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P348492	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P348657	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P348654	
2007169	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P348425	
2007189	EPA 8321B	2,4-D	0.0020	U	ug/L	P348391	
		Bentazon	0.0010	I	ug/L	P348391	
		MCP	0.0020	U	ug/L	P348391	MS
		Triclopyr**	0.0040	U	ug/L	P348391	MS
		Imidacloprid	0.0087		ug/L	P348391	
		Diuron	0.0020	U	ug/L	P348391	
		Pyraclostrobin**	0.0020	U	ug/L	P348391	
		Primidone**	0.0040	U	ug/L	P348391	
		Linuron	0.0040	U	ug/L	P348391	
		Acetaminophen**	0.0080	U	ug/L	P348391	
		Fenuron	0.016	U	ug/L	P348391	
		Imazapyr**	0.0083	I	ug/L	P348391	
		Carbamazepine**	4.0E-04	U	ug/L	P348391	
		Fluridone**	4.0E-04	U	ug/L	P348391	
		Hydrocodone**	8.0E-04	U	ug/L	P348391	
		Naproxen**	0.0080	U	ug/L	P348391	
		Ibuprofen**	0.020	U	ug/L	P348391	
		Sucralose**	0.15		ug/L	P348298	MS, RPD

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Shoal River below Titi Creek

Collection Date/Time: 07/12/2018 12:15

Field ID: G4NW0410

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2007166	EPA 180.1 Rev. 2.0	Turbidity	5.9		NTU	P348432	
	EPA 300.0 Rev. 2.1	Chloride	2.9		mg Cl/L	P348904	
		Sulfate	1.2		mg SO4/L	P348912	
	SM 2120 B	Color (true)	66		PCU	P348422	
	SM 2320 B-97	Total Alkalinity	3.6		mg CaCO3/L	P348680	
	SM 2540 C-97	TDS	29		mg/L	P348937	
	SM 2540 D-97	TSS	9	I	mg/L	P349042	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P348684	
2007168	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P348871	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P348836	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P348493	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P348657	
	SM 5310 B-00	Organic Carbon	5.1		mg C/L	P348654	
2007170	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P348425	
2007190	EPA 8321B	2,4-D	0.0020	U	ug/L	P348391	
		Bentazon	0.0010	I	ug/L	P348391	
		MCP	0.0020	U	ug/L	P348391	MS
		Triclopyr**	0.0040	U	ug/L	P348391	MS
		Imidacloprid	0.0083		ug/L	P348391	
		Diuron	0.0020	U	ug/L	P348391	
		Pyraclostrobin**	0.0020	U	ug/L	P348391	
		Primidone**	0.0040	U	ug/L	P348391	
		Linuron	0.0040	U	ug/L	P348391	
		Acetaminophen**	0.0080	U	ug/L	P348391	
		Fenuron	0.016	U	ug/L	P348391	
		Imazapyr**	0.0086	I	ug/L	P348391	
		Carbamazepine**	4.0E-04	U	ug/L	P348391	
		Fluridone**	4.0E-04	U	ug/L	P348391	
		Hydrocodone**	8.0E-04	U	ug/L	P348391	
		Naproxen**	0.0080	U	ug/L	P348391	
		Ibuprofen**	0.020	U	ug/L	P348391	
		Sucralose**	0.13		ug/L	P348298	MS, RPD

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348432

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348904

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348912

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348871

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348836

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348492

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348493

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348657

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348425

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P348298

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P348391

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	4.0E-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: P348422

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P348680

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

Reference Method: SM 2540 C-97
Batch ID: P348936

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P348937

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349041

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P349041

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349042

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P348684

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P348654

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: P348904

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P348912

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P348871

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P348836

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P348492

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P348493

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P348657

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P348425

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	95.7		P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P348298

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	116		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P348391

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	65.0		P	40 - 150
Acetaminophen	100		P	30 - 150
Bentazon	76.4		P	30 - 150
Carbamazepine	79.8		P	40 - 150
Diuron	75.6		P	40 - 150
Fenuron	107		P	40 - 150
Fluridone	92.9		P	40 - 150
Hydrocodone	101		P	40 - 150
Ibuprofen	59.9		P	40 - 150
Imazapyr	94.7		P	40 - 150
Imidacloprid	110		P	40 - 160
Linuron	93.2		P	40 - 150
MCPP	97.9		P	40 - 150
Naproxen	75.3		P	40 - 150
Primidone	114		P	40 - 150
Pyraclostrobin	90.1		P	40 - 150
Triclopyr	86.9		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P348422

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.2		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P348680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P348684

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P348654

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2006910	Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348912

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2006910	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007155	Ammonia-N	105	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348492

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007066	NO2NO3-N	97.2	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348493

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007168	NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348657

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007213	Total-P	94.6	94.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348425

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007170	O-Phosphate-P	97.6	98.3	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P348298

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2006741	Sucralose	162	107	F/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P348391

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007965	2,4-D	119	121	P/P	40 - 150
2007965	Acetaminophen	96.2	90.0	P/P	30 - 150
2007965	Bentazon	65.5	62.6	P/P	30 - 150
2007965	Carbamazepine	61.5	59.0	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P348391

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007965	Diuron	51.8	51.4	P/P	40 - 150
2007965	Fenuron	71.2	65.1	P/P	40 - 150
2007965	Fluridone	83.5	79.3	P/P	40 - 150
2007965	Hydrocodone	69.6	64.1	P/P	40 - 150
2007965	Ibuprofen	107	100	P/P	40 - 150
2007965	Imazapyr	73.3	75.6	P/P	40 - 150
2007965	Imidacloprid	112	104	P/P	40 - 160
2007965	Linuron	78.8	76.4	P/P	40 - 150
2007965	MCP	150	160	F/F	40 - 150
2007965	Naproxen	128	123	P/P	40 - 150
2007965	Primidone	86.4	78.7	P/P	40 - 150
2007965	Pyraclostrobin	86.4	89.4	P/P	40 - 150
2007965	Triclopyr	174	193	F/F	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P348684

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007096	Fluoride	96.6	97.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P348654

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007067	Organic Carbon	101		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007165	Turbidity	0.788	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2006910	Chloride	6.18	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P348912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2006910	Sulfate	6.77	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007155	Ammonia-N	5.37	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007213	Kjeldahl Nitrogen	0.494	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348492

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007066	NO2NO3-N	1.43	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007168	NO2NO3-N	0.495	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348657

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007213	Total-P	0.0729	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007170	O-Phosphate-P	0.715	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P348298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2006741	Sucralose	34.5	Spike	F	0 - 30

Reference Method: EPA 8321B
Batch ID: P348391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007965	2,4-D	1.56	Spike	P	0 - 30
2007965	Acetaminophen	6.71	Spike	P	0 - 30
2007965	Bentazon	2.71	Spike	P	0 - 30
2007965	Carbamazepine	4.17	Spike	P	0 - 30
2007965	Diuron	0.777	Spike	P	0 - 30
2007965	Fenuron	8.95	Spike	P	0 - 30
2007965	Fluridone	5.04	Spike	P	0 - 30
2007965	Hydrocodone	8.17	Spike	P	0 - 30
2007965	Ibuprofen	6.40	Spike	P	0 - 30
2007965	Imazapyr	0.964	Spike	P	0 - 30
2007965	Imidacloprid	5.92	Spike	P	0 - 30
2007965	Linuron	3.04	Spike	P	0 - 30
2007965	MCP	6.23	Spike	P	0 - 30
2007965	Naproxen	4.18	Spike	P	0 - 30
2007965	Primidone	9.34	Spike	P	0 - 30
2007965	Pyraclostrobin	3.42	Spike	P	0 - 30
2007965	Triclopyr	9.96	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P348422

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007153	Color (true)	1.40	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P348680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007096	Total Alkalinity	0.457	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P348936

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

Reference Method: SM 2540 C-97
Batch ID: P348936

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007250	TDS	2.87	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P348937

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007251	TDS	3.28	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P348684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007096	Fluoride	0.516	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P348654

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007067	Organic Carbon	0.860	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: 2007189

Field Sample ID: G4NW0024

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	98.8	P	30 - 160
EPA 8321B	Acetaminophen-d4	105	P	30 - 160
EPA 8321B	Carbamazepine-d10	75.1	P	30 - 160
EPA 8321B	Diuron-d6	64.1	P	30 - 160
EPA 8321B	Ibuprofen-d3	94.3	P	40 - 160
EPA 8321B	Primidone-d5	101	P	30 - 160
EPA 8321B	Sucralose-d6	114	P	40 - 160

Lab Sample ID: 2007190

Field Sample ID: G4NW0410

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	86.6	P	30 - 160
EPA 8321B	Acetaminophen-d4	93.6	P	30 - 160
EPA 8321B	Carbamazepine-d10	69.8	P	30 - 160
EPA 8321B	Diuron-d6	67.4	P	30 - 160
EPA 8321B	Ibuprofen-d3	94.0	P	40 - 160
EPA 8321B	Primidone-d5	98.3	P	30 - 160
EPA 8321B	Sucralose-d6	122	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A85221

Included Lab Sample IDs: 2007165, 2007166

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A85222

Included Lab Sample IDs: 2007169, 2007170

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	98.2	P/P	90 - 110
O-Phosphate-P	98.8	98.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A85224

Included Lab Sample IDs: 2007165, 2007166

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	99.0	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A85247

Included Lab Sample IDs: 2007167, 2007168

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A85307

Included Lab Sample IDs: 2007167, 2007168

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	97.2	P/P	90 - 110
Organic Carbon	97.2	96.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A85314

Included Lab Sample IDs: 2007165, 2007166

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

Reference Method: SM 4500 F-C-97

Run ID: A85314

Included Lab Sample IDs: 2007165, 2007166

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A85319

Included Lab Sample IDs: 2007189, 2007190

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	129	130	P/P	60 - 160
Sucralose	130	149	P/P	60 - 160

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A85337

Included Lab Sample IDs: 2007165, 2007166

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	102	P/P	90 - 110
Sulfate	100	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A85367

Included Lab Sample IDs: 2007167, 2007168

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A85375

Included Lab Sample IDs: 2007167, 2007168

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A85405

Included Lab Sample IDs: 2007167, 2007168

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	100	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A85612

Included Lab Sample IDs: 2007189, 2007190

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	102	107	P/P	50 - 150
Bentazon	111	127	P/P	50 - 150
Ibuprofen	105	123	P/P	50 - 150
MCP	108	120	P/P	50 - 150
Naproxen	115	111	P/P	60 - 150
Triclopyr	98.7	118	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A85626

Included Lab Sample IDs: 2007189, 2007190

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	111	109	P/P	60 - 150
Carbamazepine	112	108	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A85626

Included Lab Sample IDs: 2007189, 2007190

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Diuron	91.5	95.7	P/P	60 - 150
Fenuron	107	106	P/P	60 - 150
Fluridone	110	109	P/P	60 - 160
Hydrocodone	109	109	P/P	60 - 150
Imazapyr	91.7	92.4	P/P	50 - 150
Imidacloprid	110	104	P/P	60 - 150
Linuron	108	104	P/P	60 - 150
Primidone	92.1	105	P/P	60 - 150
Pyraclostrobin	105	114	P/P	60 - 150

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

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.788	
EPA 300.0 Rev. 2.1	Chloride	101	106		6.18	
	Sulfate	100	100		6.77	
EPA 350.1 Rev. 2.0	Ammonia-N	106	105 99.5			5.37
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102				0.494
EPA 353.2 Rev. 2.0	NO2NO3-N	102	97.2 98.8			1.43
	NO2NO3-N	102	102			0.495
EPA 365.1 Rev. 2.0	Total-P	97.8	94.6 94.7			0.0729
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.7	97.6 98.3			0.715
EPA 8321B	2,4-D	65.0	119 121			1.56
	Acetaminophen	100	96.2 90.0			6.71
	Bentazon	76.4	65.5 62.6			2.71
	Carbamazepine	79.8	61.5 59.0			4.17
	Diuron	75.6	51.8 51.4			0.777
	Fenuron	107	71.2 65.1			8.95
	Fluridone	92.9	83.5 79.3			5.04
	Hydrocodone	101	69.6 64.1			8.17
	Ibuprofen	59.9	107 100			6.40
	Imazapyr	94.7	73.3 75.6			0.964
	Imidacloprid	110	112 104			5.92
	Linuron	93.2	78.8 76.4			3.04
	MCPP	97.9	150 160			6.23
	Naproxen	75.3	128 123			4.18
	Primidone	114	86.4 78.7			9.34
	Pyraclostrobin	90.1	86.4 89.4			3.42
	Sucralose	116	162 107			34.5
	Triclopyr	86.9	174 193			9.96
SM 2120 B	Color (true)	98.2			1.40	
SM 2320 B-97	Total Alkalinity	102			0.457	
SM 2540 C-97	TDS				2.87	
	TDS				3.28	
SM 4500 F-C-97	Fluoride	98.6	96.6 97.2			0.516
SM 5310 B-00	Organic Carbon	95.2	101			0.860

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2007165, 2007166
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2007165, 2007166
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2007165, 2007166
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2007167, 2007168
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2007167, 2007168
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2007167, 2007168
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2007167, 2007168
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2007169, 2007170
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2007189, 2007190
SM 2120 B / E31780	True Color measured at 450 nm	2007165, 2007166

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2007165, 2007166
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2007165, 2007166
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2007165, 2007166
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2007165, 2007166
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2007167, 2007168

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	07/13/2018			07/13/2018 16:55	Tanya Welborn	2007165, 2007166
EPA 300.0 Rev. 2.1	07/13/2018			07/20/2018 20:26	Lipi Saha	2007165
	07/13/2018			07/20/2018 20:38	Lipi Saha	2007166
EPA 350.1 Rev. 2.0	07/13/2018			07/20/2018 11:48	Ping Hua	2007167
	07/13/2018			07/20/2018 11:49	Ping Hua	2007168
EPA 351.2 Rev. 2.0	07/13/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 09:42	Joseph Suarez	2007167
	07/13/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 09:44	Joseph Suarez	2007168
EPA 353.2 Rev. 2.0	07/13/2018			07/16/2018 13:40	Lauren Bottorf	2007167
	07/13/2018			07/16/2018 13:47	Lauren Bottorf	2007168
EPA 365.1 Rev. 2.0	07/13/2018	07/18/2018 14:10	Sima Feizi	07/20/2018 11:27	Beverly Y. Sanders	2007167
	07/13/2018	07/18/2018 14:10	Sima Feizi	07/20/2018 11:28	Beverly Y. Sanders	2007168
EPA 365.1 Rev. 2.0 dissolved	07/13/2018			07/13/2018 15:32	Julia Storbeck	2007170
	07/13/2018			07/13/2018 16:04	Julia Storbeck	2007169
EPA 8321B	07/13/2018	07/16/2018 11:30	Juyoung Kim	07/17/2018 08:08	Mohammad Ghaffari	2007189
	07/13/2018	07/16/2018 11:30	Juyoung Kim	07/17/2018 08:38	Mohammad Ghaffari	2007190
	07/13/2018	07/18/2018 10:30	Hoor Shaik	07/24/2018 02:16	Juyoung Kim	2007189
	07/13/2018	07/18/2018 10:30	Hoor Shaik	07/24/2018 02:51	Juyoung Kim	2007190
	07/13/2018	07/18/2018 10:30	Hoor Shaik	07/26/2018 06:53	Juyoung Kim	2007189
	07/13/2018	07/18/2018 10:30	Hoor Shaik	07/26/2018 07:28	Juyoung Kim	2007190
SM 2120 B	07/13/2018			07/13/2018 16:03	Tanya Welborn	2007165
	07/13/2018			07/13/2018 16:04	Tanya Welborn	2007166
SM 2320 B-97	07/13/2018			07/18/2018 02:11	Dale L. Simmons	2007165
	07/13/2018			07/18/2018 02:23	Dale L. Simmons	2007166
SM 2540 C-97	07/13/2018			07/18/2018 16:21	Yijie Li	2007165, 2007166
SM 2540 D-97	07/13/2018			07/18/2018 16:21	Yijie Li	2007165, 2007166
SM 4500 F-C-97	07/13/2018			07/18/2018 02:11	Dale L. Simmons	2007165
	07/13/2018			07/18/2018 02:23	Dale L. Simmons	2007166
SM 5310 B-00	07/13/2018			07/18/2018 01:49	Megan Treadwell	2007167
	07/13/2018			07/18/2018 02:32	Megan Treadwell	2007168