

Chemical Analysis Report

SO-DIST-2018-07-19-01

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

Event Description: **Sarasota Streams**
Request ID: **RQ-2018-07-23-12**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 09-AUG-2018 10:52

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

Case Narrative

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

Results for the following analytical groups are included in this report: 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: Phillippi Creek@Proctor

Collection Date/Time: 07/18/2018 09:40

Field ID: G3SD0091

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009161	EPA 180.1 Rev. 2.0	Turbidity	7.4		NTU	P348827	
	EPA 300.0 Rev. 2.1	Chloride	52		mg Cl/L	P349150	
		Sulfate	83		mg SO4/L	P349155	
	SM 2120 B	Color (true)	71		PCU	P348781	
	SM 2320 B-97	Total Alkalinity	167		mg CaCO3/L	P349027	
	SM 2540 C-97	TDS	439	A	mg/L	P349195	
	SM 2540 D-97	TSS	5	IA	mg/L	P349172	
	SM 4500 F-C-97	Fluoride	0.30		mg F/L	P349031	
2009163	EPA 350.1 Rev. 2.0	Ammonia-N	0.28		mg N/L	P349158	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P348953	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.53		mg N/L	P348973	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P349420	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P349005	
2009165	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.028		mg P/L	P348787	

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: Matheny Creek @BenevaRd

Collection Date/Time: 07/18/2018 10:30

Field ID: G3SD0092

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009177	EPA 8321B	2,4-D	0.0034	I	ug/L	P348774	
		Bentazon	0.039		ug/L	P348774	
		MCPP	0.0065	I	ug/L	P348774	
		Triclopyr**	0.0040	U	ug/L	P348774	
		Imidacloprid	0.071		ug/L	P348774	
		Diuron	0.0056	I	ug/L	P348774	
		Pyraclostrobin**	0.0020	U	ug/L	P348774	
		Primidone**	0.0040	U	ug/L	P348774	
		Linuron	0.0040	U	ug/L	P348774	
		Acetaminophen**	0.0080	U	ug/L	P348774	
		Fenuron	0.016	U	ug/L	P348774	
		Imazapyr**	0.30		ug/L	P348774	
		Carbamazepine**	4.0E-04	U	ug/L	P348774	
		Fluridone**	0.20		ug/L	P348774	
		Hydrocodone**	8.0E-04	U	ug/L	P348774	
		Naproxen**	0.0080	U	ug/L	P348774	
		Ibuprofen**	0.020	U	ug/L	P348774	
		Sucralose**	0.098		ug/L	P348754	

Ref. Method and Comment:

EPA 8321B: Insufficient sample to perform matrix spikes.

Sample Location: North Creek(Tidal)@US41

Collection Date/Time: 07/18/2018 11:15

Field ID: G3SD0089

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009179	EPA 8321B	2,4-D	0.081		ug/L	P348774	
		Bentazon	0.013		ug/L	P348774	
		MCP	0.0020	U	ug/L	P348774	
		Triclopyr**	0.0040	U	ug/L	P348774	
		Imidacloprid	0.079		ug/L	P348774	
		Diuron	0.0021	I	ug/L	P348774	
		Pyraclostrobin**	0.0020	U	ug/L	P348774	
		Primidone**	0.0068	I	ug/L	P348774	
		Linuron	0.0040	U	ug/L	P348774	
		Acetaminophen**	0.0080	U	ug/L	P348774	
		Fenuron	0.016	U	ug/L	P348774	
		Imazapyr**	1.1		ug/L	P348774	
		Carbamazepine**	6.2E-04	I	ug/L	P348774	
		Fluridone**	0.45		ug/L	P348774	
		Hydrocodone**	8.0E-04	U	ug/L	P348774	
		Naproxen**	0.0080	U	ug/L	P348774	
		Ibuprofen**	0.020	U	ug/L	P348774	
		Sucralose**	1.0		ug/L	P348754	

Ref. Method and Comment:

EPA 8321B: Insufficient sample to perform matrix spikes.

Sample Location: North Creek byOaksCrkCt

Collection Date/Time: 07/18/2018 11:00

Field ID: G3SD0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009162	EPA 180.1 Rev. 2.0	Turbidity	4.4	A	NTU	P348828	
	EPA 300.0 Rev. 2.1	Chloride	97		mg Cl/L	P349150	
		Sulfate	320		mg SO4/L	P349155	
	SM 2120 B	Color (true)	76		PCU	P348781	
	SM 2320 B-97	Total Alkalinity	305		mg CaCO3/L	P349027	
	SM 2540 C-97	TDS	1.01E+03		mg/L	P349195	
	SM 2540 D-97	TSS	2	I	mg/L	P349172	
	SM 4500 F-C-97	Fluoride	0.42		mg F/L	P349031	
2009164	EPA 350.1 Rev. 2.0	Ammonia-N	0.069		mg N/L	P349158	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P348953	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.33		mg N/L	P348973	
	EPA 365.1 Rev. 2.0	Total-P	0.23		mg P/L	P349307	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P349005	
2009166	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.15		mg P/L	P348787	

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: South Creek @ HonoreAve

Collection Date/Time: 07/18/2018 11:30

Field ID: G3SD0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2009178	EPA 8321B	2,4-D	0.026		ug/L	P348774	
		Bentazon	0.075		ug/L	P348774	
		MCP	0.024		ug/L	P348774	
		Triclopyr**	0.0040	U	ug/L	P348774	
		Imidacloprid	0.052		ug/L	P348774	
		Diuron	0.0020	U	ug/L	P348774	
		Pyraclostrobin**	0.0020	U	ug/L	P348774	
		Primidone**	0.0040	U	ug/L	P348774	
		Linuron	0.0040	U	ug/L	P348774	
		Acetaminophen**	0.0080	U	ug/L	P348774	
		Fenuron	0.016	U	ug/L	P348774	
		Imazapyr**	0.45		ug/L	P348774	
		Carbamazepine**	7.1E-04	I	ug/L	P348774	
		Fluridone**	0.13		ug/L	P348774	
		Hydrocodone**	8.0E-04	U	ug/L	P348774	
		Naproxen**	0.0080	U	ug/L	P348774	
		Ibuprofen**	0.020	U	ug/L	P348774	
		Sucralose**	0.86		ug/L	P348754	

Ref. Method and Comment:

EPA 8321B: Insufficient sample to perform matrix spikes.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348827

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348828

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349150

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349155

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349158

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348953

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348973

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349307

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349420

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348787

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

Reference Method: EPA 8321B
Batch ID: P348754

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P348774

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
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: P348781

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P349027

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P349195

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349172

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P349172

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P349031

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P349005

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: P349150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	108		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349155

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349158

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: P348953

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: P348973

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349307

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349420

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348787

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

Reference Method: EPA 8321B
Batch ID: P348754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	77.3		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P348774

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	115	112	P/P	40 - 150
Acetaminophen	77.5	98.7	P/P	30 - 150
Bentazon	93.1	89.1	P/P	30 - 150
Carbamazepine	67.4	73.7	P/P	40 - 150
Diuron	53.7	65.1	P/P	40 - 150
Fenuron	97.5	108	P/P	40 - 150
Fluridone	79.2	87.9	P/P	40 - 150
Hydrocodone	86.0	93.5	P/P	40 - 150
Ibuprofen	112	98.5	P/P	40 - 150
Imazapyr	93.7	97.5	P/P	40 - 150
Imidacloprid	98.5	105	P/P	40 - 160
Linuron	75.9	77.2	P/P	40 - 150
MCPP	138	132	P/P	40 - 150
Naproxen	106	130	P/P	40 - 150
Primidone	86.2	99.4	P/P	40 - 150
Pyraclostrobin	78.2	88.4	P/P	40 - 150
Triclopyr	139	133	P/P	40 - 150

Reference Method: SM 2120 B
Batch ID: P348781

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P349027

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	106		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P349031

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349005

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008993	Chloride	105		P	90 - 110
2009081	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008993	Sulfate	103		P	90 - 110
2009081	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349158

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009258	Ammonia-N	98.1	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348953

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009229	Kjeldahl Nitrogen	98.0	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009073	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009230	Total-P	98.6	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349420

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009065	Total-P	96.4	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009071	O-Phosphate-P	95.7	95.3	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P348754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008562	Sucralose	75.6	96.9	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P349031

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009225	Fluoride	98.4	96.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349005

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2009067	Organic Carbon	92.7	94.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348827

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009062	Turbidity	2.04	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348828

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009162	Turbidity	0.684	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008993	Chloride	2.26	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008993	Sulfate	3.12	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349158

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009258	Ammonia-N	0.636	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009229	Kjeldahl Nitrogen	0.764	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009073	NO2NO3-N	0.257	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009230	Total-P	1.82	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P349420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009065	Total-P	1.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P348787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009071	O-Phosphate-P	0.222	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P348754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008562	Sucralose	13.5	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P348774

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
LFB	2,4-D	2.45	LCS	P	0 - 30
LFB	Acetaminophen	24.0	LCS	P	0 - 30
LFB	Bentazon	4.36	LCS	P	0 - 30
LFB	Carbamazepine	8.84	LCS	P	0 - 30
LFB	Diuron	19.2	LCS	P	0 - 30
LFB	Fenuron	10.2	LCS	P	0 - 30
LFB	Fluridone	10.5	LCS	P	0 - 30
LFB	Hydrocodone	8.33	LCS	P	0 - 30
LFB	Ibuprofen	12.8	LCS	P	0 - 30
LFB	Imazapyr	3.94	LCS	P	0 - 30
LFB	Imidacloprid	6.71	LCS	P	0 - 30
LFB	Linuron	1.75	LCS	P	0 - 30
LFB	MCP	4.52	LCS	P	0 - 30
LFB	Naproxen	20.4	LCS	P	0 - 30
LFB	Primidone	14.2	LCS	P	0 - 30
LFB	Pyraclostrobin	12.2	LCS	P	0 - 30
LFB	Triclopyr	4.80	LCS	P	0 - 30

Reference Method: SM 2120 B
 Batch ID: P348781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009061	Color (true)	4.33	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P349027

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

Reference Method: SM 2320 B-97
Batch ID: P349027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009225	Total Alkalinity	0.239	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P349195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009161	TDS	7.29	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P349031

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009225	Fluoride	1.92	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P349005

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2009067	Organic Carbon	1.04	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: 2009177
Field Sample ID: G3SD0092

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	116	P	30 - 160
EPA 8321B	Acetaminophen-d4	80.3	P	30 - 160
EPA 8321B	Carbamazepine-d10	72.1	P	30 - 160
EPA 8321B	Diuron-d6	55.7	P	30 - 160
EPA 8321B	Ibuprofen-d3	75.2	P	40 - 160
EPA 8321B	Primidone-d5	89.6	P	30 - 160
EPA 8321B	Sucralose-d6	128	P	40 - 160

Lab Sample ID: 2009178
Field Sample ID: G3SD0090

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	127	P	30 - 160
EPA 8321B	Acetaminophen-d4	73.9	P	30 - 160
EPA 8321B	Carbamazepine-d10	63.7	P	30 - 160
EPA 8321B	Diuron-d6	53.7	P	30 - 160
EPA 8321B	Ibuprofen-d3	81.7	P	40 - 160
EPA 8321B	Primidone-d5	78.9	P	30 - 160
EPA 8321B	Sucralose-d6	117	P	40 - 160

Lab Sample ID: 2009179
Field Sample ID: G3SD0089

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	124	P	30 - 160
EPA 8321B	Acetaminophen-d4	76.9	P	30 - 160
EPA 8321B	Carbamazepine-d10	67.3	P	30 - 160
EPA 8321B	Diuron-d6	62.1	P	30 - 160
EPA 8321B	Ibuprofen-d3	84.1	P	40 - 160
EPA 8321B	Primidone-d5	79.7	P	30 - 160
EPA 8321B	Sucralose-d6	107	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A85347

Included Lab Sample IDs: 2009161, 2009162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	104	104	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A85348

Included Lab Sample IDs: 2009165, 2009166

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	97.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A85363

Included Lab Sample IDs: 2009161, 2009162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	98.5	P/P	95 - 105
Turbidity	99.5	98.5	P/P	95 - 105

Reference Method: EPA 8321B

Run ID: A85393

Included Lab Sample IDs: 2009177, 2009178, 2009179

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	91.4	90.1	P/P	60 - 150

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A85414

Included Lab Sample IDs: 2009163, 2009164

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A85417

Included Lab Sample IDs: 2009161, 2009162

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

Reference Method: SM 5310 B-00

Run ID: A85418

Included Lab Sample IDs: 2009163, 2009164

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A85424

Included Lab Sample IDs: 2009163, 2009164

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85424
Included Lab Sample IDs: 2009163, 2009164

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	98.8	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A85430
Included Lab Sample IDs: 2009161, 2009162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A85430
Included Lab Sample IDs: 2009161, 2009162

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.5	P/P	90 - 110
Fluoride	99.0	98.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85474
Included Lab Sample IDs: 2009163, 2009164

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85548
Included Lab Sample IDs: 2009164

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85600
Included Lab Sample IDs: 2009163

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	100	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A85613
Included Lab Sample IDs: 2009177, 2009178, 2009179

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	116	110	P/P	50 - 150
Bentazon	115	93.6	P/P	50 - 150
Ibuprofen	128	108	P/P	50 - 150
MCP	131	128	P/P	50 - 150
Naproxen	139	124	P/P	60 - 150
Triclopyr	131	125	P/P	50 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A85635

Included Lab Sample IDs: 2009177, 2009178, 2009179

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	113	97.9	P/P	60 - 150
Carbamazepine	93.1	90.4	P/P	60 - 150
Diuron	87.9	83.2	P/P	60 - 150
Fenuron	98.3	85.3	P/P	60 - 150
Fluridone	107	96.7	P/P	60 - 160
Hydrocodone	107	92.4	P/P	60 - 150
Imazapyr	113	99.1	P/P	50 - 150
Imidacloprid	100	84.6	P/P	60 - 150
Linuron	110	86.7	P/P	60 - 150
Primidone	93.2	94.8	P/P	60 - 150
Pyraclostrobin	109	93.8	P/P	60 - 150

Reference Method: EPA 8321B

Run ID: A85672

Included Lab Sample IDs: 2009179

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluridone	115	118	P/P	60 - 160
Imazapyr	102	114	P/P	50 - 150

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery		LCS	Precision	MS
							SMP	
EPA 180.1 Rev. 2.0	Turbidity						2.04	
	Turbidity						0.684	
EPA 300.0 Rev. 2.1	Chloride	108		105	104		2.26	
	Sulfate	106		103	103		3.12	
EPA 350.1 Rev. 2.0	Ammonia-N	100		98.1	98.8			0.636
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102		98.0	99.3			0.764
EPA 353.2 Rev. 2.0	NO2NO3-N	103		102	102			0.257
EPA 365.1 Rev. 2.0	Total-P	98.3		98.6	101			1.82
	Total-P	99.1		96.4	98.4			1.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7		95.7	95.3			0.222
EPA 8321B	2,4-D	115	112			2.45		
	Acetaminophen	77.5	98.7			24.0		
	Bentazon	93.1	89.1			4.36		
	Carbamazepine	67.4	73.7			8.84		
	Diuron	53.7	65.1			19.2		
	Fenuron	97.5	108			10.2		
	Fluridone	79.2	87.9			10.5		
	Hydrocodone	86.0	93.5			8.33		
	Ibuprofen	112	98.5			12.8		
	Imazapyr	93.7	97.5			3.94		
	Imidacloprid	98.5	105			6.71		
	Linuron	75.9	77.2			1.75		
	MCPP	138	132			4.52		
	Naproxen	106	130			20.4		
	Primidone	86.2	99.4			14.2		
	Pyraclostrobin	78.2	88.4			12.2		
	Sucralose	77.3		75.6	96.9			13.5
	Triclopyr	139	133			4.80		
SM 2120 B	Color (true)	100					4.33	
SM 2320 B-97	Total Alkalinity	106					0.239	
SM 2540 C-97	TDS						7.29	
SM 4500 F-C-97	Fluoride	96.1		98.4	96.3			1.92
SM 5310 B-00	Organic Carbon	94.8		92.7	94.1			1.04

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2009161, 2009162
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2009161, 2009162
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2009161, 2009162
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2009163, 2009164
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2009163, 2009164
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2009163, 2009164
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2009163, 2009164
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2009165, 2009166
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2009177, 2009178, 2009179
SM 2120 B / E31780	True Color measured at 450 nm	2009161, 2009162

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	2009161, 2009162
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2009161, 2009162
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2009161, 2009162
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2009161, 2009162
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2009163, 2009164

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	07/19/2018			07/19/2018 15:51	Blanca Fach	2009161, 2009162
EPA 300.0 Rev. 2.1	07/19/2018			07/25/2018 14:20	Lipi Saha	2009161
	07/19/2018			07/25/2018 14:32	Lipi Saha	2009162
EPA 350.1 Rev. 2.0	07/19/2018			07/25/2018 13:11	Ping Hua	2009164
	07/19/2018			07/25/2018 14:11	Ping Hua	2009163
EPA 351.2 Rev. 2.0	07/19/2018	07/23/2018 11:30	Adrian Shelby	07/24/2018 11:03	Joseph Suarez	2009163
	07/19/2018	07/23/2018 11:30	Adrian Shelby	07/24/2018 11:05	Joseph Suarez	2009164
EPA 353.2 Rev. 2.0	07/19/2018			07/23/2018 13:06	Lauren Bottorf	2009163
	07/19/2018			07/23/2018 13:07	Lauren Bottorf	2009164
EPA 365.1 Rev. 2.0	07/19/2018	07/27/2018 12:35	Sima Feizi	07/30/2018 09:05	Beverly Y. Sanders	2009164
	07/19/2018	07/31/2018 10:30	Sima Feizi	08/01/2018 09:12	Beverly Y. Sanders	2009163
EPA 365.1 Rev. 2.0 dissolved	07/19/2018			07/19/2018 15:43	Julia Storbeck	2009165
	07/19/2018			07/19/2018 15:44	Julia Storbeck	2009166
EPA 8321B	07/19/2018	07/20/2018 16:30	Mohammad Ghaffari	07/21/2018 14:58	Mohammad Ghaffari	2009177
	07/19/2018	07/20/2018 16:30	Mohammad Ghaffari	07/21/2018 15:13	Mohammad Ghaffari	2009178
	07/19/2018	07/20/2018 16:30	Mohammad Ghaffari	07/21/2018 15:28	Mohammad Ghaffari	2009179
	07/19/2018	07/25/2018 08:30	Hoor Shaik	07/27/2018 14:43	Juyoung Kim	2009177
	07/19/2018	07/25/2018 08:30	Hoor Shaik	07/27/2018 15:17	Juyoung Kim	2009178
	07/19/2018	07/25/2018 08:30	Hoor Shaik	07/27/2018 15:52	Juyoung Kim	2009179
	07/19/2018	07/25/2018 08:30	Hoor Shaik	07/28/2018 22:03	Juyoung Kim	2009177
	07/19/2018	07/25/2018 08:30	Hoor Shaik	07/28/2018 22:37	Juyoung Kim	2009178
	07/19/2018	07/25/2018 08:30	Hoor Shaik	07/28/2018 23:12	Juyoung Kim	2009179
	07/19/2018	07/25/2018 08:30	Hoor Shaik	08/02/2018 22:36	Juyoung Kim	2009179
SM 2120 B	07/19/2018			07/19/2018 15:21	Tanya Welborn	2009161
	07/19/2018			07/19/2018 15:22	Tanya Welborn	2009162
SM 2320 B-97	07/19/2018			07/24/2018 01:05	Dale L. Simmons	2009161
	07/19/2018			07/24/2018 03:31	Dale L. Simmons	2009162
SM 2540 C-97	07/19/2018			07/20/2018 16:46	William L. Brown IV	2009161, 2009162
SM 2540 D-97	07/19/2018			07/20/2018 17:00	William L. Brown IV	2009161, 2009162
SM 4500 F-C-97	07/19/2018			07/24/2018 01:05	Dale L. Simmons	2009161
	07/19/2018			07/24/2018 03:31	Dale L. Simmons	2009162
SM 5310 B-00	07/19/2018			07/23/2018 23:10	Megan Treadwell	2009163
	07/19/2018			07/23/2018 23:24	Megan Treadwell	2009164