

Chemical Analysis Report

SW-DIST-2018-05-15-01

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

Event Description: **Pinellas WBIDS By June**

Request ID: **RQ-2018-05-14-07**

Customer: **SW-DIST**

Project ID: **SMP**

Send Reports to:

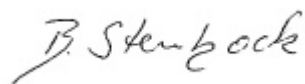
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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 07-JUN-2018 13:53



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: LONG BRANCH @ APPT WALKWAY

Collection Date/Time: 05/14/2018 09:45

Field ID: G1SW0098

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992758	EPA 8321B	2,4-D	0.013		ug/L	P345194	
		Bentazon	0.0038		ug/L	P345194	
		MCP	0.0026	I	ug/L	P345194	
		Triclopyr**	0.0040	U	ug/L	P345194	
		Imidacloprid	0.049	J	ug/L	P345194	SUR
		Diuron	0.0020	UJ	ug/L	P345194	SUR
		Pyraclostrobin**	0.0020	UJ	ug/L	P345194	SUR
		Primidone**	0.0040	U	ug/L	P345194	
		Linuron	0.0040	UJ	ug/L	P345194	SUR
		Acetaminophen**	0.057		ug/L	P345194	
		Fenuron	0.016	UJ	ug/L	P345194	SUR
		Imazapyr**	0.086	J	ug/L	P345194	SUR
		Carbamazepine**	4.0E-04	UJ	ug/L	P345194	SUR
		Fluridone**	0.0081	J	ug/L	P345194	SUR
		Hydrocodone**	8.0E-04	UJ	ug/L	P345194	SUR
		Sucralose**	0.25		ug/L	P345129	

Ref. Method and Comment:

EPA 8321B: Refer to the narrative for an explanation of QC Codes. Results confirmed in re-extraction.

Sample Location: CEDAR CREEK @ PINEHURST

Collection Date/Time: 05/14/2018 11:00

Field ID: G5SW0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992746	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P345363	
	EPA 300.0 Rev. 2.1	Chloride	100		mg Cl/L	P345692	
		Sulfate	22		mg SO4/L	P345693	
	SM 2120 B	Color (true)	90		PCU	P345340	
	SM 2320 B-97	Total Alkalinity	77		mg CaCO3/L	P345489	
	SM 2540 C-97	TDS	356		mg/L	P345723	
	SM 2540 D-97	TSS	3	I	mg/L	P345715	
	SM 4500 F-C-97	Fluoride	0.23		mg F/L	P345491	
1992747	EPA 350.1 Rev. 2.0	Ammonia-N	0.13		mg N/L	P345569	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P345979	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P345412	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P345445	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P345625	
1992748	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.098		mg P/L	P345367	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

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

Sample Location: CEDAR CREEK @ PINEHURST

Collection Date/Time: 05/14/2018 11:00

Field ID: G5SW0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G5SW0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992759	EPA 8321B	2,4-D	0.028		ug/L	P345194	
		Bentazon	0.014		ug/L	P345194	
		MCP	0.015		ug/L	P345194	
		Triclopyr**	0.0040	U	ug/L	P345194	
		Imidacloprid	0.16	J	ug/L	P345194	SUR
		Diuron	0.0020	UJ	ug/L	P345194	SUR
		Pyraclostrobin**	0.0020	UJ	ug/L	P345194	SUR
		Primidone**	0.019		ug/L	P345194	
		Linuron	0.0040	UJ	ug/L	P345194	SUR
		Acetaminophen**	0.12		ug/L	P345194	
		Fenuron	0.016	UJ	ug/L	P345194	SUR
		Imazapyr**	0.24		ug/L	P345194	
		Carbamazepine**	0.0018		ug/L	P345194	
		Fluridone**	4.0E-04	UJ	ug/L	P345194	SUR
		Hydrocodone**	8.0E-04	U	ug/L	P345194	
		Sucralose**	3.3		ug/L	P345129	

Ref. Method and Comment:

EPA 8321B: Refer to the narrative for an explanation of QC Codes. Results confirmed in re-extraction.

Sample Location: ALLIGATOR @ OLD COACHMAN

Collection Date/Time: 05/14/2018 10:25

Field ID: G1SW0062

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992760	EPA 8321B	2,4-D	0.066		ug/L	P345194	
		Bentazon	0.011		ug/L	P345194	
		MCP	0.024		ug/L	P345194	
		Triclopyr**	0.0040	U	ug/L	P345194	
		Imidacloprid	0.067	J	ug/L	P345194	SUR
		Diuron	0.0020	UJ	ug/L	P345194	SUR
		Pyraclostrobin**	0.0020	UJ	ug/L	P345194	SUR
		Primidone**	0.029		ug/L	P345194	
		Linuron	0.0040	UJ	ug/L	P345194	SUR
		Acetaminophen**	0.14		ug/L	P345194	
		Fenuron	0.016	UJ	ug/L	P345194	SUR
		Imazapyr**	0.087	J	ug/L	P345194	SUR
		Carbamazepine**	4.6E-04	IJ	ug/L	P345194	SUR
		Fluridone**	0.0060	J	ug/L	P345194	SUR
		Hydrocodone**	8.0E-04	UJ	ug/L	P345194	SUR
		Sucralose**	4.8		ug/L	P345129	

Ref. Method and Comment:

EPA 8321B: Refer to the narrative for an explanation of QC Codes. Results confirmed in re-extraction.

Sample Location: LONG BRANCH @ MICHIGAN

Collection Date/Time: 05/14/2018 10:00

Field ID: G1SW0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992761	EPA 8321B	2,4-D	0.0020	U	ug/L	P345194	

Field ID: G1SW0097

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992761	EPA 8321B	Bentazon	0.0093		ug/L	P345194	
		MCP	0.0020	U	ug/L	P345194	
		Triclopyr**	0.0040	U	ug/L	P345194	
		Imidacloprid	0.037		ug/L	P345194	
		Diuron	0.0021	I	ug/L	P345194	
		Pyraclostrobin**	0.0020	U	ug/L	P345194	
		Primidone**	0.0040	U	ug/L	P345194	
		Linuron	0.0040	U	ug/L	P345194	
		Acetaminophen**	0.0080	U	ug/L	P345194	
		Fenuron	0.016	U	ug/L	P345194	
		Imazapyr**	0.12		ug/L	P345194	
		Carbamazepine**	4.0E-04	U	ug/L	P345194	
		Fluridone**	0.046		ug/L	P345194	
		Hydrocodone**	8.0E-04	U	ug/L	P345194	
		Sucralose**	0.14		ug/L	P345129	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345363

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345692

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345693

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345569

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345979

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345412

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345445

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345367

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

Reference Method: EPA 8321B
Batch ID: P345129

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P345194

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	0.030	I	ug/L
Fluridone	4.0E-04	U	ug/L
Hydrocodone	8.0E-04	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
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: P345340

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P345489

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P345723

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P345715

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P345491

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P345625

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: P345692

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345693

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345569

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345979

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345412

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345412

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: P345445

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345367

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

Reference Method: EPA 8321B
Batch ID: P345129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	113		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P345194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	90.0		P	40 - 150
Acetaminophen	98.3		P	30 - 150
Bentazon	79.5		P	30 - 150
Carbamazepine	61.5		P	40 - 150
Diuron	62.2		P	40 - 150
Fenuron	96.2		P	40 - 150
Fluridone	83.0		P	40 - 150
Hydrocodone	98.8		P	40 - 150
Imazapyr	85.6		P	40 - 150
Imidacloprid	102		P	40 - 160
Linuron	97.2		P	40 - 150
MCPP	96.7		P	40 - 150
Primidone	98.1		P	40 - 150
Pyraclostrobin	66.3		P	40 - 150
Triclopyr	94.9		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P345489

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

Reference Method: SM 4500 F-C-97
Batch ID: P345491

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	92.9		P	91 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P345625

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992556	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992556	Sulfate	99.8		P	90 - 110
1992612	Sulfate	93.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345569

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992720	Ammonia-N	97.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345979

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992720	Kjeldahl Nitrogen	93.5	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345412

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992747	NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345445

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992779	Total-P	103	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345367

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992649	O-Phosphate-P	99.1	98.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P345129

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992563	Sucralose	111	107	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P345194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992331	2,4-D	76.0	72.8	P/P	40 - 150
1992331	Acetaminophen	95.0	92.5	P/P	30 - 150
1992331	Bentazon	45.6	44.3	P/P	30 - 150
1992331	Carbamazepine	53.4	56.7	P/P	40 - 150
1992331	Diuron	52.4	55.3	P/P	40 - 150
1992331	Fenuron	85.2	91.1	P/P	40 - 150
1992331	Fluridone	75.3	77.3	P/P	40 - 150
1992331	Hydrocodone	106	109	P/P	40 - 150
1992331	Imazapyr	100	99.6	P/P	40 - 150
1992331	Imidacloprid	152	159	P/P	40 - 160
1992331	Linuron	92.3	91.6	P/P	40 - 150
1992331	MCCP	74.5	71.5	P/P	40 - 150
1992331	Primidone	103	111	P/P	40 - 150
1992331	Pyraclostrobin	72.0	71.6	P/P	40 - 150
1992331	Triclopyr	81.1	73.8	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P345491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992610	Fluoride	94.4	93.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992936	Organic Carbon	99.6	98.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345363

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992774	Turbidity	4.76	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992556	Chloride	1.25	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992556	Sulfate	2.28	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345569

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992720	Ammonia-N	1.84	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992720	Kjeldahl Nitrogen	2.28	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992747	NO2NO3-N	0.954	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992779	Total-P	2.09	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992649	O-Phosphate-P	0.202	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P345129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992563	Sucralose	3.82	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P345194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992331	2,4-D	4.28	Spike	P	0 - 30
1992331	Acetaminophen	2.60	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P345194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992331	Bentazon	3.03	Spike	P	0 - 30
1992331	Carbamazepine	5.92	Spike	P	0 - 30
1992331	Diuron	5.45	Spike	P	0 - 30
1992331	Fenuron	6.70	Spike	P	0 - 30
1992331	Fluridone	2.63	Spike	P	0 - 30
1992331	Hydrocodone	2.28	Spike	P	0 - 30
1992331	Imazapyr	0.862	Spike	P	0 - 30
1992331	Imidacloprid	4.18	Spike	P	0 - 30
1992331	Linuron	0.702	Spike	P	0 - 30
1992331	MCPP	4.22	Spike	P	0 - 30
1992331	Primidone	7.32	Spike	P	0 - 30
1992331	Pyraclostrobin	0.568	Spike	P	0 - 30
1992331	Triclopyr	9.45	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P345340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992640	Color (true)	3.59	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P345489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992610	Total Alkalinity	0.0961	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P345723

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992612	TDS	7.89	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P345491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992610	Fluoride	0.480	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P345625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992936	Organic Carbon	0.598	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: 1992758
Field Sample ID: G1SW0098

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	55.3	P	30 - 160
EPA 8321B	Acetaminophen-d4	45.5	P	30 - 160
EPA 8321B	Carbamazepine-d10	19.1	F	30 - 160
EPA 8321B	Diuron-d6	15.7	F	30 - 160
EPA 8321B	Primidone-d5	61.2	P	30 - 160
EPA 8321B	Sucralose-d6	130	P	40 - 160

Lab Sample ID: 1992759
Field Sample ID: G5SW0129

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	79.5	P	30 - 160
EPA 8321B	Acetaminophen-d4	67.4	P	30 - 160
EPA 8321B	Carbamazepine-d10	36.1	P	30 - 160
EPA 8321B	Diuron-d6	26.2	F	30 - 160
EPA 8321B	Primidone-d5	91.0	P	30 - 160
EPA 8321B	Sucralose-d6	108	P	40 - 160

Lab Sample ID: 1992760
Field Sample ID: G1SW0062

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	56.0	P	30 - 160
EPA 8321B	Acetaminophen-d4	40.4	P	30 - 160
EPA 8321B	Carbamazepine-d10	20.1	F	30 - 160
EPA 8321B	Diuron-d6	15.7	F	30 - 160
EPA 8321B	Primidone-d5	54.6	P	30 - 160
EPA 8321B	Sucralose-d6	92.3	P	40 - 160

Lab Sample ID: 1992761
Field Sample ID: G1SW0097

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	50.0	P	30 - 160
EPA 8321B	Acetaminophen-d4	78.1	P	30 - 160
EPA 8321B	Carbamazepine-d10	41.5	P	30 - 160
EPA 8321B	Diuron-d6	40.5	P	30 - 160
EPA 8321B	Primidone-d5	87.5	P	30 - 160
EPA 8321B	Sucralose-d6	124	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A83897
Included Lab Sample IDs: 1992746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.4	98.9	P/P	90 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A83908

Included Lab Sample IDs: 1992746

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A83910

Included Lab Sample IDs: 1992748

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.3	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A83934

Included Lab Sample IDs: 1992747

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

Reference Method: SM 2320 B-97

Run ID: A83973

Included Lab Sample IDs: 1992746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83973

Included Lab Sample IDs: 1992746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.3	98.1	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A83978

Included Lab Sample IDs: 1992758, 1992759, 1992760, 1992761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	105	114	P/P	60 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A84010

Included Lab Sample IDs: 1992747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A84034

Included Lab Sample IDs: 1992747

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A84061

Included Lab Sample IDs: 1992746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.3	99.9	P/P	90 - 110
Sulfate	99.4	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84065

Included Lab Sample IDs: 1992747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84200

Included Lab Sample IDs: 1992747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.1	102	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A84229

Included Lab Sample IDs: 1992758, 1992759, 1992760, 1992761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	81.4	73.4	P/P	50 - 150
Acetaminophen	93.9	101	P/P	60 - 150
Bentazon	93.1	109	P/P	50 - 150
Carbamazepine	87.2	98.8	P/P	60 - 150
Diuron	90.4	99.8	P/P	60 - 150
Fenuron	99.9	100	P/P	60 - 150
Fluridone	94.6	107	P/P	60 - 160
Hydrocodone	101	100	P/P	60 - 150
Imazapyr	98.2	102	P/P	50 - 150
Imidacloprid	98.1	90.0	P/P	60 - 150
Linuron	102	116	P/P	60 - 150
MCP	89.8	93.3	P/P	50 - 150
Primidone	102	98.1	P/P	60 - 150
Pyraclostrobin	93.8	98.7	P/P	60 - 150
Triclopyr	83.5	83.0	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A84279

Included Lab Sample IDs: 1992758, 1992759, 1992760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	89.0	89.2	P/P	50 - 150
Bentazon	97.6	98.4	P/P	50 - 150
MCP	89.8	84.1	P/P	50 - 150
Triclopyr	114	95.1	P/P	50 - 160

* 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				4.76	
EPA 300.0 Rev. 2.1	Chloride	101	101		1.25	
	Sulfate	101	99.8 93.7		2.28	
EPA 350.1 Rev. 2.0	Ammonia-N	102	97.8 100			1.84
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	93.5 96.2			2.28
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	99.0 100			0.954
EPA 365.1 Rev. 2.0	Total-P	101	103 105			2.09
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.6	99.1 98.9			0.202
EPA 8321B	2,4-D	90.0	76.0 72.8			4.28
	Acetaminophen	98.3	95.0 92.5			2.60
	Bentazon	79.5	45.6 44.3			3.03
	Carbamazepine	61.5	53.4 56.7			5.92
	Diuron	62.2	52.4 55.3			5.45
	Fenuron	96.2	85.2 91.1			6.70
	Fluridone	83.0	75.3 77.3			2.63
	Hydrocodone	98.8	106 109			2.28
	Imazapyr	85.6	100 99.6			0.862
	Imidacloprid	102	152 159			4.18
	Linuron	97.2	92.3 91.6			0.702
	MCPP	96.7	74.5 71.5			4.22
	Primidone	98.1	103 111			7.32
	Pyraclostrobin	66.3	72.0 71.6			0.568
	Sucralose	113	111 107			3.82
	Triclopyr	94.9	81.1 73.8			9.45
SM 2120 B	Color (true)				3.59	
SM 2320 B-97	Total Alkalinity	101			0.0961	
SM 2540 C-97	TDS				7.89	
SM 4500 F-C-97	Fluoride	92.9	94.4 93.8			0.480
SM 5310 B-00	Organic Carbon	99.4	99.6 98.9			0.598

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1992746
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1992746
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1992746
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1992747
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1992747
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1992747
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1992747
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1992748
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1992758, 1992759, 1992760, 1992761
SM 2120 B / E31780	True Color measured at 450 nm	1992746
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1992746
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1992746
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1992746
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1992746

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1992747

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	05/15/2018			05/15/2018 15:35	William L. Brown IV	1992746
EPA 300.0 Rev. 2.1	05/15/2018			05/21/2018 22:08	Lipi Saha	1992746
EPA 350.1 Rev. 2.0	05/15/2018			05/18/2018 11:16	Ping Hua	1992747
EPA 351.2 Rev. 2.0	05/15/2018	05/25/2018 11:00	Adrian Shelby	05/29/2018 11:28	Joseph Suarez	1992747
EPA 353.2 Rev. 2.0	05/15/2018			05/16/2018 13:38	Lauren Bottorf	1992747
EPA 365.1 Rev. 2.0	05/15/2018	05/16/2018 08:57	Sima Feizi	05/22/2018 10:50	Beverly Y. Sanders	1992747
EPA 365.1 Rev. 2.0 dissolved	05/15/2018			05/15/2018 16:03	Megan Treadwell	1992748
EPA 8321B	05/15/2018	05/16/2018 10:00	Hoor Shaik	05/17/2018 06:01	Juyoung Kim	1992758
	05/15/2018	05/16/2018 10:00	Hoor Shaik	05/17/2018 06:35	Juyoung Kim	1992759
	05/15/2018	05/16/2018 10:00	Hoor Shaik	05/17/2018 07:10	Juyoung Kim	1992760
	05/15/2018	05/16/2018 10:00	Hoor Shaik	05/17/2018 07:44	Juyoung Kim	1992761
	05/15/2018	05/16/2018 10:00	Hoor Shaik	05/17/2018 23:54	Juyoung Kim	1992761
	05/15/2018	05/16/2018 10:00	Hoor Shaik	05/25/2018 10:59	Juyoung Kim	1992758
	05/15/2018	05/16/2018 10:00	Hoor Shaik	05/25/2018 11:34	Juyoung Kim	1992759
	05/15/2018	05/16/2018 10:00	Hoor Shaik	05/25/2018 12:08	Juyoung Kim	1992760
	05/15/2018	05/16/2018 13:00	Juyoung Kim	05/16/2018 15:04	Juyoung Kim	1992758
	05/15/2018	05/16/2018 13:00	Juyoung Kim	05/16/2018 15:23	Juyoung Kim	1992759
	05/15/2018	05/16/2018 13:00	Juyoung Kim	05/16/2018 15:41	Juyoung Kim	1992760
	05/15/2018	05/16/2018 13:00	Juyoung Kim	05/16/2018 16:00	Juyoung Kim	1992761
SM 2120 B	05/15/2018			05/15/2018 14:51	Julia Storbeck	1992746
SM 2320 B-97	05/15/2018			05/16/2018 21:55	Dale L. Simmons	1992746
SM 2540 C-97	05/15/2018			05/16/2018 15:26	Yijie Li	1992746
SM 2540 D-97	05/15/2018			05/16/2018 15:26	Yijie Li	1992746
SM 4500 F-C-97	05/15/2018			05/16/2018 21:55	Dale L. Simmons	1992746
SM 5310 B-00	05/15/2018			05/18/2018 23:27	Julia Storbeck	1992747