

Chemical Analysis Report

SW-DIST-2019-05-02-02

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

Event Description: **Rice, Sims, Wolf, Mckay drainage**
Request ID: **RQ-2019-04-29-07**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 22-MAY-2019 13:38

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Rice Creek@Oak Forest Dr

Collection Date/Time: 05/01/2019 10:55

Field ID: G2SW0096

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2082758	EPA 8321B	2,4-D	0.0023	I	ug/L	P363186	
		Acesulfame K**	0.10	U	ug/L	P363369	
		AMPA**	0.18	I	ug/L	P363369	
		Sucralose**	1.7		ug/L	P363369	
		Acetaminophen**	0.0080	U	ug/L	P363186	
		Endothall**	0.25	U	ug/L	P363369	
		Glufosinate**	0.10	U	ug/L	P363369	
		Bentazon	0.23		ug/L	P363186	
		Glyphosate**	0.10	U	ug/L	P363369	
		Carbamazepine**	0.0063		ug/L	P363186	
		Diuron	0.016		ug/L	P363186	
		Fenuron	0.018	I	ug/L	P363186	
		Fluridone**	0.0089		ug/L	P363186	
		Imazapyr**	0.55		ug/L	P363186	
		Hydrocodone**	0.0020	U	ug/L	P363186	
		Ibuprofen**	0.020	U	ug/L	P363186	
		Imidacloprid	0.0061	I	ug/L	P363186	
		Linuron	0.0040	U	ug/L	P363186	
		MCPP	0.0023	I	ug/L	P363186	
		Naproxen**	0.0080	U	ug/L	P363186	
		Primidone**	0.023		ug/L	P363186	
		Pyraclostrobin**	0.0020	U	ug/L	P363186	
		Triclopyr**	0.0040	U	ug/L	P363186	

Sample Location: Rice @ Balm Rvrview

Collection Date/Time: 05/01/2019 11:15

Field ID: G2SW0032

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2082759	EPA 8321B	2,4-D	0.0035	I	ug/L	P363186	
		Acesulfame K**	0.10	U	ug/L	P363369	
		AMPA**	0.33	I	ug/L	P363369	
		Sucralose**	1.8		ug/L	P363369	
		Acetaminophen**	0.0080	U	ug/L	P363186	
		Endothall**	0.25	U	ug/L	P363369	
		Glufosinate**	0.10	U	ug/L	P363369	
		Bentazon	0.20		ug/L	P363186	
		Glyphosate**	0.30	I	ug/L	P363369	
		Carbamazepine**	0.0055		ug/L	P363186	
		Diuron	0.019		ug/L	P363186	
		Fenuron	0.069		ug/L	P363186	
		Fluridone**	0.011		ug/L	P363186	
		Imazapyr**	0.55		ug/L	P363186	
		Hydrocodone**	0.0020	U	ug/L	P363186	
		Ibuprofen**	0.020	U	ug/L	P363186	
		Imidacloprid	0.0076	I	ug/L	P363186	
		Linuron	0.0040	U	ug/L	P363186	
		MCPP	0.0031	I	ug/L	P363186	
		Naproxen**	0.0080	U	ug/L	P363186	
		Primidone**	0.027		ug/L	P363186	
		Pyraclostrobin**	0.0020	U	ug/L	P363186	
		Triclopyr**	0.0040	U	ug/L	P363186	

Sample Location: Wolf Branch Canal @ Manns Harbor Drive Boatlift

Collection Date/Time: 05/01/2019 10:15

Field ID: G1SW0092

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2082745	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P363261	
	EPA 300.0	Bromide	49		mg Br/L	P363643	
	SM 2320 B-97	Total Alkalinity	126	A	mg CaCO3/L	P363495	
	SM 2540 D-97	TSS	25	AJ	mg/L	P363456	RPD
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P363872	
2082746	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P363631	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P363621	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P363410	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P363387	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P363922	
2082747	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P363275	
2082760	EPA 8321B	2,4-D	0.0080		ug/L	P363186	
		Acesulfame K**	0.10	UJ	ug/L	P363369	SUR
		AMPA**	1.0	U	ug/L	P363369	
		Sucralose**	0.86		ug/L	P363369	
		Acetaminophen**	0.0080	U	ug/L	P363186	
		Endothall**	0.25	U	ug/L	P363369	SUR
		Glufosinate**	1.0	U	ug/L	P363369	
		Glyphosate**	1.0	U	ug/L	P363369	
		Bentazon	0.029		ug/L	P363186	
		Carbamazepine**	0.0012	I	ug/L	P363186	
		Diuron	0.0024	I	ug/L	P363186	
		Fenuron	0.016	U	ug/L	P363186	
		Fluridone**	0.036		ug/L	P363186	
		Imazapyr**	0.0042	I	ug/L	P363186	
		Hydrocodone**	0.0020	U	ug/L	P363186	
		Ibuprofen**	0.020	U	ug/L	P363186	
		Imidacloprid	0.0022	I	ug/L	P363186	
		Linuron	0.0040	U	ug/L	P363186	
		MCPP	0.0030	I	ug/L	P363186	
		Naproxen**	0.0080	U	ug/L	P363186	
		Primidone**	0.0044	I	ug/L	P363186	
		Pyraclostrobin**	0.0020	U	ug/L	P363186	
		Triclopyr**	0.0040	U	ug/L	P363186	

Ref. Method and Comment:

SM 2540 D-97: Refer to the narrative for an explanation of QC Codes.

EPA 8321B: Refer to the narrative for an explanation of QC Codes. Surrogate spike recovery exceeding the control limits. Results confirmed in sample duplicate. MDL for some parameters elevated due to matrix interference.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P363261

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P363643

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363631

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363621

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363410

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363387

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363275

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

Reference Method: EPA 8321B
Batch ID: P363186

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	0.0020	U	ug/L
Ibuprofen	0.020	U	ug/L
Imazapyr	0.0040	U	ug/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P363186

Component	Result	Code	Units
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: EPA 8321B
Batch ID: P363369

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
AMPA	0.10	U	ug/L
Endothall	0.25	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: SM 2320 B-97
Batch ID: P363495

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

Reference Method: SM 2540 D-97
Batch ID: P363456

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P363872

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P363922

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P363643

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363631

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363621

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363410

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: P363387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363275

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

Reference Method: EPA 8321B
Batch ID: P363186

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	89.4		P	40 - 150
Acetaminophen	94.5		P	30 - 150
Bentazon	110		P	30 - 150
Carbamazepine	97.6		P	40 - 150
Diuron	91.0		P	40 - 150
Fenuron	112		P	40 - 150
Fluridone	97.1		P	40 - 150
Hydrocodone	96.5		P	40 - 150
Ibuprofen	77.1		P	40 - 150
Imazapyr	98.6		P	40 - 150
Imidacloprid	105		P	40 - 150
Linuron	73.3		P	40 - 150
MCPP	104		P	40 - 150
Naproxen	83.9		P	40 - 150
Primidone	93.3		P	40 - 150
Pyraclostrobin	74.0		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P363186

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Triclopyr	64.6		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P363369

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	90.3		P	40 - 150
AMPA	106		P	40 - 150
Endothall	67.3		P	40 - 150
Glufosinate	104		P	40 - 150
Glyphosate	105		P	40 - 140
Sucralose	99.5		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P363495

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P363872

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P363922

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	89.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P363643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082903	Bromide	95.9	94.8	P/P	90 - 110
2082953	Bromide	95.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363631

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082547	Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082708	Kjeldahl Nitrogen	104	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363410

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082736	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082746	Total-P	93.2	92.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082442	O-Phosphate-P	95.5	96.2	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P363186

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082381	2,4-D	97.4	124	P/P	40 - 150
2082381	Acetaminophen	90.0	92.9	P/P	30 - 150
2082381	Bentazon	81.8	82.5	P/P	30 - 150
2082381	Carbamazepine	72.4	78.5	P/P	40 - 150
2082381	Diuron	67.6	71.7	P/P	40 - 150
2082381	Fenuron	83.9	85.0	P/P	40 - 150
2082381	Fluridone	91.9	97.2	P/P	40 - 150
2082381	Hydrocodone	86.6	83.6	P/P	40 - 150
2082381	Ibuprofen	73.2	77.2	P/P	40 - 150
2082381	Imazapyr	125	134	P/P	40 - 150
2082381	Imidacloprid	131	133	P/P	40 - 150
2082381	Linuron	57.6	65.5	P/P	40 - 150
2082381	MCP	126	145	P/P	40 - 150
2082381	Naproxen	78.0	82.2	P/P	40 - 150
2082381	Primidone	90.7	100	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P363186

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082381	Pyraclostrobin	89.6	92.1	P/P	40 - 150
2082381	Triclopyr	79.0	94.0	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P363369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082693	Acesulfame K	67.3	67.2	P/P	40 - 150
2082693	AMPA	63.4	66.8	P/P	40 - 150
2082693	Endothall	62.1	62.6	P/P	40 - 150
2082693	Glufosinate	92.6	97.0	P/P	40 - 150
2082693	Glyphosate	83.1	106	P/P	40 - 140
2082693	Sucralose	98.8	99.4	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P363872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082745	Fluoride	96.6	96.6	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P363922

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2083174	Organic Carbon	90.6	91.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P363261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082764	Turbidity	1.78	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P363643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082903	Bromide	0.937	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082547	Ammonia-N	1.27	Spike	P	0 - 15

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082708	Kjeldahl Nitrogen	3.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363410

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082736	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082746	Total-P	0.830	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082442	O-Phosphate-P	0.451	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P363186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082381	2,4-D	24.1	Spike	P	0 - 30
2082381	Acetaminophen	3.18	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P363186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082381	Bentazon	0.905	Spike	P	0 - 30
2082381	Carbamazepine	8.07	Spike	P	0 - 30
2082381	Diuron	5.79	Spike	P	0 - 30
2082381	Fenuron	1.22	Spike	P	0 - 30
2082381	Fluridone	5.61	Spike	P	0 - 30
2082381	Hydrocodone	3.45	Spike	P	0 - 30
2082381	Ibuprofen	5.30	Spike	P	0 - 30
2082381	Imazapyr	6.41	Spike	P	0 - 30
2082381	Imidacloprid	1.59	Spike	P	0 - 30
2082381	Linuron	12.7	Spike	P	0 - 30
2082381	MCP	13.5	Spike	P	0 - 30
2082381	Naproxen	5.31	Spike	P	0 - 30
2082381	Primidone	10.0	Spike	P	0 - 30
2082381	Pyraclostrobin	2.78	Spike	P	0 - 30
2082381	Triclopyr	17.3	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P363369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082693	Acesulfame K	0.0712	Spike	P	0 - 30
2082693	AMPA	1.82	Spike	P	0 - 30
2082693	Endothall	0.794	Spike	P	0 - 30
2082693	Glufosinate	4.60	Spike	P	0 - 30
2082693	Glyphosate	7.83	Spike	P	0 - 30
2082693	Sucralose	0.388	Spike	P	0 - 30

Reference Method: SM 2320 B-97
Batch ID: P363495

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082745	Total Alkalinity	0.925	Sample	P	0 - 2.8

Reference Method: SM 2540 D-97
Batch ID: P363456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082745	TSS	17.9	Sample	F	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P363872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082745	Fluoride	0.0	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P363922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2083174	Organic Carbon	0.900	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: 2082758
Field Sample ID: G2SW0096

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	107	P	30 - 160
EPA 8321B	Acetaminophen-d4	111	P	30 - 160
EPA 8321B	Carbamazepine-d10	86.2	P	30 - 160
EPA 8321B	Diuron-d6	79.9	P	30 - 160
EPA 8321B	Endothall-d6	73.7	P	30 - 160
EPA 8321B	Endothall-d6	73.7	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	66.4	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	66.4	P	30 - 160
EPA 8321B	Ibuprofen-d3	97.1	P	30 - 160
EPA 8321B	Primidone-d5	100	P	30 - 160
EPA 8321B	Sucralose-d6	112	P	30 - 160
EPA 8321B	Sucralose-d6	112	P	30 - 160

Lab Sample ID: 2082759
Field Sample ID: G2SW0032

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	131	P	30 - 160
EPA 8321B	Acetaminophen-d4	99.3	P	30 - 160
EPA 8321B	Carbamazepine-d10	74.9	P	30 - 160
EPA 8321B	Diuron-d6	67.9	P	30 - 160
EPA 8321B	Endothall-d6	71.8	P	30 - 160
EPA 8321B	Endothall-d6	71.8	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	90.4	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	90.4	P	30 - 160
EPA 8321B	Ibuprofen-d3	87.5	P	30 - 160
EPA 8321B	Primidone-d5	94.9	P	30 - 160
EPA 8321B	Sucralose-d6	114	P	30 - 160
EPA 8321B	Sucralose-d6	114	P	30 - 160

Lab Sample ID: 2082760
Field Sample ID: G1SW0092

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	120	P	30 - 160
EPA 8321B	Acetaminophen-d4	87.2	P	30 - 160
EPA 8321B	Carbamazepine-d10	77.6	P	30 - 160
EPA 8321B	Diuron-d6	72.2	P	30 - 160
EPA 8321B	Endothall-d6	1290	F	30 - 160
EPA 8321B	Endothall-d6	1290	F	30 - 160
EPA 8321B	Glyphosate 13C 15N	37.5	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	37.5	P	30 - 160
EPA 8321B	Ibuprofen-d3	69.1	P	30 - 160
EPA 8321B	Primidone-d5	84.7	P	30 - 160
EPA 8321B	Sucralose-d6	106	P	30 - 160
EPA 8321B	Sucralose-d6	106	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91163

Included Lab Sample IDs: 2082745

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91167

Included Lab Sample IDs: 2082747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.6	96.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91217

Included Lab Sample IDs: 2082746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A91249

Included Lab Sample IDs: 2082745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.9	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A91264

Included Lab Sample IDs: 2082758, 2082759, 2082760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	91.3	82.8	P/P	60 - 160
Endothall	69.3	61.4	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A91267

Included Lab Sample IDs: 2082758, 2082759, 2082760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	103	104	P/P	60 - 160
AMPA	109	94.4	P/P	60 - 160
AMPA	94.4	103	P/P	60 - 160
Glufosinate	106	111	P/P	60 - 160
Glufosinate	108	106	P/P	60 - 160
Glufosinate	111	112	P/P	60 - 160
Glyphosate	110	115	P/P	60 - 160
Glyphosate	115	128	P/P	60 - 160
Glyphosate	128	128	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A91295

Included Lab Sample IDs: 2082758, 2082759, 2082760

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

Reference Method: EPA 8321B

Run ID: A91295

Included Lab Sample IDs: 2082758, 2082759, 2082760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	104	104	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91296

Included Lab Sample IDs: 2082746

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91302

Included Lab Sample IDs: 2082746

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

Reference Method: EPA 300.0

Run ID: A91304

Included Lab Sample IDs: 2082745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	101	104	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A91357

Included Lab Sample IDs: 2082760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Endothall	69.3	61.4	P/P	60 - 160

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91365

Included Lab Sample IDs: 2082746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.4	93.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A91397

Included Lab Sample IDs: 2082745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A91414

Included Lab Sample IDs: 2082746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	92.7	92.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A91464

Included Lab Sample IDs: 2082758, 2082759, 2082760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	100	89.3	P/P	50 - 150
2,4-D	88.2	100	P/P	50 - 150
Acetaminophen	115	114	P/P	60 - 160
Acetaminophen	115	115	P/P	60 - 160
Bentazon	106	107	P/P	50 - 160
Bentazon	107	99.2	P/P	50 - 160
Carbamazepine	102	98.4	P/P	60 - 150
Carbamazepine	103	102	P/P	60 - 150
Diuron	102	106	P/P	60 - 150
Diuron	106	102	P/P	60 - 150
Fenuron	102	103	P/P	60 - 150
Fenuron	103	106	P/P	60 - 150
Fluridone	102	102	P/P	60 - 160
Fluridone	103	102	P/P	60 - 160
Hydrocodone	103	98.8	P/P	60 - 150
Hydrocodone	105	103	P/P	60 - 150
Ibuprofen	114	119	P/P	50 - 160
Ibuprofen	119	115	P/P	50 - 160
Imazapyr	101	98.4	P/P	50 - 150
Imazapyr	98.4	92.3	P/P	50 - 150
Imidacloprid	102	101	P/P	60 - 150
Imidacloprid	97.6	102	P/P	60 - 150
Linuron	96.8	98.0	P/P	60 - 150
Linuron	98.0	101	P/P	60 - 150
MCPP	100	93.2	P/P	50 - 150
MCPP	93.2	99.5	P/P	50 - 150
Naproxen	102	102	P/P	50 - 160
Naproxen	94.3	102	P/P	50 - 160
Primidone	104	105	P/P	60 - 150
Primidone	109	104	P/P	60 - 150
Pyraclostrobin	104	107	P/P	60 - 150
Pyraclostrobin	104	104	P/P	60 - 150
Triclopyr	99.1	99.8	P/P	50 - 150
Triclopyr	99.8	100	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			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					1.78	
EPA 300.0	Bromide	97.1	95.9	94.8	95.3		0.937
EPA 350.1 Rev. 2.0	Ammonia-N	98.5	99.7	101			1.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.7	104	100			3.41
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	103	103			0.0
EPA 365.1 Rev. 2.0	Total-P	97.7	93.2	92.3			0.830
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.3	95.5	96.2			0.451
EPA 8321B	2,4-D	89.4	97.4	124			24.1
	Acesulfame K	90.3	67.3	67.2			0.0712
	Acetaminophen	94.5	90.0	92.9			3.18
	AMPA	106	63.4	66.8			1.82
	Bentazon	110	81.8	82.5			0.905
	Carbamazepine	97.6	72.4	78.5			8.07
	Diuron	91.0	67.6	71.7			5.79
	Endothall	67.3	62.1	62.6			0.794
	Fenuron	112	83.9	85.0			1.22
	Fluridone	97.1	91.9	97.2			5.61
	Glufosinate	104	92.6	97.0			4.60
	Glyphosate	105	83.1	106			7.83
	Hydrocodone	96.5	86.6	83.6			3.45
	Ibuprofen	77.1	73.2	77.2			5.30
	Imazapyr	98.6	125	134			6.41
	Imidacloprid	105	131	133			1.59
	Linuron	73.3	57.6	65.5			12.7
	MCPP	104	126	145			13.5
	Naproxen	83.9	78.0	82.2			5.31
	Primidone	93.3	90.7	100			10.0
	Pyraclostrobin	74.0	89.6	92.1			2.78
	Sucralose	99.5	98.8	99.4			0.388
	Triclopyr	64.6	79.0	94.0			17.3
SM 2320 B-97	Total Alkalinity	102				0.925	
SM 2540 D-97	TSS					17.9	
SM 4500 F-C-97	Fluoride	96.6	96.6	96.6			0.0
SM 5310 B-00	Organic Carbon	89.2	90.6	91.5			0.900

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2082745
EPA 300.0 / E31780	Bromide in aqueous matrices	2082745
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2082746
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2082746
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2082746
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2082746
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2082747
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2082758, 2082759, 2082760
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2082758, 2082759, 2082760
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2082745

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2082745
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2082745
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2082746

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	05/02/2019			05/02/2019 16:16	Adrian Shelby	2082745
EPA 300.0	05/02/2019			05/08/2019 20:57	Lipi Saha	2082745
EPA 350.1 Rev. 2.0	05/02/2019			05/08/2019 11:55	Ping Hua	2082746
EPA 351.2 Rev. 2.0	05/02/2019	05/08/2019 12:15	Adrian Shelby	05/10/2019 12:46	Joseph Suarez	2082746
EPA 353.2 Rev. 2.0	05/02/2019			05/06/2019 11:39	Beverly Y. Sanders	2082746
EPA 365.1 Rev. 2.0	05/02/2019	05/06/2019 10:59	Joseph Suarez	05/08/2019 13:57	Rosalyn Ballman	2082746
EPA 365.1 Rev. 2.0 dissolved	05/02/2019			05/02/2019 16:48	Jhamieka S. Greenwood	2082747
EPA 8321B	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/06/2019 15:52	Rebecca Ware	2082758
	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/06/2019 16:09	Rebecca Ware	2082759
	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/06/2019 17:31	Rebecca Ware	2082760
	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/07/2019 02:20	Rebecca Ware	2082758
	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/07/2019 02:34	Rebecca Ware	2082759
	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/07/2019 02:48	Rebecca Ware	2082760
	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/07/2019 20:25	Rebecca Ware	2082758
	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/07/2019 20:36	Rebecca Ware	2082759
	05/02/2019	05/06/2019 10:00	Rebecca Ware	05/07/2019 20:48	Rebecca Ware	2082760
	05/02/2019	05/06/2019 12:00	Hoor Shaik	05/16/2019 11:55	Juyoung Kim	2082758
	05/02/2019	05/06/2019 12:00	Hoor Shaik	05/16/2019 13:05	Juyoung Kim	2082759
	05/02/2019	05/06/2019 12:00	Hoor Shaik	05/16/2019 13:39	Juyoung Kim	2082760
	05/02/2019	05/06/2019 12:00	Hoor Shaik	05/16/2019 18:51	Juyoung Kim	2082758
	05/02/2019	05/06/2019 12:00	Hoor Shaik	05/16/2019 19:25	Juyoung Kim	2082759
SM 2320 B-97	05/02/2019			05/07/2019 06:24	Dale L. Simmons	2082745
SM 2540 D-97	05/02/2019			05/03/2019 16:35	Mariam Hanna	2082745
SM 4500 F-C-97	05/02/2019			05/14/2019 05:27	Dale L. Simmons	2082745
SM 5310 B-00	05/02/2019			05/14/2019 08:16	Julia Storbeck	2082746