

Chemical Analysis Report

SO-DIST-2019-05-22-01

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

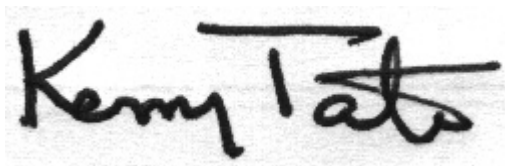
Event Description: **SMP: Canals**
Request ID: **RQ-2019-05-20-10**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 10-JUN-2019 13:56

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 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: C-19 @ US 27

Collection Date/Time: 05/21/2019 10:00

Field ID: C-19 @ US 27

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2088082	EPA 180.1 Rev. 2.0	Turbidity	6.5		NTU	P364432	
	EPA 300.0 Rev. 2.1	Chloride	62		mg Cl/L	P364630	
		Sulfate	26		mg SO4/L	P364633	
	SM 2120 B	Color (true)	76		PCU	P364406	
	SM 2320 B-97	Total Alkalinity	162		mg CaCO3/L	P364860	
	SM 2540 C-97	TDS	338	A	mg/L	P364926	
	SM 2540 D-97	TSS	12	A	mg/L	P364886	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P364871	
2088084	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P364806	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P364754	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364520	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P364717	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P364513	
2088086	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P364402	
2088090	EPA 8321B	2,4-D	0.18		ug/L	P364434	
		Acesulfame K**	0.10	U	ug/L	P364435	
		AMPA**	0.30	I	ug/L	P364435	
		Sucralose**	0.051		ug/L	P364435	
		Acetaminophen**	0.0080	U	ug/L	P364434	
		Endothall**	0.25	U	ug/L	P364435	
		Glufosinate**	0.10	U	ug/L	P364435	
		Bentazon	0.013		ug/L	P364434	
		Glyphosate**	0.68		ug/L	P364435	
		Carbamazepine**	8.0E-04	U	ug/L	P364434	
		Diuron	0.0043	I	ug/L	P364434	
		Fenuron	0.025	I	ug/L	P364434	
		Fluridone**	0.0038		ug/L	P364434	
		Imazapyr**	0.29		ug/L	P364434	
		Hydrocodone**	0.0020	U	ug/L	P364434	
		Ibuprofen**	0.020	U	ug/L	P364434	
		Imidacloprid	0.0041	I	ug/L	P364434	
		Linuron	0.0040	U	ug/L	P364434	
		MCPP	0.0020	U	ug/L	P364434	
		Naproxen**	0.0080	U	ug/L	P364434	
		Primidone**	0.0040	U	ug/L	P364434	
		Pyraclostrobin**	0.0020	U	ug/L	P364434	
		Triclopyr**	0.0040	UJ	ug/L	P364434	RPD

Ref. Method and Comment:

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

EPA 8321B: MS accuracy for 2,4-D and imazapyr could not be assessed due to high concentration of parameter in the spiked sample. Refer to the narrative for an explanation of QC Codes.

Sample Location: C-19 @ US 27

Collection Date/Time: 05/21/2019 10:05

Field ID: FB_05212019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2088083	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P364432	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P364630	
		Sulfate	0.20	U	mg SO4/L	P364633	
	SM 2120 B	Color (true)	2.5	U	PCU	P364406	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P364860	
	SM 2540 C-97	TDS	15	U	mg/L	P364922	
	SM 2540 D-97	TSS	2	U	mg/L	P364882	
2088085	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P364871	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P364806	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P364754	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364520	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P364717	
2088087	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P364513	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364402	
2088091	EPA 8321B	2,4-D	0.0020	U	ug/L	P364434	
		Acesulfame K**	0.10	U	ug/L	P364435	
		AMPA**	0.10	U	ug/L	P364435	
		Sucralose**	0.010	U	ug/L	P364435	
		Acetaminophen**	0.0080	U	ug/L	P364434	
		Endothall**	0.25	U	ug/L	P364435	
		Glufosinate**	0.10	U	ug/L	P364435	
		Bentazon	8.0E-04	U	ug/L	P364434	
		Glyphosate**	0.10	U	ug/L	P364435	
		Carbamazepine**	8.0E-04	U	ug/L	P364434	
		Diuron	0.0020	U	ug/L	P364434	
		Fenuron	0.016	U	ug/L	P364434	
		Fluridone**	8.0E-04	U	ug/L	P364434	
		Imazapyr**	0.0040	U	ug/L	P364434	
		Hydrocodone**	0.0020	U	ug/L	P364434	
		Ibuprofen**	0.020	U	ug/L	P364434	
		Imidacloprid	0.0020	U	ug/L	P364434	
		Linuron	0.0040	U	ug/L	P364434	
		MCPP	0.0020	U	ug/L	P364434	
		Naproxen**	0.0080	U	ug/L	P364434	
		Primidone**	0.0040	U	ug/L	P364434	
		Pyraclostrobin**	0.0020	U	ug/L	P364434	
		Triclopyr**	0.0040	U	ug/L	P364434	RPD

Ref. Method and Comment:

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

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

EPA 8321B: MS accuracy for 2,4-D and imazapyr could not be assessed due to high concentration of parameter in the spiked sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364432

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364630

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364633

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364806

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364754

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364520

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364717

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364402

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

Reference Method: EPA 8321B
Batch ID: P364434

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P364434

Component	Result	Code	Units
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
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: P364435

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 2120 B
Batch ID: P364406

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P364860

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

Reference Method: SM 2540 C-97
Batch ID: P364922

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P364926

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P364882

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P364886

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P364871

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P364513

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: P364630

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P364633

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P364806

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P364754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P364520

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P364717

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P364402

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

Reference Method: EPA 8321B
 Batch ID: P364434

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	95.9		P	40 - 150
Acetaminophen	101		P	30 - 150
Bentazon	128		P	30 - 150
Carbamazepine	108		P	40 - 150
Diuron	97.7		P	40 - 150
Fenuron	120		P	40 - 150
Fluridone	102		P	40 - 150
Hydrocodone	95.2		P	40 - 150
Ibuprofen	100		P	40 - 150
Imazapyr	104		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P364434

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Imidacloprid	102		P	40 - 150
Linuron	82.3		P	40 - 150
MCPP	119		P	40 - 150
Naproxen	99.9		P	40 - 150
Primidone	94.0		P	40 - 150
Pyraclostrobin	78.8		P	40 - 150
Triclopyr	70.4		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P364435

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	104		P	40 - 150
AMPA	116		P	40 - 150
Endothall	99.5		P	40 - 150
Glufosinate	91.1		P	40 - 150
Glyphosate	83.6		P	40 - 140
Sucralose	106		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P364406

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P364860

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P364871

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P364513

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088094	Chloride	101		P	90 - 110
2088290	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364633

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088094	Sulfate	101		P	90 - 110
2088290	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088100	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088055	NO2NO3-N	99.5	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088111	Total-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364402

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088102	O-Phosphate-P	96.6	97.3	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P364434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088090	Acetaminophen	63.9	67.8	P/P	30 - 150
2088090	Bentazon	88.1	52.4	P/P	30 - 150
2088090	Carbamazepine	73.1	79.0	P/P	40 - 150
2088090	Diuron	71.6	70.9	P/P	40 - 150
2088090	Fenuron	44.0	51.6	P/P	40 - 150
2088090	Fluridone	92.5	85.3	P/P	40 - 150
2088090	Hydrocodone	73.8	74.9	P/P	40 - 150
2088090	Ibuprofen	80.3	78.7	P/P	40 - 150
2088090	Imidacloprid	118	121	P/P	40 - 150
2088090	Linuron	60.1	64.4	P/P	40 - 150
2088090	MCP	140	144	P/P	40 - 150
2088090	Naproxen	80.8	94.7	P/P	40 - 150
2088090	Primidone	68.7	72.5	P/P	40 - 150
2088090	Pyraclostrobin	84.1	86.9	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P364434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088090	Triclopyr	83.8	114	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P364435

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088091	Acesulfame K	102	104	P/P	40 - 150
2088091	AMPA	133	137	P/P	40 - 150
2088091	Endothall	99.7	102	P/P	40 - 150
2088091	Glufosinate	94.6	93.6	P/P	40 - 150
2088091	Glyphosate	82.4	86.1	P/P	40 - 140
2088091	Sucralose	108	107	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P364871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088010	Fluoride	100	98.8	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P364513

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2088100	Organic Carbon	94.1	96.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088028	Turbidity	4.03	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088290	Chloride	0.368	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088290	Sulfate	0.196	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088100	Ammonia-N	0.256	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088084	Kjeldahl Nitrogen	1.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088055	NO2NO3-N	2.54	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088111	Total-P	1.18	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364402

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088102	O-Phosphate-P	0.722	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P364434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088090	2,4-D	3.91	Spike	P	0 - 30
2088090	Acetaminophen	5.92	Spike	P	0 - 30
2088090	Bentazon	26.6	Spike	P	0 - 30
2088090	Carbamazepine	7.85	Spike	P	0 - 30
2088090	Diuron	0.943	Spike	P	0 - 30
2088090	Fenuron	9.58	Spike	P	0 - 30
2088090	Fluridone	6.68	Spike	P	0 - 30
2088090	Hydrocodone	1.47	Spike	P	0 - 30
2088090	Ibuprofen	1.95	Spike	P	0 - 30
2088090	Imazapyr	24.8	Spike	P	0 - 30
2088090	Imidacloprid	2.40	Spike	P	0 - 30
2088090	Linuron	7.05	Spike	P	0 - 30
2088090	MCP	2.81	Spike	P	0 - 30
2088090	Naproxen	15.8	Spike	P	0 - 30
2088090	Primidone	5.30	Spike	P	0 - 30
2088090	Pyraclostrobin	3.29	Spike	P	0 - 30
2088090	Triclopyr	30.7	Spike	F	0 - 30

Reference Method: EPA 8321B
Batch ID: P364435

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088091	Acesulfame K	2.45	Spike	P	0 - 30
2088091	AMPA	2.88	Spike	P	0 - 30
2088091	Endothall	2.15	Spike	P	0 - 30
2088091	Glufosinate	1.12	Spike	P	0 - 30
2088091	Glyphosate	4.35	Spike	P	0 - 30
2088091	Sucralose	1.22	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P364406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088120	Color (true)	2.04	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P364860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088010	Total Alkalinity	0.367	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P364922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2087592	TDS	4.55	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P364926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088082	TDS	3.84	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P364886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088082	TSS	6.90	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P364871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088010	Fluoride	0.986	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P364513

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2088100	Organic Carbon	2.35	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: 2088090
Field Sample ID: C-19 @ US 27

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	99.1	P	30 - 160
EPA 8321B	Acetaminophen-d4	70.1	P	30 - 160
EPA 8321B	Carbamazepine-d10	75.3	P	30 - 160
EPA 8321B	Diuron-d6	67.7	P	30 - 160
EPA 8321B	Endothall-d6	82.5	P	30 - 160
EPA 8321B	Endothall-d6	82.5	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	68.3	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	68.3	P	30 - 160
EPA 8321B	Ibuprofen-d3	72.3	P	30 - 160
EPA 8321B	Primidone-d5	73.4	P	30 - 160
EPA 8321B	Sucralose-d6	50.2	P	30 - 160
EPA 8321B	Sucralose-d6	50.2	P	30 - 160

Lab Sample ID: 2088091
Field Sample ID: FB_05212019

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	116	P	30 - 160
EPA 8321B	Acetaminophen-d4	105	P	30 - 160
EPA 8321B	Carbamazepine-d10	93.1	P	30 - 160
EPA 8321B	Diuron-d6	93.5	P	30 - 160
EPA 8321B	Endothall-d6	120	P	30 - 160
EPA 8321B	Endothall-d6	120	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	117	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	117	P	30 - 160
EPA 8321B	Ibuprofen-d3	91.7	P	30 - 160
EPA 8321B	Primidone-d5	96.4	P	30 - 160
EPA 8321B	Sucralose-d6	107	P	30 - 160
EPA 8321B	Sucralose-d6	107	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A91603

Included Lab Sample IDs: 2088086, 2088087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	96.4	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A91604

Included Lab Sample IDs: 2088082, 2088083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A91617

Included Lab Sample IDs: 2088082, 2088083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A91642

Included Lab Sample IDs: 2088082, 2088083

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

Reference Method: EPA 8321B

Run ID: A91652

Included Lab Sample IDs: 2088090, 2088091

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	97.1	109	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A91657

Included Lab Sample IDs: 2088084, 2088085

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	98.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A91661

Included Lab Sample IDs: 2088084, 2088085

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	98.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A91679

Included Lab Sample IDs: 2088090, 2088091

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	101	100	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A91679

Included Lab Sample IDs: 2088090, 2088091

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Endothall	92.6	99.4	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A91680

Included Lab Sample IDs: 2088090, 2088091

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	119	124	P/P	60 - 160
Glufosinate	100	102	P/P	60 - 160
Glyphosate	86.4	99.0	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A91731

Included Lab Sample IDs: 2088090, 2088091

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	89.3	106	P/P	50 - 150
Acetaminophen	105	108	P/P	60 - 160
Bentazon	113	107	P/P	50 - 160
Carbamazepine	110	104	P/P	60 - 150
Diuron	111	101	P/P	60 - 150
Fenuron	108	108	P/P	60 - 150
Fluridone	110	111	P/P	60 - 160
Hydrocodone	100	101	P/P	60 - 150
Ibuprofen	92.6	88.1	P/P	50 - 160
Imazapyr	98.5	96.7	P/P	50 - 150
Imidacloprid	102	83.0	P/P	60 - 150
Linuron	97.9	92.1	P/P	60 - 150
MCPP	95.4	94.2	P/P	50 - 150
Naproxen	96.7	100	P/P	50 - 160
Primidone	67.8	99.1	P/P	60 - 150
Pyraclostrobin	112	103	P/P	60 - 150
Triclopyr	97.4	106	P/P	50 - 150

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A91780

Included Lab Sample IDs: 2088084, 2088085

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91785

Included Lab Sample IDs: 2088084

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A91790

Included Lab Sample IDs: 2088085

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A91798

Included Lab Sample IDs: 2088082, 2088083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A91799

Included Lab Sample IDs: 2088082, 2088083

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A91810

Included Lab Sample IDs: 2088084, 2088085

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	99.4	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				4.03	
EPA 300.0 Rev. 2.1	Chloride	101	100	101	0.368	
	Sulfate	101	100	101	0.196	
EPA 350.1 Rev. 2.0	Ammonia-N	103	102	102		0.256
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109				1.52
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	97.0	99.5	97.0		2.54
EPA 365.1 Rev. 2.0	Total-P	100	102	104		1.18
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	96.6	97.3		0.722
EPA 8321B	2,4-D	95.9				3.91
	Acesulfame K	104	102	104		2.45
	Acetaminophen	101	63.9	67.8		5.92
	AMPA	116	133	137		2.88
	Bentazon	128	88.1	52.4		26.6
	Carbamazepine	108	73.1	79.0		7.85
	Diuron	97.7	71.6	70.9		0.943
	Endothall	99.5	99.7	102		2.15
	Fenuron	120	44.0	51.6		9.58
	Fluridone	102	92.5	85.3		6.68
	Glufosinate	91.1	94.6	93.6		1.12
	Glyphosate	83.6	82.4	86.1		4.35
	Hydrocodone	95.2	73.8	74.9		1.47
	Ibuprofen	100	80.3	78.7		1.95
	Imazapyr	104				24.8
	Imidacloprid	102	118	121		2.40
	Linuron	82.3	60.1	64.4		7.05
	MCPP	119	140	144		2.81
	Naproxen	99.9	80.8	94.7		15.8
	Primidone	94.0	68.7	72.5		5.30
	Pyraclostrobin	78.8	84.1	86.9		3.29
	Sucralose	106	108	107		1.22
	Triclopyr	70.4	83.8	114		30.7
SM 2120 B	Color (true)	101			2.04	
SM 2320 B-97	Total Alkalinity	105			0.367	
SM 2540 C-97	TDS				4.55	
	TDS				3.84	
SM 2540 D-97	TSS				6.90	
SM 4500 F-C-97	Fluoride	98.9	100	98.8		0.986
SM 5310 B-00	Organic Carbon	97.1	94.1	96.7		2.35

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2088082, 2088083
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2088082, 2088083
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2088082, 2088083
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2088084, 2088085
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2088084, 2088085
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2088084, 2088085

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2088084, 2088085
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2088086, 2088087
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2088090, 2088091
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2088090, 2088091
SM 2120 B / E31780	True Color measured at 450 nm	2088082, 2088083
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2088082, 2088083
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2088082, 2088083
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2088082, 2088083
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2088082, 2088083
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2088084, 2088085

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	05/22/2019			05/22/2019 14:38	Sima Feizi	2088082, 2088083
EPA 300.0 Rev. 2.1	05/22/2019			05/25/2019 07:53	Lipi Saha	2088082
	05/22/2019			05/25/2019 08:05	Lipi Saha	2088083
EPA 350.1 Rev. 2.0	05/22/2019			05/24/2019 13:47	Ping Hua	2088084
	05/22/2019			05/24/2019 13:55	Ping Hua	2088085
EPA 351.2 Rev. 2.0	05/22/2019	05/30/2019 18:00	Adrian Shelby	06/03/2019 11:03	Joseph Suarez	2088084
	05/22/2019	05/30/2019 18:00	Adrian Shelby	06/03/2019 11:07	Joseph Suarez	2088085
EPA 353.2 Rev. 2.0	05/22/2019			05/24/2019 11:19	Beverly Y. Sanders	2088084
	05/22/2019			05/24/2019 11:20	Beverly Y. Sanders	2088085
EPA 365.1 Rev. 2.0	05/22/2019	05/30/2019 10:32	Joseph Suarez	05/31/2019 12:03	Rosalyn Ballman	2088084
	05/22/2019	05/30/2019 10:32	Joseph Suarez	05/31/2019 15:51	Rosalyn Ballman	2088085
EPA 365.1 Rev. 2.0 dissolved	05/22/2019			05/22/2019 15:56	Jhamieka S. Greenwood	2088087
	05/22/2019			05/22/2019 16:00	Jhamieka S. Greenwood	2088086
EPA 8321B	05/22/2019	05/23/2019 01:00	Rebecca Ware	05/24/2019 09:48	Rebecca Ware	2088091
	05/22/2019	05/23/2019 01:00	Rebecca Ware	05/24/2019 10:59	Rebecca Ware	2088090
	05/22/2019	05/23/2019 01:00	Rebecca Ware	05/24/2019 13:58	Rebecca Ware	2088091
	05/22/2019	05/23/2019 01:00	Rebecca Ware	05/24/2019 14:09	Rebecca Ware	2088090
	05/22/2019	05/23/2019 01:00	Rebecca Ware	05/24/2019 17:43	Rebecca Ware	2088091
	05/22/2019	05/23/2019 01:00	Rebecca Ware	05/24/2019 17:57	Rebecca Ware	2088090
	05/22/2019	05/28/2019 09:00	Hoor Shaik	05/30/2019 05:40	Juyoung Kim	2088090
	05/22/2019	05/28/2019 09:00	Hoor Shaik	05/30/2019 06:15	Juyoung Kim	2088091
SM 2120 B	05/22/2019			05/22/2019 15:52	Madeline Funaro	2088082
	05/22/2019			05/22/2019 15:53	Madeline Funaro	2088083
SM 2320 B-97	05/22/2019			06/02/2019 04:10	Dale L. Simmons	2088082
	05/22/2019			06/02/2019 04:17	Dale L. Simmons	2088083
SM 2540 C-97	05/22/2019			05/23/2019 16:02	Yijie Li	2088082, 2088083
SM 2540 D-97	05/22/2019			05/23/2019 16:02	Yijie Li	2088082, 2088083
SM 4500 F-C-97	05/22/2019			05/31/2019 11:09	Dale L. Simmons	2088082
	05/22/2019			05/31/2019 12:05	Dale L. Simmons	2088083
SM 5310 B-00	05/22/2019			05/24/2019 12:39	Julia Storbeck	2088084
	05/22/2019			05/24/2019 12:53	Julia Storbeck	2088085