

Chemical Analysis Report

NE-DIST-2018-05-09-01

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

Event Description: **Santa Fe**
Request ID: **RQ-2018-04-30-48**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256-7577
Attn: Jeremy Parrish

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 04-JUN-2018 14:48



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: Santa Fe River @ Hollingsworth Bluff

Collection Date/Time: 05/08/2018 11:30

Field ID: 21030145

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1991038	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P344972	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P345210	
		Sulfate	30		mg SO4/L	P345213	
	SM 2120 B	Color (true)	49		PCU	P344967	
	SM 2320 B-97	Total Alkalinity	152		mg CaCO3/L	P345324	
	SM 2540 C-97	TDS	212		mg/L	P345666	
	SM 2540 D-97	TSS	2	I	mg/L	P345652	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P345327	
1991039	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P345298	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.34		mg N/L	P345013	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.88		mg N/L	P345239	
	EPA 365.1 Rev. 2.0	Total-P	0.084		mg P/L	P345004	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P345624	
1991040	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.074		mg P/L	P344975	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: 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: Cow Creek at SR 138

Collection Date/Time: 05/08/2018 12:55

Field ID: 21030086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1991041	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P344972	
	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P345210	
		Sulfate	0.20	U	mg SO4/L	P345213	
	SM 2120 B	Color (true)	200		PCU	P344967	
	SM 2320 B-97	Total Alkalinity	135		mg CaCO3/L	P345324	
	SM 2540 C-97	TDS	200		mg/L	P345666	
	SM 2540 D-97	TSS	4	I	mg/L	P345652	
	SM 4500 F-C-97	Fluoride	0.048	I	mg F/L	P345327	
1991042	EPA 350.1 Rev. 2.0	Ammonia-N	0.053		mg N/L	P345298	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P345013	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.046		mg N/L	P345239	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P345014	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P345624	
1991043	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.051		mg P/L	P344975	
1991060	EPA 8321B	2,4-D	0.0020	U	ug/L	P344935	
		Sucralose**	0.010	U	ug/L	P344961	
		Bentazon	8.0E-04	U	ug/L	P344935	MS
		MCP	0.0020	U	ug/L	P344935	
		Triclopyr**	0.0040	U	ug/L	P344935	
		Imidacloprid	0.0020	U	ug/L	P344935	
		Diuron	0.0020	U	ug/L	P344935	MS

Field ID: 21030086

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1991060	EPA 8321B	Pyraclostrobin**	0.0020	U	ug/L	P344935	
		Primidone**	0.0040	U	ug/L	P344935	
		Linuron	0.0040	U	ug/L	P344935	
		Acetaminophen**	0.0080	U	ug/L	P344935	
		Fenuron	0.016	U	ug/L	P344935	
		Imazapyr**	0.019		ug/L	P344935	
		Carbamazepine**	4.0E-04	U	ug/L	P344935	MS
		Fluridone**	4.0E-04	U	ug/L	P344935	
		Hydrocodone**	8.0E-04	U	ug/L	P344935	

Ref. Method and Comment:
 EPA 300.0 Rev. 2.1: Sulfate: 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.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P344972

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P345210

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P345213

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P345298

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P345013

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P345239

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345004

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345014

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344975

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

Reference Method: EPA 8321B
Batch ID: P344935

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	4.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCPP	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: EPA 8321B
Batch ID: P344961

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P344967

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P345324

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: P345666

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P345652

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P345327

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P345624

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: P345210

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345213

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345298

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: P345013

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345239

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
-----------	---------	---------	-----------	----------------

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345239

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345004

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345014

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: P344975

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

Reference Method: EPA 8321B
Batch ID: P344935

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	104		P	40 - 150
Acetaminophen	93.4		P	30 - 150
Bentazon	102		P	30 - 150
Carbamazepine	67.4		P	40 - 150
Diuron	65.0		P	40 - 150
Fenuron	107		P	40 - 150
Fluridone	85.4		P	40 - 150
Hydrocodone	109		P	40 - 150
Imazapyr	103		P	40 - 150
Imidacloprid	113		P	40 - 160
Linuron	101		P	40 - 150
MCPP	109		P	40 - 150
Primidone	103		P	40 - 150
Pyraclostrobin	83.4		P	40 - 150
Triclopyr	109		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P344961

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	109		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P345324

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P345327

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345624

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: P345210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990776	Chloride	95.8		P	90 - 110
1990861	Chloride	93.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345213

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990776	Sulfate	96.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345298

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990909	Ammonia-N	98.6	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990909	Kjeldahl Nitrogen	105	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345239

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990909	NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345004

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991039	Total-P	98.8	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345014

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991052	Total-P	101	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344975

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991079	O-Phosphate-P	94.4	95.8	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P344935

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990998	2,4-D	74.1	71.4	P/P	40 - 150
1990998	Acetaminophen	71.6	72.9	P/P	30 - 150
1990998	Bentazon	25.7	27.9	F/F	30 - 150
1990998	Carbamazepine	33.9	35.1	F/F	40 - 150
1990998	Diuron	37.5	38.0	F/F	40 - 150
1990998	Fenuron	42.6	46.5	P/P	40 - 150
1990998	Fluridone	63.7	66.1	P/P	40 - 150
1990998	Hydrocodone	67.5	71.6	P/P	40 - 150
1990998	Imazapyr	91.0	89.8	P/P	40 - 150
1990998	Imidacloprid	102	103	P/P	40 - 160
1990998	Linuron	78.7	77.8	P/P	40 - 150
1990998	MCP	65.8	60.1	P/P	40 - 150
1990998	Primidone	60.5	55.6	P/P	40 - 150
1990998	Pyraclostrobin	69.1	69.7	P/P	40 - 150
1990998	Triclopyr	77.8	78.2	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P344961

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991044	Sucralose	107	121	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P345327

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991083	Fluoride	97.6	97.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991039	Organic Carbon	98.0	97.9	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P344972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991011	Turbidity	4.06	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990776	Chloride	1.32	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345213

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990776	Sulfate	3.93	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990909	Ammonia-N	3.16	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990909	Kjeldahl Nitrogen	1.85	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345239

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990909	NO2NO3-N	0.207	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345004

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991039	Total-P	3.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991052	Total-P	2.36	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344975

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991079	O-Phosphate-P	1.17	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P344935

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990998	2,4-D	3.71	Spike	P	0 - 30
1990998	Acetaminophen	1.78	Spike	P	0 - 30
1990998	Bentazon	8.36	Spike	P	0 - 30
1990998	Carbamazepine	3.60	Spike	P	0 - 30
1990998	Diuron	1.32	Spike	P	0 - 30
1990998	Fenuron	8.76	Spike	P	0 - 30
1990998	Fluridone	3.74	Spike	P	0 - 30
1990998	Hydrocodone	5.84	Spike	P	0 - 30
1990998	Imazapyr	0.809	Spike	P	0 - 30
1990998	Imidacloprid	0.974	Spike	P	0 - 30
1990998	Linuron	1.24	Spike	P	0 - 30
1990998	MCP	9.09	Spike	P	0 - 30
1990998	Primidone	8.44	Spike	P	0 - 30
1990998	Pyraclostrobin	0.775	Spike	P	0 - 30
1990998	Triclopyr	0.510	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P344961

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991044	Sucralose	7.37	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P344967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991011	Color (true)	1.66	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P345324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991083	Total Alkalinity	0.348	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P345666

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991003	TDS	1.91	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P345327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991083	Fluoride	0.476	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P345624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991039	Organic Carbon	0.0808	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: 1991060
Field Sample ID: 21030086

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	71.5	P	30 - 160
EPA 8321B	Acetaminophen-d4	85.4	P	30 - 160
EPA 8321B	Carbamazepine-d10	41.2	P	30 - 160
EPA 8321B	Diuron-d6	44.4	P	30 - 160
EPA 8321B	Primidone-d5	76.0	P	30 - 160
EPA 8321B	Sucralose-d6	98.4	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A83732
Included Lab Sample IDs: 1991038, 1991041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.5	99.7	P/P	90 - 110
Sulfate	99.4	98.2	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A83776
Included Lab Sample IDs: 1991038, 1991041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	102	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A83777
Included Lab Sample IDs: 1991038, 1991041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
-----------	---------	---------	------------	----------------

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A83777

Included Lab Sample IDs: 1991038, 1991041

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: A83778

Included Lab Sample IDs: 1991040, 1991043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A83865

Included Lab Sample IDs: 1991039, 1991042

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

Reference Method: EPA 8321B

Run ID: A83887

Included Lab Sample IDs: 1991060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	109	110	P/P	50 - 150
Bentazon	120	112	P/P	50 - 150
MCP	110	104	P/P	50 - 150
Triclopyr	112	103	P/P	50 - 160

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83889

Included Lab Sample IDs: 1991039, 1991042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	99.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A83894

Included Lab Sample IDs: 1991038, 1991041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.5	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83894

Included Lab Sample IDs: 1991038, 1991041

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A83912

Included Lab Sample IDs: 1991039, 1991042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	104	P/P	90 - 110
Total-P	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A83923

Included Lab Sample IDs: 1991039, 1991042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	101	P/P	90 - 110
Kjeldahl Nitrogen	97.4	103	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A83978

Included Lab Sample IDs: 1991060

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

Reference Method: SM 5310 B-00

Run ID: A84034

Included Lab Sample IDs: 1991039, 1991042

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

Reference Method: EPA 8321B

Run ID: A84229

Included Lab Sample IDs: 1991060

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	102	103	P/P	60 - 150
Carbamazepine	94.1	94.7	P/P	60 - 150
Diuron	97.2	99.0	P/P	60 - 150
Fenuron	102	94.4	P/P	60 - 150
Fluridone	99.0	97.9	P/P	60 - 160
Hydrocodone	107	110	P/P	60 - 150
Imazapyr	99.2	114	P/P	50 - 150
Imidacloprid	102	104	P/P	60 - 150
Linuron	111	112	P/P	60 - 150
Primidone	107	107	P/P	60 - 150
Pyraclostrobin	100	97.8	P/P	60 - 150

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				4.06	
EPA 300.0 Rev. 2.1	Chloride	95.7	95.8	93.6	1.32	
	Sulfate	95.7	96.6		3.93	
EPA 350.1 Rev. 2.0	Ammonia-N	102	98.6	102		3.16
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	105	107		1.85
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.5	98.5			0.207
EPA 365.1 Rev. 2.0	Total-P	100	98.8	103		3.02
	Total-P	101	101	104		2.36
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	94.4	95.8		1.17
EPA 8321B	2,4-D	104	74.1	71.4		3.71
	Acetaminophen	93.4	71.6	72.9		1.78
	Bentazon	102	25.7	27.9		8.36
	Carbamazepine	67.4	33.9	35.1		3.60
	Diuron	65.0	37.5	38.0		1.32
	Fenuron	107	42.6	46.5		8.76
	Fluridone	85.4	63.7	66.1		3.74
	Hydrocodone	109	67.5	71.6		5.84
	Imazapyr	103	91.0	89.8		0.809
	Imidacloprid	113	102	103		0.974
	Linuron	101	78.7	77.8		1.24
	MCPP	109	65.8	60.1		9.09
	Primidone	103	60.5	55.6		8.44
	Pyraclostrobin	83.4	69.1	69.7		0.775
	Sucralose	109	107	121		7.37
	Triclopyr	109	77.8	78.2		0.510
SM 2120 B	Color (true)				1.66	
SM 2320 B-97	Total Alkalinity	101			0.348	
SM 2540 C-97	TDS				1.91	
SM 4500 F-C-97	Fluoride	97.1	97.6	97.0		0.476
SM 5310 B-00	Organic Carbon	99.4	98.0	97.9		0.0808

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1991038, 1991041
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1991038, 1991041
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1991038, 1991041
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1991039, 1991042
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1991039, 1991042
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1991039, 1991042
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1991039, 1991042
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1991040, 1991043
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1991060
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1991060
SM 2120 B / E31780	True Color measured at 450 nm	1991038, 1991041
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1991038, 1991041
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1991038, 1991041

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	1991038, 1991041
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1991038, 1991041
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1991039, 1991042

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	05/09/2018			05/09/2018 15:35	DeAsia Armster	1991038, 1991041
EPA 300.0 Rev. 2.1	05/09/2018			05/11/2018 00:32	Lipi Saha	1991038
	05/09/2018			05/11/2018 00:44	Lipi Saha	1991041
EPA 350.1 Rev. 2.0	05/09/2018			05/11/2018 12:33	Ping Hua	1991039
	05/09/2018			05/11/2018 12:34	Ping Hua	1991042
EPA 351.2 Rev. 2.0	05/09/2018	05/10/2018 15:30	Adrian Shelby	05/14/2018 17:44	Tanya Welborn	1991042
	05/09/2018	05/10/2018 15:30	Adrian Shelby	05/14/2018 18:06	Tanya Welborn	1991039
EPA 353.2 Rev. 2.0	05/09/2018			05/14/2018 14:58	Lauren Bottorf	1991039
	05/09/2018			05/14/2018 14:59	Lauren Bottorf	1991042
EPA 365.1 Rev. 2.0	05/09/2018	05/10/2018 11:35	Sima Feizi	05/15/2018 10:04	Beverly Y. Sanders	1991039
	05/09/2018	05/10/2018 11:35	Sima Feizi	05/15/2018 10:19	Beverly Y. Sanders	1991042
EPA 365.1 Rev. 2.0 dissolved	05/09/2018			05/09/2018 15:18	Megan Treadwell	1991040
	05/09/2018			05/09/2018 15:19	Megan Treadwell	1991043
EPA 8321B	05/09/2018	05/09/2018 16:30	Juyoung Kim	05/16/2018 00:05	Juyoung Kim	1991060
	05/09/2018	05/11/2018 13:00	Hoor Shaik	05/12/2018 05:15	Juyoung Kim	1991060
	05/09/2018	05/11/2018 13:00	Hoor Shaik	05/16/2018 05:48	Juyoung Kim	1991060
SM 2120 B	05/09/2018			05/09/2018 15:03	Tanya Welborn	1991038
	05/09/2018			05/09/2018 15:38	Tanya Welborn	1991041
SM 2320 B-97	05/09/2018			05/15/2018 00:41	Dale L. Simmons	1991038
	05/09/2018			05/15/2018 00:51	Dale L. Simmons	1991041
SM 2540 C-97	05/09/2018			05/11/2018 16:15	Yijie Li	1991038, 1991041
SM 2540 D-97	05/09/2018			05/11/2018 16:15	Yijie Li	1991038, 1991041
SM 4500 F-C-97	05/09/2018			05/15/2018 00:41	Dale L. Simmons	1991038
	05/09/2018			05/15/2018 00:51	Dale L. Simmons	1991041
SM 5310 B-00	05/09/2018			05/18/2018 15:51	Julia Storbeck	1991039
	05/09/2018			05/18/2018 17:19	Julia Storbeck	1991042