

Chemical Analysis Report

SE-DIST-2018-10-26-01

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

Event Description: **SMP- Blank**
Request ID: **RQ-2018-10-22-19**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

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Certified by: Colin Wright, Program Administrator

Date Certified: 19-NOV-2018 11:01

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light blue rectangular 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: Metals, 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: FORT DRUM CREEK @ 441

Collection Date/Time: 10/25/2018 13:40

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036761	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P353781	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P354210	
		Sulfate	0.20	U	mg SO4/L	P354212	
	SM 2120 B	Color (true)	2.5	U	PCU	P353777	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P354135	RPD
	SM 2540 C-97	TDS	15	U	mg/L	P354263	
	SM 2540 D-97	TSS	2	U	mg/L	P354128	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P354137	
2036762	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P354175	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P354151	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P354221	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P354060	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P354252	
2036763	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P353784	
2036766	EPA 8321B	2,4-D	0.0020	U	ug/L	P353668	
		Bentazon	8.0E-04	U	ug/L	P353668	
		MCP	0.0020	U	ug/L	P353668	
		Triclopyr**	0.0040	U	ug/L	P353668	
		Imidacloprid	0.0020	U	ug/L	P353668	MS
		Diuron	0.0020	U	ug/L	P353668	
		Pyraclostrobin**	0.0020	U	ug/L	P353668	
		Primidone**	0.0040	U	ug/L	P353668	
		Linuron	0.0040	U	ug/L	P353668	
		Acetaminophen**	0.0080	U	ug/L	P353668	
		Fenuron	0.016	U	ug/L	P353668	
		Imazapyr**	0.0040	U	ug/L	P353668	
		Carbamazepine**	8.0E-04	U	ug/L	P353668	
		Fluridone**	4.0E-04	U	ug/L	P353668	
		Hydrocodone**	8.0E-04	U	ug/L	P353668	
		Naproxen**	0.0080	U	ug/L	P353668	
		Ibuprofen**	0.020	U	ug/L	P353668	
		Sucralose**	0.010	U	ug/L	P353656	
		Acesulfame K**	0.10	U	ug/L	P353656	
2036767	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P353932	
		Iron	30	U	ug/L	P353932	
		Magnesium	0.040	U	mg/L	P353932	
		Potassium	0.30	U	mg/L	P353932	
		Sodium	0.50	U	mg/L	P353932	
		Zinc	5.0	U	ug/L	P353932	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P353392	
		Cadmium	0.020	U	ug/L	P353392	
		Chromium	0.40	U	ug/L	P353392	
		Copper	0.20	U	ug/L	P353392	

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2036767	EPA 200.8 Rev. 5.4	Lead	0.050	U	ug/L	P353392	
		Nickel	0.20	U	ug/L	P353392	
		Silver	0.010	U	ug/L	P353392	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 353.2 Rev. 2.0: The result was confirmed on 11/05/2018.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353781

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353932

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353392

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354210

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354212

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354175

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354151

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354221

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354060

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353784

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

Reference Method: EPA 8321B
Batch ID: P353656

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P353668

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	4.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Ibuprofen	0.020	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0020	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: SM 2120 B
Batch ID: P353777

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P354135

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P354263

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354128

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P354137

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P354252

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353932

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	103		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	104		P	85 - 115
Sodium	98.5		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353392

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.2		P	85 - 115
Cadmium	98.7		P	85 - 115
Chromium	98.5		P	85 - 115
Copper	96.0		P	85 - 115
Lead	95.5		P	85 - 115
Nickel	97.8		P	85 - 115
Silver	96.9		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354210

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354212

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354175

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354151

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354221

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354060

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353784

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.8		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P353656

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	75.7		P	40 - 150
Sucralose	81.2		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P353668

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	88.5		P	40 - 150
Acetaminophen	112		P	30 - 150
Bentazon	88.8		P	30 - 150
Carbamazepine	86.0		P	40 - 150
Diuron	80.3		P	40 - 150
Fenuron	133		P	40 - 150
Fluridone	91.2		P	40 - 150
Hydrocodone	116		P	40 - 150
Ibuprofen	90.8		P	40 - 150
Imazapyr	103		P	40 - 150
Imidacloprid	110		P	40 - 160
Linuron	78.8		P	40 - 150
MCPP	110		P	40 - 150
Naproxen	105		P	40 - 150
Primidone	110		P	40 - 150
Pyraclostrobin	67.5		P	40 - 150
Triclopyr	116		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P353777

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.9		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P354135

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: P354137

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354252

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 200.7 Rev. 4.4
Batch ID: P353932

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036696	Calcium	96.8		P	80 - 120
2036696	Iron	101		P	80 - 120
2036696	Magnesium	95.9		P	80 - 120
2036696	Potassium	107		P	80 - 120
2036696	Sodium	101		P	80 - 120
2036696	Zinc	102		P	80 - 120
2036996	Calcium	103	103	P/P	80 - 120
2036996	Iron	104	104	P/P	80 - 120
2036996	Magnesium	108	108	P/P	80 - 120
2036996	Potassium	103	99.6	P/P	80 - 120
2036996	Sodium	93.4		P	80 - 120
2036996	Zinc	108	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353392

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036696	Arsenic	98.7		P	80 - 120
2036696	Cadmium	101		P	80 - 120
2036696	Chromium	98.8		P	80 - 120
2036696	Copper	94.2		P	80 - 120
2036696	Lead	95.3		P	80 - 120
2036696	Nickel	96.2		P	80 - 120
2036696	Silver	98.0		P	80 - 120
2036996	Arsenic	97.5	98.0	P/P	80 - 120
2036996	Cadmium	97.7	98.4	P/P	80 - 120
2036996	Chromium	99.0	97.5	P/P	80 - 120
2036996	Copper	95.4	95.3	P/P	80 - 120
2036996	Lead	94.5	95.2	P/P	80 - 120
2036996	Nickel	96.5	96.8	P/P	80 - 120
2036996	Silver	97.2	96.6	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036716	Chloride	99.1		P	90 - 110
2036983	Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036716	Sulfate	102		P	90 - 110
2036983	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354175

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036717	Ammonia-N	96.2	98.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036784	Kjeldahl Nitrogen	110	107	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354221

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036770	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354060

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036787	Total-P	99.6	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353784

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036731	O-Phosphate-P	94.4	95.4	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P353656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036071	Acesulfame K	59.3	63.4	P/P	40 - 150
2036071	Sucralose	67.0	73.3	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P353668

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036302	2,4-D	142	130	P/P	40 - 150
2036302	Acetaminophen	115	111	P/P	30 - 150
2036302	Bentazon	55.5	53.2	P/P	30 - 150
2036302	Carbamazepine	79.4	77.7	P/P	40 - 150
2036302	Diuron	59.7	59.0	P/P	40 - 150
2036302	Fenuron	107	115	P/P	40 - 150
2036302	Fluridone	89.0	87.5	P/P	40 - 150
2036302	Hydrocodone	115	108	P/P	40 - 150
2036302	Ibuprofen	72.5	76.5	P/P	40 - 150
2036302	Imazapyr	111	109	P/P	40 - 150
2036302	Imidacloprid	164	161	F/F	40 - 160
2036302	Linuron	65.0	62.2	P/P	40 - 150
2036302	MCPP	142	149	P/P	40 - 150
2036302	Naproxen	94.8	93.5	P/P	40 - 150
2036302	Primidone	98.0	99.6	P/P	40 - 150
2036302	Pyraclostrobin	62.2	63.6	P/P	40 - 150
2036302	Triclopyr	135	134	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P354137

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2037275	Fluoride	97.2	97.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354252

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2036331	Organic Carbon	100	98.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P353781

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036727	Turbidity	2.00	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P353932

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036996	Calcium	0.188	Spike	P	0 - 20
2036996	Iron	0.273	Spike	P	0 - 20
2036996	Magnesium	0.206	Spike	P	0 - 20
2036996	Potassium	1.97	Spike	P	0 - 20
2036996	Sodium	0.821	Spike	P	0 - 20
2036996	Zinc	3.35	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P353392

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036996	Arsenic	0.466	Spike	P	0 - 20
2036996	Cadmium	0.713	Spike	P	0 - 20
2036996	Chromium	1.26	Spike	P	0 - 20
2036996	Copper	0.103	Spike	P	0 - 20
2036996	Lead	0.707	Spike	P	0 - 20
2036996	Nickel	0.287	Spike	P	0 - 20
2036996	Silver	0.685	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036716	Chloride	0.814	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P354212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036716	Sulfate	1.29	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P354175

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036717	Ammonia-N	2.34	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036784	Kjeldahl Nitrogen	1.75	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P354221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036770	NO2NO3-N	0.971	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036787	Total-P	2.18	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P353784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036731	O-Phosphate-P	0.907	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P353656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036071	Acesulfame K	6.60	Spike	P	0 - 30
2036071	Sucralose	8.13	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P353668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036302	2,4-D	8.59	Spike	P	0 - 30
2036302	Acetaminophen	3.62	Spike	P	0 - 30
2036302	Bentazon	3.74	Spike	P	0 - 30
2036302	Carbamazepine	2.09	Spike	P	0 - 30
2036302	Diuron	0.966	Spike	P	0 - 30
2036302	Fenuron	7.16	Spike	P	0 - 30
2036302	Fluridone	1.37	Spike	P	0 - 30
2036302	Hydrocodone	6.71	Spike	P	0 - 30
2036302	Ibuprofen	5.35	Spike	P	0 - 30
2036302	Imazapyr	1.08	Spike	P	0 - 30
2036302	Imidacloprid	1.94	Spike	P	0 - 30
2036302	Linuron	4.35	Spike	P	0 - 30
2036302	MCP	4.64	Spike	P	0 - 30
2036302	Naproxen	1.40	Spike	P	0 - 30
2036302	Primidone	1.64	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P353668

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036302	Pyraclostrobin	2.28	Spike	P	0 - 30
2036302	Triclopyr	1.01	Spike	P	0 - 30

Reference Method: SM 2120 B
 Batch ID: P353777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036716	Color (true)	1.54	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P354135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2037275	Total Alkalinity	1.67	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P354263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036716	TDS	2.02	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P354137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2037275	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P354252

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2036331	Organic Carbon	1.86	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: 2036766

Field Sample ID: BLANK

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	93.2	P	30 - 160
EPA 8321B	2,4-D-d3	93.2	P	30 - 160
EPA 8321B	Acetaminophen-d4	124	P	30 - 160
EPA 8321B	Carbamazepine-d10	94.3	P	30 - 160
EPA 8321B	Diuron-d6	106	P	30 - 160
EPA 8321B	Endothall-d6	101	P	40 - 160
EPA 8321B	Ibuprofen-d3	90.9	P	30 - 160
EPA 8321B	Ibuprofen-d3	90.9	P	30 - 160
EPA 8321B	Primidone-d5	107	P	30 - 160
EPA 8321B	Sucralose-d6	108	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A87325
Included Lab Sample IDs: 2036761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.8	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A87326
Included Lab Sample IDs: 2036761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A87328
Included Lab Sample IDs: 2036763

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

Reference Method: EPA 8321B
Run ID: A87330
Included Lab Sample IDs: 2036766

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	70.4	74.4	P/P	60 - 160

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87368
Included Lab Sample IDs: 2036761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A87369
Included Lab Sample IDs: 2036766

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	61.8	67.6	P/P	60 - 160

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A87466
Included Lab Sample IDs: 2036767

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	95 - 105
Iron	103	101	P/P	95 - 105
Magnesium	104	103	P/P	95 - 105
Potassium	103	102	P/P	95 - 105
Sodium	102	100	P/P	95 - 105
Zinc	103	104	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A87486
Included Lab Sample IDs: 2036761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.6	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A87486
Included Lab Sample IDs: 2036761

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87489
Included Lab Sample IDs: 2036762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87504
Included Lab Sample IDs: 2036762

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A87505
Included Lab Sample IDs: 2036767

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.3	97.9	P/P	90 - 110
Cadmium	99.7	101	P/P	90 - 110
Chromium	101	100	P/P	90 - 110
Copper	98.6	97.7	P/P	90 - 110
Lead	98.5	98.8	P/P	90 - 110
Nickel	99.3	99.1	P/P	90 - 110
Silver	95.3	95.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87529
Included Lab Sample IDs: 2036762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87530
Included Lab Sample IDs: 2036762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A87543

Included Lab Sample IDs: 2036766

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	102	105	P/P	50 - 150
Acetaminophen	111	117	P/P	60 - 160
Bentazon	109	119	P/P	50 - 160
Carbamazepine	127	126	P/P	60 - 160
Diuron	115	119	P/P	60 - 150
Fenuron	137	136	P/P	60 - 150
Fluridone	112	119	P/P	60 - 160
Hydrocodone	128	117	P/P	60 - 150
Ibuprofen	75.9	101	P/P	50 - 160
Imazapyr	109	105	P/P	50 - 150
Imidacloprid	127	118	P/P	60 - 160
Linuron	122	119	P/P	60 - 150
MCPP	99.7	101	P/P	50 - 150
Naproxen	126	101	P/P	50 - 160
Primidone	128	124	P/P	60 - 160
Pyraclostrobin	97.1	97.2	P/P	60 - 150
Triclopyr	99.8	105	P/P	50 - 160

Reference Method: SM 5310 B-00

Run ID: A87546

Included Lab Sample IDs: 2036762

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	97.5	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					2.00	
EPA 200.7 Rev. 4.4	Calcium	103	96.8	103	103		0.188
	Iron	103	101	104	104		0.273
	Magnesium	108	95.9	108	108		0.206
	Potassium	104	107	103	99.6		1.97
	Sodium	98.5	101	93.4			0.821
	Zinc	104	102	108	104		3.35
EPA 200.8 Rev. 5.4	Arsenic	97.2	98.7	97.5	98.0		0.466
	Cadmium	98.7	101	97.7	98.4		0.713
	Chromium	98.5	98.8	99.0	97.5		1.26
	Copper	96.0	94.2	95.4	95.3		0.103
	Lead	95.5	95.3	94.5	95.2		0.707
	Nickel	97.8	96.2	96.5	96.8		0.287
	Silver	96.9	98.0	97.2	96.6		0.685
EPA 300.0 Rev. 2.1	Chloride	102	99.1	99.1		0.814	
	Sulfate	102	102	102		1.29	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	96.2	98.6			2.34
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	110	107			1.75
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	102	104			0.971
EPA 365.1 Rev. 2.0	Total-P	97.4	99.6	96.2			2.18
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.8	94.4	95.4			0.907
EPA 8321B	2,4-D	88.5	142	130			8.59
	Acesulfame K	75.7	59.3	63.4			6.60
	Acetaminophen	112	115	111			3.62
	Bentazon	88.8	55.5	53.2			3.74
	Carbamazepine	86.0	79.4	77.7			2.09
	Diuron	80.3	59.7	59.0			0.966
	Fenuron	133	107	115			7.16
	Fluridone	91.2	89.0	87.5			1.37
	Hydrocodone	116	115	108			6.71
	Ibuprofen	90.8	72.5	76.5			5.35
	Imazapyr	103	111	109			1.08
	Imidacloprid	110	164	161			1.94
	Linuron	78.8	65.0	62.2			4.35
	MCPP	110	142	149			4.64
	Naproxen	105	94.8	93.5			1.40
	Primidone	110	98.0	99.6			1.64
	Pyraclostrobin	67.5	62.2	63.6			2.28
	Sucralose	81.2	67.0	73.3			8.13
	Triclopyr	116	135	134			1.01
SM 2120 B	Color (true)	98.9				1.54	
SM 2320 B-97	Total Alkalinity	101				1.67	
SM 2540 C-97	TDS					2.02	
SM 4500 F-C-97	Fluoride	98.1	97.2	97.2			0.0
SM 5310 B-00	Organic Carbon	97.1	100	98.4			1.86

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2036761
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2036767

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2036767
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2036761
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2036761
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2036762
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2036762
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2036762
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2036762
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2036763
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2036766
SM 2120 B / E31780	True Color measured at 450 nm	2036761
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2036761
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2036761
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2036761
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2036761
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2036762

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	10/26/2018			10/26/2018 16:32	Megan Treadwell	2036761
EPA 200.7 Rev. 4.4	10/26/2018	10/30/2018 17:30	Elliott D. Healy	11/01/2018 13:00	Betina Topolski	2036767
EPA 200.8 Rev. 5.4	10/26/2018	10/30/2018 17:30	Elliott D. Healy	11/02/2018 18:47	Robert K Palmer	2036767
EPA 300.0 Rev. 2.1	10/26/2018			11/01/2018 20:35	Lipi Saha	2036761
EPA 350.1 Rev. 2.0	10/26/2018			11/02/2018 14:21	Julia Storbeck	2036762
EPA 351.2 Rev. 2.0	10/26/2018	11/02/2018 12:30	Adrian Shelby	11/05/2018 14:07	Joseph Suarez	2036762
EPA 353.2 Rev. 2.0	10/26/2018			11/05/2018 12:38	Lauren Bottorf	2036762
EPA 365.1 Rev. 2.0	10/26/2018	11/01/2018 12:35	Sima Feizi	11/02/2018 11:58	Beverly Y. Sanders	2036762
EPA 365.1 Rev. 2.0 dissolved	10/26/2018			10/26/2018 16:46	Anthony C. Onicha	2036763
EPA 8321B	10/26/2018	10/26/2018 12:00	Rebecca Ware	10/28/2018 01:34	Mohammad Ghaffari	2036766
	10/26/2018	10/26/2018 12:00	Rebecca Ware	10/30/2018 02:34	Rebecca Ware	2036766
	10/26/2018	10/31/2018 09:00	Hoor Shaik	11/05/2018 04:34	Juyoung Kim	2036766
	10/26/2018	10/31/2018 09:00	Hoor Shaik	11/05/2018 22:35	Juyoung Kim	2036766
SM 2120 B	10/26/2018			10/26/2018 15:23	Chelsea Hernandez	2036761
SM 2320 B-97	10/26/2018			11/01/2018 19:45	Dale L. Simmons	2036761
SM 2540 C-97	10/26/2018			10/30/2018 14:05	Yijie Li	2036761
SM 2540 D-97	10/26/2018			10/30/2018 14:05	Yijie Li	2036761
SM 4500 F-C-97	10/26/2018			11/01/2018 19:45	Dale L. Simmons	2036761
SM 5310 B-00	10/26/2018			11/05/2018 06:33	Megan Treadwell	2036762