

Chemical Analysis Report

SE-DIST-2018-09-26-01

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

Event Description: **SMP- Martin Boat**

Request ID: **RQ-2018-09-17-27**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

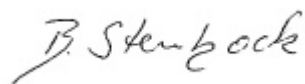
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

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

Date Certified: 22-OCT-2018 12:27



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: South Fork SLR @ Hosford Park

Collection Date/Time: 09/25/2018 12:55

Field ID: G2SE0043

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2028230	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P352392	
	SM 2320 B-97	Total Alkalinity	173		mg CaCO3/L	P352645	
	SM 2540 D-97	TSS	8	I	mg/L	P352594	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P352650	
2028232	EPA 350.1 Rev. 2.0	Ammonia-N	0.057		mg N/L	P352715	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P352401	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P352489	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P352375	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P352428	
2028234	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.061		mg P/L	P352313	
2028294	EPA 200.7 Rev. 4.4	Iron	750		ug/L	P352333	
		Zinc	5.3	I	ug/L	P352333	
	EPA 200.8 Rev. 5.4	Arsenic	1.96		ug/L	P352333	
		Cadmium	0.020	U	ug/L	P352333	
		Chromium	1.1	I	ug/L	P352333	
		Copper	1.69		ug/L	P352333	
		Lead	0.61		ug/L	P352333	
		Nickel	0.51	I	ug/L	P352333	
		Silver	0.010	U	ug/L	P352333	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: South Fork SLR @ Gaines Ave

Collection Date/Time: 09/25/2018 13:20

Field ID: G2SE0039

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2028231	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P352392	
	SM 2320 B-97	Total Alkalinity	179		mg CaCO3/L	P352645	
	SM 2540 D-97	TSS	8	I	mg/L	P352594	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P352650	
2028233	EPA 350.1 Rev. 2.0	Ammonia-N	0.057		mg N/L	P352715	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P352401	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P352489	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P352376	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P352428	
2028235	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.059		mg P/L	P352313	
2028295	EPA 200.7 Rev. 4.4	Iron	750		ug/L	P352333	
		Zinc	5.0	U	ug/L	P352333	
	EPA 200.8 Rev. 5.4	Arsenic	1.86		ug/L	P352333	
		Cadmium	0.020	U	ug/L	P352333	
		Chromium	0.93	I	ug/L	P352333	
		Copper	1.33		ug/L	P352333	
		Lead	0.44		ug/L	P352333	
		Nickel	0.48	I	ug/L	P352333	
		Silver	0.010	U	ug/L	P352333	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: North Fork SLR @ Veterans Memorial park

Collection Date/Time: 09/25/2018 14:20

Field ID: G2SE0007

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2028236	EPA 180.1 Rev. 2.0	Turbidity	6.7		NTU	P352392	
	SM 2320 B-97	Total Alkalinity	163		mg CaCO3/L	P352645	
	SM 2540 D-97	TSS	9	I	mg/L	P352594	
	SM 4500 F-C-97	Fluoride	0.29		mg F/L	P352650	
2028237	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P352715	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P352401	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P352489	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P352376	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P352428	
2028238	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.085		mg P/L	P352313	
2028292	EPA 8321B	2,4-D	0.036		ug/L	P352307	
		Bentazon	0.0038		ug/L	P352307	MS
		MCP	0.0020	U	ug/L	P352307	
		Triclopyr**	0.0040	U	ug/L	P352307	
		Imidacloprid	0.018		ug/L	P352307	
		Diuron	0.014		ug/L	P352307	
		Pyraclostrobin**	0.0020	U	ug/L	P352307	
		Primidone**	0.0040	U	ug/L	P352307	
		Linuron	0.0040	U	ug/L	P352307	
		Acetaminophen**	0.0080	U	ug/L	P352307	
		Fenuron	0.016	U	ug/L	P352307	
		Imazapyr**	0.31		ug/L	P352307	
		Carbamazepine**	0.0010	I	ug/L	P352307	
		Fluridone**	0.013		ug/L	P352307	
		Hydrocodone**	8.0E-04	U	ug/L	P352307	
		Naproxen**	0.0080	U	ug/L	P352307	
		Ibuprofen**	0.020	U	ug/L	P352307	
		Sucralose**	0.41		ug/L	P352201	
		Acesulfame K**	0.10	U	ug/L	P352201	
2028296	EPA 200.7 Rev. 4.4	Iron	250		ug/L	P352333	
		Zinc	5.0	U	ug/L	P352333	
	EPA 200.8 Rev. 5.4	Arsenic	2.22		ug/L	P352333	
		Cadmium	0.020	U	ug/L	P352333	
		Chromium	0.45	I	ug/L	P352333	
		Copper	2.06		ug/L	P352333	
		Lead	0.21		ug/L	P352333	
		Nickel	0.44	I	ug/L	P352333	
		Silver	0.010	U	ug/L	P352333	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 8321B: MS accuracy for imazapyr and imidacloprid 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: P352392

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352333

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352333

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 350.1 Rev. 2.0
Batch ID: P352715

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352401

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352489

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352375

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352376

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352313

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

Reference Method: EPA 8321B
Batch ID: P352201

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

Reference Method: EPA 8321B
Batch ID: P352307

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
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: SM 2320 B-97
Batch ID: P352645

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

Reference Method: SM 2540 D-97
Batch ID: P352594

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P352650

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P352428

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: P352333

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	105		P	85 - 115
Zinc	99.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352333

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	105		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	100		P	85 - 115
Copper	103		P	85 - 115
Lead	102		P	85 - 115
Nickel	104		P	85 - 115
Silver	107		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352715

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352401

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352489

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352375

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352376

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: P352313

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P352201

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	76.8		P	40 - 150
Sucralose	107		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P352307

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	96.7		P	40 - 150
Acetaminophen	87.4		P	30 - 150
Bentazon	86.5		P	30 - 150
Carbamazepine	79.3		P	40 - 150
Diuron	69.4		P	40 - 150
Fenuron	98.8		P	40 - 150
Fluridone	98.5		P	40 - 150
Hydrocodone	105		P	40 - 150
Ibuprofen	99.6		P	40 - 150
Imazapyr	69.5		P	40 - 150
Imidacloprid	86.1		P	40 - 160
Linuron	68.1		P	40 - 150
MCPP	95.8		P	40 - 150
Naproxen	86.1		P	40 - 150
Primidone	84.9		P	40 - 150
Pyraclostrobin	85.1		P	40 - 150
Triclopyr	93.6		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P352645

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P352650

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352428

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352333

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028016	Iron	107		P	80 - 120
2028016	Zinc	104		P	80 - 120
2028142	Iron	103	102	P/P	80 - 120
2028142	Zinc	98.8	98.0	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352333

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028016	Arsenic	102		P	80 - 120
2028016	Cadmium	102		P	80 - 120
2028016	Chromium	99.9		P	80 - 120
2028016	Copper	99.5		P	80 - 120
2028016	Lead	100		P	80 - 120
2028016	Nickel	99.4		P	80 - 120
2028016	Silver	106		P	80 - 120
2028142	Arsenic	101	101	P/P	80 - 120
2028142	Cadmium	103	104	P/P	80 - 120
2028142	Chromium	102	103	P/P	80 - 120
2028142	Copper	99.0	99.9	P/P	80 - 120
2028142	Lead	101	101	P/P	80 - 120
2028142	Nickel	98.5	99.4	P/P	80 - 120
2028142	Silver	106	106	P/P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028214	Ammonia-N	99.7	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028251	Kjeldahl Nitrogen	104	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352489

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028232	NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352375

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028183	Total-P	97.5	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352376

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352376

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028243	Total-P	97.0	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352313

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028254	O-Phosphate-P	99.9	100	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P352201

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028139	Acesulfame K	78.4	74.1	P/P	40 - 150
2028139	Sucralose	105	103	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P352307

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028285	2,4-D	110	98.3	P/P	40 - 150
2028285	Acetaminophen	82.1	86.8	P/P	30 - 150
2028285	Bentazon	15.1	15.3	F/F	30 - 150
2028285	Carbamazepine	64.3	67.4	P/P	40 - 150
2028285	Diuron	57.1	56.7	P/P	40 - 150
2028285	Fenuron	88.0	80.5	P/P	40 - 150
2028285	Fluridone	101	108	P/P	40 - 150
2028285	Hydrocodone	112	112	P/P	40 - 150
2028285	Ibuprofen	77.7	74.8	P/P	40 - 150
2028285	Linuron	56.4	61.6	P/P	40 - 150
2028285	MCP	116	111	P/P	40 - 150
2028285	Naproxen	74.9	76.6	P/P	40 - 150
2028285	Primidone	97.6	92.3	P/P	40 - 150
2028285	Pyraclostrobin	87.1	81.0	P/P	40 - 150
2028285	Triclopyr	118	109	P/P	40 - 150

Reference Method: SM 5310 B-00
Batch ID: P352428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028134	Organic Carbon	96.8	95.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352392

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028212	Turbidity	1.21	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028142	Iron	0.869	Spike	P	0 - 20
2028142	Zinc	0.798	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028142	Arsenic	0.531	Spike	P	0 - 20
2028142	Cadmium	1.37	Spike	P	0 - 20
2028142	Chromium	0.748	Spike	P	0 - 20
2028142	Copper	0.881	Spike	P	0 - 20
2028142	Lead	0.205	Spike	P	0 - 20
2028142	Nickel	0.814	Spike	P	0 - 20
2028142	Silver	0.324	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028214	Ammonia-N	0.582	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028251	Kjeldahl Nitrogen	1.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028232	NO2NO3-N	0.332	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028183	Total-P	4.96	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028243	Total-P	6.51	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352313

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028254	O-Phosphate-P	0.499	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P352201

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028139	Acesulfame K	5.58	Spike	P	0 - 30
2028139	Sucralose	1.19	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P352307

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028285	2,4-D	9.06	Spike	P	0 - 30
2028285	Acetaminophen	5.53	Spike	P	0 - 30
2028285	Bentazon	6.07	Spike	P	0 - 30
2028285	Carbamazepine	4.48	Spike	P	0 - 30
2028285	Diuron	0.802	Spike	P	0 - 30
2028285	Fenuron	8.83	Spike	P	0 - 30
2028285	Fluridone	6.68	Spike	P	0 - 30
2028285	Hydrocodone	0.739	Spike	P	0 - 30
2028285	Ibuprofen	3.82	Spike	P	0 - 30
2028285	Imazapyr	3.58	Spike	P	0 - 30
2028285	Imidacloprid	5.21	Spike	P	0 - 30
2028285	Linuron	8.86	Spike	P	0 - 30
2028285	MCPP	4.36	Spike	P	0 - 30
2028285	Naproxen	2.35	Spike	P	0 - 30
2028285	Primidone	5.08	Spike	P	0 - 30
2028285	Pyraclostrobin	7.29	Spike	P	0 - 30
2028285	Triclopyr	7.62	Spike	P	0 - 30

Reference Method: SM 2320 B-97
Batch ID: P352645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028706	Total Alkalinity	0.0871	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P352650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028706	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P352428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028134	Organic Carbon	1.67	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: 2028292

Field Sample ID: G2SE0007

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	74.2	P	30 - 160
EPA 8321B	Acetaminophen-d4	95.7	P	30 - 160
EPA 8321B	Carbamazepine-d10	65.7	P	30 - 160
EPA 8321B	Diuron-d6	55.2	P	30 - 160
EPA 8321B	Endothall-d6	101	P	40 - 160
EPA 8321B	Ibuprofen-d3	62.2	P	30 - 160
EPA 8321B	Primidone-d5	85.7	P	30 - 160
EPA 8321B	Sucralose-d6	127	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A86732

Included Lab Sample IDs: 2028234, 2028235, 2028238

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	98.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86757

Included Lab Sample IDs: 2028230, 2028231, 2028236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	102	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A86766

Included Lab Sample IDs: 2028232, 2028233, 2028237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.5	93.0	P/P	90 - 110
Organic Carbon	95.0	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86773

Included Lab Sample IDs: 2028232, 2028233, 2028237

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86790

Included Lab Sample IDs: 2028232, 2028233, 2028237

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86794

Included Lab Sample IDs: 2028232, 2028233, 2028237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	99.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A86795

Included Lab Sample IDs: 2028292

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	96.8	110	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A86798

Included Lab Sample IDs: 2028292

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

Reference Method: EPA 8321B
Run ID: A86798
Included Lab Sample IDs: 2028292

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	81.6	69.9	P/P	60 - 160

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A86803
Included Lab Sample IDs: 2028294, 2028295, 2028296

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	98.1	100	P/P	90 - 110
Zinc	99.1	102	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A86818
Included Lab Sample IDs: 2028292

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	97.4	106	P/P	50 - 150
Acetaminophen	97.9	89.1	P/P	60 - 160
Bentazon	95.5	98.8	P/P	50 - 160
Carbamazepine	102	94.0	P/P	60 - 160
Diuron	94.7	96.5	P/P	60 - 150
Fenuron	103	96.5	P/P	60 - 150
Fluridone	129	127	P/P	60 - 160
Hydrocodone	114	113	P/P	60 - 150
Ibuprofen	86.9	109	P/P	50 - 160
Imazapyr	83.1	87.5	P/P	50 - 150
Imidacloprid	102	90.1	P/P	60 - 150
Linuron	94.2	94.9	P/P	60 - 150
MCPP	97.2	97.0	P/P	50 - 150
Naproxen	102	93.6	P/P	50 - 160
Primidone	90.8	80.2	P/P	60 - 150
Pyraclostrobin	118	117	P/P	60 - 150
Triclopyr	99.1	96.5	P/P	50 - 160

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A86830
Included Lab Sample IDs: 2028294, 2028295, 2028296

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.6	98.0	P/P	90 - 110
Cadmium	99.3	99.6	P/P	90 - 110
Chromium	99.6	99.4	P/P	90 - 110
Copper	99.0	98.7	P/P	90 - 110
Lead	99.5	99.9	P/P	90 - 110
Nickel	98.5	98.3	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A86860
Included Lab Sample IDs: 2028230, 2028231, 2028236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	105	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A86860

Included Lab Sample IDs: 2028230, 2028231, 2028236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86860

Included Lab Sample IDs: 2028230, 2028231, 2028236

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	99.0	P/P	90 - 110
Fluoride	98.0	97.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86893

Included Lab Sample IDs: 2028232, 2028233, 2028237

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87005

Included Lab Sample IDs: 2028294, 2028295, 2028296

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	103	102	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					1.21	
EPA 200.7 Rev. 4.4	Iron	105	107	103	102		0.869
	Zinc	99.3	104	98.8	98.0		0.798
EPA 200.8 Rev. 5.4	Arsenic	105	102	101	101		0.531
	Cadmium	101	102	103	104		1.37
	Chromium	100	99.9	102	103		0.748
	Copper	103	99.5	99.0	99.9		0.881
	Lead	102	100	101	101		0.205
	Nickel	104	99.4	98.5	99.4		0.814
	Silver	107	106	106	106		0.324
EPA 350.1 Rev. 2.0	Ammonia-N	97.5	99.7	99.0			0.582
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	104	106			1.36
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.5	100			0.332
EPA 365.1 Rev. 2.0	Total-P	101	97.5	103			4.96
	Total-P	101	97.0	104			6.51
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.9	100			0.499
EPA 8321B	2,4-D	96.7	98.3	110			9.06
	Acesulfame K	76.8	78.4	74.1			5.58
	Acetaminophen	87.4	82.1	86.8			5.53
	Bentazon	86.5	15.1	15.3			6.07
	Carbamazepine	79.3	64.3	67.4			4.48
	Diuron	69.4	57.1	56.7			0.802
	Fenuron	98.8	88.0	80.5			8.83
	Fluridone	98.5	101	108			6.68
	Hydrocodone	105	112	112			0.739
	Ibuprofen	99.6	74.8	77.7			3.82
	Imazapyr	69.5					3.58
	Imidacloprid	86.1					5.21
	Linuron	68.1	56.4	61.6			8.86
	MCPP	95.8	111	116			4.36
	Naproxen	86.1	76.6	74.9			2.35
	Primidone	84.9	97.6	92.3			5.08
	Pyraclostrobin	85.1	87.1	81.0			7.29
	Sucralose	107	105	103			1.19
	Triclopyr	93.6	109	118			7.62
SM 2320 B-97	Total Alkalinity	103				0.0871	
SM 4500 F-C-97	Fluoride	96.6					0.0
SM 5310 B-00	Organic Carbon	96.0	96.8	95.0			1.67

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2028230, 2028231, 2028236
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2028294, 2028295, 2028296
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2028294, 2028295, 2028296
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2028232, 2028233, 2028237
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2028232, 2028233, 2028237
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2028232, 2028233, 2028237

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2028232, 2028233, 2028237
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2028234, 2028235, 2028238
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2028292
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2028230, 2028231, 2028236
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2028230, 2028231, 2028236
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2028230, 2028231, 2028236
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2028232, 2028233, 2028237

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	09/26/2018			09/26/2018 16:41	Megan Treadwell	2028230, 2028231, 2028236
EPA 200.7 Rev. 4.4	09/26/2018	09/26/2018 17:40	Elliott D. Healy	09/28/2018 16:36	Betina Topolski	2028294
	09/26/2018	09/26/2018 17:40	Elliott D. Healy	09/28/2018 16:41	Betina Topolski	2028295
	09/26/2018	09/26/2018 17:40	Elliott D. Healy	09/28/2018 16:46	Betina Topolski	2028296
EPA 200.8 Rev. 5.4	09/26/2018	09/26/2018 17:40	Elliott D. Healy	10/01/2018 23:39	Allison Taylor	2028294
	09/26/2018	09/26/2018 17:40	Elliott D. Healy	10/01/2018 23:48	Allison Taylor	2028295
	09/26/2018	09/26/2018 17:40	Elliott D. Healy	10/01/2018 23:58	Allison Taylor	2028296
	09/26/2018	09/26/2018 17:40	Elliott D. Healy	10/08/2018 23:48	Allison Taylor	2028294
	09/26/2018	09/26/2018 17:40	Elliott D. Healy	10/08/2018 23:58	Allison Taylor	2028295
	09/26/2018	09/26/2018 17:40	Elliott D. Healy	10/09/2018 00:08	Allison Taylor	2028296
EPA 350.1 Rev. 2.0	09/26/2018			10/02/2018 12:00	Ping Hua	2028232
	09/26/2018			10/02/2018 12:02	Ping Hua	2028233
	09/26/2018			10/02/2018 12:03	Ping Hua	2028237
EPA 351.2 Rev. 2.0	09/26/2018	09/27/2018 15:15	Adrian Shelby	09/28/2018 14:54	Joseph Suarez	2028232
	09/26/2018	09/27/2018 15:15	Adrian Shelby	09/28/2018 14:56	Joseph Suarez	2028233
	09/26/2018	09/27/2018 15:15	Adrian Shelby	09/28/2018 14:57	Joseph Suarez	2028237
EPA 353.2 Rev. 2.0	09/26/2018			09/28/2018 13:10	Lauren Bottorf	2028232
	09/26/2018			09/28/2018 13:16	Lauren Bottorf	2028233
	09/26/2018			09/28/2018 13:18	Lauren Bottorf	2028237
EPA 365.1 Rev. 2.0	09/26/2018	09/27/2018 11:30	Sima Feizi	09/28/2018 09:15	Beverly Y. Sanders	2028232
	09/26/2018	09/27/2018 11:30	Sima Feizi	09/28/2018 09:24	Beverly Y. Sanders	2028233
	09/26/2018	09/27/2018 11:30	Sima Feizi	09/28/2018 09:25	Beverly Y. Sanders	2028237
EPA 365.1 Rev. 2.0 dissolved	09/26/2018			09/26/2018 15:29	Julia Storbeck	2028234
	09/26/2018			09/26/2018 15:30	Julia Storbeck	2028235, 2028238
EPA 8321B	09/26/2018	09/28/2018 08:30	Mohammad Ghaffari	09/28/2018 17:14	Mohammad Ghaffari	2028292
	09/26/2018	09/28/2018 08:30	Mohammad Ghaffari	09/29/2018 18:42	Mohammad Ghaffari	2028292
	09/26/2018	09/28/2018 09:00	Hoor Shaik	09/29/2018 17:42	Juyoung Kim	2028292
	09/26/2018	09/28/2018 09:00	Hoor Shaik	10/02/2018 04:33	Juyoung Kim	2028292
SM 2320 B-97	09/26/2018			10/02/2018 17:51	Dale L. Simmons	2028230
	09/26/2018			10/02/2018 18:02	Dale L. Simmons	2028231
	09/26/2018			10/02/2018 21:43	Dale L. Simmons	2028236
SM 2540 D-97	09/26/2018			09/28/2018 15:48	Yijie Li	2028230, 2028231, 2028236
SM 4500 F-C-97	09/26/2018			10/02/2018 17:51	Dale L. Simmons	2028230
	09/26/2018			10/02/2018 18:02	Dale L. Simmons	2028231
	09/26/2018			10/02/2018 21:43	Dale L. Simmons	2028236
SM 5310 B-00	09/26/2018			09/27/2018 19:22	Megan Treadwell	2028232
	09/26/2018			09/27/2018 20:02	Megan Treadwell	2028233
	09/26/2018			09/27/2018 20:16	Megan Treadwell	2028237