

Chemical Analysis Report

WAS-SECT-2018-06-26-01

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

Event Description: **Black And Quincy Creek SCI**

Request ID: **RQ-2018-05-14-18**

Customer: **WAS-SECT**

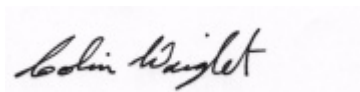
Project ID: **SMP**

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Attn: Curtis Musson

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Certified by: Colin Wright, Program Administrator

Date Certified: 16-JUL-2018 12:49

A handwritten signature in black ink, appearing to read "Colin Wright", is shown on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: 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: Black Creek upstream of CR 158

Collection Date/Time: 06/26/2018 08:50

Field ID: G1WA0072

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2003262	EPA 180.1 Rev. 2.0	Turbidity	6.5	A	NTU	P347535	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P347791	
		Sulfate	0.24	I	mg SO4/L	P347792	
	SM 2120 B	Color (true)	270		PCU	P347516	
	SM 2320 B-97	Total Alkalinity	1.9	I	mg CaCO3/L	P347808	
	SM 2540 C-97	TDS	37		mg/L	P347910	
	SM 2540 D-97	TSS	11		mg/L	P347905	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P347812	
2003263	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P347943	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P348025	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P347684	
	EPA 365.1 Rev. 2.0	Total-P	0.087		mg P/L	P347836	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P347986	
2003264	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P347567	
2003271	EPA 8321B	2,4-D	0.0020	U	ug/L	P347238	
		Sucralose**	0.010	U	ug/L	P347494	
		Bentazon	8.0E-04	U	ug/L	P347238	
		MCP	0.0020	U	ug/L	P347238	
		Triclopyr**	0.0040	U	ug/L	P347238	
		Imidacloprid	0.0040	I	ug/L	P347238	
		Diuron	0.0055	I	ug/L	P347238	
		Pyraclostrobin**	0.0020	U	ug/L	P347238	
		Primidone**	0.0040	U	ug/L	P347238	
		Linuron	0.0040	U	ug/L	P347238	
		Acetaminophen**	0.0080	U	ug/L	P347238	
		Fenuron	0.016	U	ug/L	P347238	
		Imazapyr**	0.032		ug/L	P347238	
		Carbamazepine**	4.0E-04	U	ug/L	P347238	
		Fluridone**	0.0016	I	ug/L	P347238	
		Hydrocodone**	8.0E-04	U	ug/L	P347238	
2003274	EPA 200.7 Rev. 4.4	Calcium	2.36		mg/L	P347583	
		Iron	2.61E+03		ug/L	P347583	
		Magnesium	1.02		mg/L	P347583	
		Potassium	0.35	I	mg/L	P347583	
		Sodium	2.4		mg/L	P347583	
		Zinc	5.0	U	ug/L	P347583	
	EPA 200.8 Rev. 5.4	Arsenic	0.68		ug/L	P347583	
		Cadmium	0.020	U	ug/L	P347583	
		Chromium	0.73	I	ug/L	P347583	
		Copper	0.37	I	ug/L	P347583	
		Lead	0.40		ug/L	P347583	
		Nickel	0.49	I	ug/L	P347583	
		Silver	0.010	U	ug/L	P347583	

Field ID: G1WA0072

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: 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: P347535

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P347583

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: P347583

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: P347791

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347792

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347943

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348025

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: P347684

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347836

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347567

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

Reference Method: EPA 8321B
Batch ID: P347238

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: P347494

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P347516

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P347808

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: P347910

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P347905

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P347812

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P347986

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: P347583

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	104		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	101		P	85 - 115
Sodium	104		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P347583

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	94.0		P	85 - 115
Cadmium	98.0		P	85 - 115
Chromium	93.4		P	85 - 115
Copper	91.9		P	85 - 115
Lead	93.3		P	85 - 115
Nickel	94.3		P	85 - 115
Silver	98.3		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P347791

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

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P347792

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P347943

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P348025

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P347684

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P347836

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P347567

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

Reference Method: EPA 8321B

Batch ID: P347238

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	104		P	40 - 150
Acetaminophen	108		P	30 - 150
Bentazon	111		P	30 - 150
Carbamazepine	92.3		P	40 - 150
Diuron	85.7		P	40 - 150
Fenuron	106		P	40 - 150
Fluridone	89.0		P	40 - 150
Hydrocodone	101		P	40 - 150
Imazapyr	90.5		P	40 - 150
Imidacloprid	97.2		P	40 - 160
Linuron	63.6		P	40 - 150
MCPP	118		P	40 - 150
Primidone	91.4		P	40 - 150
Pyraclostrobin	87.4		P	40 - 150
Triclopyr	113		P	40 - 150

Reference Method: EPA 8321B

Batch ID: P347494

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	108		P	40 - 150

Reference Method: SM 2120 B

Batch ID: P347516

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.4		P	85 - 115

Reference Method: SM 2320 B-97

Batch ID: P347808

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

Reference Method: SM 4500 F-C-97

Batch ID: P347812

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	91 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P347986

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P347583

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003131	Calcium	106	103	P/P	80 - 120
2003131	Iron	105	102	P/P	80 - 120
2003131	Magnesium	110	106	P/P	80 - 120
2003131	Potassium	106	104	P/P	80 - 120
2003131	Sodium	105	101	P/P	80 - 120
2003131	Zinc	105	101	P/P	80 - 120
2003284	Calcium	105		P	80 - 120
2003284	Iron	107		P	80 - 120
2003284	Magnesium	104		P	80 - 120
2003284	Potassium	100		P	80 - 120
2003284	Sodium	103		P	80 - 120
2003284	Zinc	105		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347583

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003131	Arsenic	94.8	94.5	P/P	80 - 120
2003131	Cadmium	98.7	96.5	P/P	80 - 120
2003131	Chromium	95.2	94.6	P/P	80 - 120
2003131	Copper	93.7	92.6	P/P	80 - 120
2003131	Lead	95.1	93.4	P/P	80 - 120
2003131	Nickel	94.6	93.0	P/P	80 - 120
2003131	Silver	97.8	96.9	P/P	80 - 120
2003284	Arsenic	96.4		P	80 - 120
2003284	Cadmium	98.3		P	80 - 120
2003284	Chromium	94.0		P	80 - 120
2003284	Copper	90.6		P	80 - 120
2003284	Lead	95.0		P	80 - 120
2003284	Nickel	94.5		P	80 - 120
2003284	Silver	98.2		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003262	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347792

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003262	Sulfate	102		P	90 - 110
2003448	Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003164	Ammonia-N	104	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348025

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003213	Kjeldahl Nitrogen	97.4	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347684

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003294	NO2NO3-N	98.1	98.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347836

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003281	Total-P	95.1	95.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003171	O-Phosphate-P	97.7	97.3	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P347238

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003323	2,4-D	109	108	P/P	40 - 150
2003323	Acetaminophen	80.3	82.9	P/P	30 - 150
2003323	Bentazon	39.3	40.8	P/P	30 - 150
2003323	Carbamazepine	62.4	65.7	P/P	40 - 150
2003323	Diuron	59.4	62.2	P/P	40 - 150
2003323	Fenuron	70.3	71.6	P/P	40 - 150
2003323	Fluridone	79.7	77.6	P/P	40 - 150
2003323	Hydrocodone	80.5	80.8	P/P	40 - 150
2003323	Imazapyr	99.3	113	P/P	40 - 150
2003323	Imidacloprid	129	141	P/P	40 - 160
2003323	Linuron	57.2	51.2	P/P	40 - 150
2003323	MCPP	128	132	P/P	40 - 150
2003323	Primidone	79.5	74.8	P/P	40 - 150
2003323	Pyraclostrobin	77.7	82.2	P/P	40 - 150
2003323	Triclopyr	117	132	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P347494

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003557	Sucralose	110	127	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P347812

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003212	Fluoride	96.3	97.4	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P347986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2003263	Organic Carbon	100		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P347535

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003262	Turbidity	6.79	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P347583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003131	Calcium	2.64	Spike	P	0 - 20
2003131	Iron	2.84	Spike	P	0 - 20
2003131	Magnesium	3.03	Spike	P	0 - 20
2003131	Potassium	2.61	Spike	P	0 - 20
2003131	Sodium	2.87	Spike	P	0 - 20
2003131	Zinc	3.26	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P347583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003131	Arsenic	0.315	Spike	P	0 - 20
2003131	Cadmium	2.20	Spike	P	0 - 20
2003131	Chromium	0.663	Spike	P	0 - 20
2003131	Copper	1.13	Spike	P	0 - 20
2003131	Lead	1.86	Spike	P	0 - 20
2003131	Nickel	1.65	Spike	P	0 - 20
2003131	Silver	0.904	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003448	Chloride	2.60	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P347792

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003448	Sulfate	2.69	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P347943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003164	Ammonia-N	1.07	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348025

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003213	Kjeldahl Nitrogen	0.576	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P347684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003294	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P347836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003281	Total-P	0.553	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P347567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003171	O-Phosphate-P	0.335	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P347238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003323	2,4-D	0.495	Spike	P	0 - 30
2003323	Acetaminophen	3.25	Spike	P	0 - 30
2003323	Bentazon	2.66	Spike	P	0 - 30
2003323	Carbamazepine	4.22	Spike	P	0 - 30
2003323	Diuron	4.60	Spike	P	0 - 30
2003323	Fenuron	1.74	Spike	P	0 - 30
2003323	Fluridone	2.55	Spike	P	0 - 30
2003323	Hydrocodone	0.333	Spike	P	0 - 30
2003323	Imazapyr	2.32	Spike	P	0 - 30
2003323	Imidacloprid	7.45	Spike	P	0 - 30
2003323	Linuron	11.1	Spike	P	0 - 30
2003323	MCP	2.77	Spike	P	0 - 30
2003323	Primidone	5.66	Spike	P	0 - 30
2003323	Pyraclostrobin	5.60	Spike	P	0 - 30
2003323	Triclopyr	11.9	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P347494

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003557	Sucralose	13.8	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: SM 2120 B
 Batch ID: P347516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003161	Color (true)	5.16	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P347808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003212	Total Alkalinity	0.951	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P347910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003448	TDS	6.36	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P347812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003212	Fluoride	0.988	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P347986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2003263	Organic Carbon	0.0	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: 2003271

Field Sample ID: G1WA0072

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	97.7	P	30 - 160
EPA 8321B	Acetaminophen-d4	65.5	P	30 - 160
EPA 8321B	Carbamazepine-d10	59.3	P	30 - 160
EPA 8321B	Diuron-d6	49.9	P	30 - 160
EPA 8321B	Primidone-d5	67.7	P	30 - 160
EPA 8321B	Sucralose-d6	96.4	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A84843
Included Lab Sample IDs: 2003262

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A84846
Included Lab Sample IDs: 2003262

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	98.0	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84847
Included Lab Sample IDs: 2003262

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	94.2	98.8	P/P	90 - 110
Sulfate	95.4	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A84855
Included Lab Sample IDs: 2003264

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A84911
Included Lab Sample IDs: 2003263

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A84920
Included Lab Sample IDs: 2003274

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	103	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	102	103	P/P	90 - 110
Potassium	99.2	99.8	P/P	90 - 110
Sodium	101	103	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A84928
Included Lab Sample IDs: 2003274

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A84947

Included Lab Sample IDs: 2003274

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	94.1	93.7	P/P	90 - 110
Cadmium	94.0	93.5	P/P	90 - 110
Chromium	94.1	93.4	P/P	90 - 110
Lead	94.3	93.8	P/P	90 - 110
Nickel	92.2	91.2	P/P	90 - 110
Silver	95.3	94.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A84959

Included Lab Sample IDs: 2003262

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A84959

Included Lab Sample IDs: 2003262

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	100	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A84988

Included Lab Sample IDs: 2003271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	121	108	P/P	50 - 150
Acetaminophen	119	103	P/P	60 - 160
Bentazon	141	142	P/P	50 - 150
Carbamazepine	111	99.4	P/P	60 - 160
Diuron	111	98.1	P/P	60 - 150
Fenuron	105	96.6	P/P	60 - 150
Fluridone	106	100	P/P	60 - 160
Hydrocodone	106	97.7	P/P	60 - 150
Imazapyr	92.8	89.1	P/P	50 - 150
Imidacloprid	93.3	96.7	P/P	60 - 150
Linuron	95.8	80.8	P/P	60 - 150
MCP	124	116	P/P	50 - 150
Primidone	96.8	86.5	P/P	60 - 150
Pyraclostrobin	107	97.6	P/P	60 - 150
Triclopyr	113	117	P/P	50 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84991

Included Lab Sample IDs: 2003263

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.6	99.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A85013

Included Lab Sample IDs: 2003263

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

Reference Method: SM 5310 B-00

Run ID: A85034

Included Lab Sample IDs: 2003263

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	96.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A85042

Included Lab Sample IDs: 2003274

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	99.4	95.8	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A85066

Included Lab Sample IDs: 2003271

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	102	114	P/P	60 - 150

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A85090

Included Lab Sample IDs: 2003263

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.3	106	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			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						6.79	
EPA 200.7 Rev. 4.4	Calcium	106	106	103	105			2.64
	Iron	104	105	102	107			2.84
	Magnesium	108	110	106	104			3.03
	Potassium	101	106	104	100			2.61
	Sodium	104	105	101	103			2.87
	Zinc	104	105	101	105			3.26
EPA 200.8 Rev. 5.4	Arsenic	94.0	96.4	94.8	94.5			0.315
	Cadmium	98.0	98.7	96.5	98.3			2.20
	Chromium	93.4	95.2	94.6	94.0			0.663
	Copper	91.9	93.7	92.6	90.6			1.13
	Lead	93.3	95.1	93.4	95.0			1.86
	Nickel	94.3	94.6	93.0	94.5			1.65
	Silver	98.3	97.8	96.9	98.2			0.904
EPA 300.0 Rev. 2.1	Chloride	100	103				2.60	
	Sulfate	100	97.9	102			2.69	
EPA 350.1 Rev. 2.0	Ammonia-N	101	104	105				1.07
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	97.4	98.2				0.576
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.1	98.1				0.0
EPA 365.1 Rev. 2.0	Total-P	97.1	95.1	95.7				0.553
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.7	97.3				0.335
EPA 8321B	2,4-D	104	109	108				0.495
	Acetaminophen	108	82.9	80.3				3.25
	Bentazon	111	39.3	40.8				2.66
	Carbamazepine	92.3	65.7	62.4				4.22
	Diuron	85.7	62.2	59.4				4.60
	Fenuron	106	71.6	70.3				1.74
	Fluridone	89.0	77.6	79.7				2.55
	Hydrocodone	101	80.8	80.5				0.333
	Imazapyr	90.5	113	99.3				2.32
	Imidacloprid	97.2	141	129				7.45
	Linuron	63.6	51.2	57.2				11.1
	MCPP	118	128	132				2.77
	Primidone	91.4	74.8	79.5				5.66
	Pyraclostrobin	87.4	82.2	77.7				5.60
	Sucralose	108	110	127				13.8
	Triclopyr	113	117	132				11.9
SM 2120 B	Color (true)	99.4					5.16	
SM 2320 B-97	Total Alkalinity	103					0.951	
SM 2540 C-97	TDS						6.36	
SM 4500 F-C-97	Fluoride	98.2	96.3	97.4				0.988
SM 5310 B-00	Organic Carbon	94.4	100					0.0

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2003262
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2003274
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2003274
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2003262

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2003262
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2003263
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2003263
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2003263
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2003263
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2003264
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2003271
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2003271
SM 2120 B / E31780	True Color measured at 450 nm	2003262
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2003262
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2003262
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2003262
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2003262
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2003263

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	06/26/2018			06/26/2018 16:09	William L. Brown IV	2003262
EPA 200.7 Rev. 4.4	06/26/2018	06/27/2018 14:40	Elliott D. Healy	06/28/2018 15:40	Betina Topolski	2003274
	06/26/2018	06/27/2018 14:40	Elliott D. Healy	06/29/2018 10:34	Betina Topolski	2003274
EPA 200.8 Rev. 5.4	06/26/2018	06/27/2018 14:40	Elliott D. Healy	06/29/2018 19:05	Robert K Palmer	2003274
	06/26/2018	06/27/2018 14:40	Elliott D. Healy	07/05/2018 13:51	Robert K Palmer	2003274
EPA 300.0 Rev. 2.1	06/26/2018			06/28/2018 14:49	Lipi Saha	2003262
EPA 350.1 Rev. 2.0	06/26/2018			07/03/2018 16:10	Julia Storbeck	2003263
EPA 351.2 Rev. 2.0	06/26/2018	07/06/2018 14:45	Adrian Shelby	07/09/2018 14:31	Joseph Suarez	2003263
EPA 353.2 Rev. 2.0	06/26/2018			06/28/2018 13:05	Lauren Bottorf	2003263
EPA 365.1 Rev. 2.0	06/26/2018	07/02/2018 12:00	Sima Feizi	07/03/2018 09:16	Beverly Y. Sanders	2003263
EPA 365.1 Rev. 2.0 dissolved	06/26/2018			06/26/2018 15:02	Megan Treadwell	2003264
EPA 8321B	06/26/2018	06/27/2018 08:30	Hoor Shaik	07/02/2018 17:59	Juyoung Kim	2003271
	06/26/2018	06/27/2018 08:30	Hoor Shaik	07/03/2018 05:31	Juyoung Kim	2003271
	06/26/2018	07/02/2018 13:00	Mohammad Ghaffari	07/05/2018 20:17	Mohammad Ghaffari	2003271
SM 2120 B	06/26/2018			06/26/2018 15:03	Tanya Welborn	2003262
SM 2320 B-97	06/26/2018			07/01/2018 01:07	Dale L. Simmons	2003262
SM 2540 C-97	06/26/2018			06/28/2018 15:21	Yijie Li	2003262
SM 2540 D-97	06/26/2018			06/28/2018 15:21	Yijie Li	2003262
SM 4500 F-C-97	06/26/2018			07/01/2018 01:07	Dale L. Simmons	2003262
SM 5310 B-00	06/26/2018			07/03/2018 09:38	Megan Treadwell	2003263