Chemical Analysis Report

WAS-SECT-2018-01-17-01

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

Event Description: **Wakulla BMAP**
Request ID: **RQ-2018-01-15-02**
Customer: **WAS-SECT**
Project ID: **BMAP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
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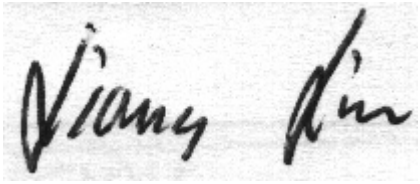
Certified by: Liang Lin, Environmental Administrator

Date Certified: 02-FEB-2018 11:34



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: Wakulla River Boat Tram **Collection Date/Time: 01/17/2018 10:25**

Field ID: 44059 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1959532	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P338368	
	EPA 300.0 Rev. 2.1	Chloride	39		mg Cl/L	P338417	
		Sulfate	15		mg SO4/L	P338419	
	SM 2120 B	Color (true)	8.5		PCU	P338397	
	SM 2320 B-97	Total Alkalinity	136		mg CaCO3/L	P338674	
	SM 2540 C-97	TDS	246	A	mg/L	P338696	
	SM 2540 D-97	TSS	3	IA	mg/L	P338896	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P339050	
1959533	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P338641	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P338378	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.36		mg N/L	P338403	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P338422	
	SM 5310 B-00	Organic Carbon	1.2		mg C/L	P338526	
1959534	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P338372	
1959538	EPA 200.7 Rev. 4.4	Calcium	48.2		mg/L	P338558	
		Iron	60	I	ug/L	P338558	
		Magnesium	12.4		mg/L	P338558	
		Potassium	1.2	I	mg/L	P338558	
		Sodium	25.4		mg/L	P338558	
		Zinc	5.0	U	ug/L	P338558	
	EPA 200.8 Rev. 5.4	Arsenic	0.83		ug/L	P338558	
		Cadmium	0.020	U	ug/L	P338558	
		Chromium	0.83	I	ug/L	P338558	
		Copper	0.20	U	ug/L	P338558	
		Lead	0.050	U	ug/L	P338558	
		Nickel	0.21	I	ug/L	P338558	
		Silver	0.010	U	ug/L	P338558	

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: Wakulla River Boat Tram **Collection Date/Time: 01/17/2018 10:25**

Field ID: 44059 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1959537	EPA 8321B	Sucralose**	0.034	I	ug/L	P338431	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P338349	
		Diuron	0.0020	U	ug/L	P338349	
		Fenuron	0.0080	U	ug/L	P338349	
		Imidacloprid	0.0020	U	ug/L	P338349	MS
		Bentazon	8.0E-04	U	ug/L	P338349	
		Linuron	0.0040	U	ug/L	P338349	
		Acetaminophen**	0.0080	U	ug/L	P338349	
		MCPP	0.0020	U	ug/L	P338349	

Field ID: 44059 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1959537	USGS O-2060-01	Carbamazepine**	4.0E-04	U	ug/L	P338349	
		Triclopyr**	0.0040	U	ug/L	P338349	
		Primidone**	0.0040	U	ug/L	P338349	
		Fluridone**	7.7E-04	I	ug/L	P338349	RPD

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P338368

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P338558

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: P338558

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: P338417

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338419

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338641

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338378

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338403

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338422

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338372

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

Reference Method: EPA 8321B
Batch ID: P338431

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P338397

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P338674

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

Reference Method: SM 2540 C-97
Batch ID: P338696

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P338896

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P339050

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P338526

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

Reference Method: USGS O-2060-01
Batch ID: P338349

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	0.0080	U	ug/L
Fluridone	4.0E-04	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
Triclopyr	0.0040	U	ug/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P338558

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	108		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	106		P	85 - 115
Sodium	111		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P338558

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.7		P	85 - 115
Cadmium	94.8		P	85 - 115
Chromium	100		P	85 - 115
Copper	93.9		P	85 - 115
Lead	94.0		P	85 - 115
Nickel	97.5		P	85 - 115
Silver	104		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338417

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338419

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338641

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: P338378

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338403

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338422

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338372

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

Reference Method: EPA 8321B
Batch ID: P338431

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	102		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P338674

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.8		P	95 - 108

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P339050

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P338526

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	92.4		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P338349

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	75.3		P	40 - 150
Acetaminophen	98.5		P	30 - 150
Bentazon	78.6		P	30 - 150
Carbamazepine	114		P	40 - 150
Diuron	102		P	40 - 150
Fenuron	114		P	40 - 150
Fluridone	120		P	40 - 150
Imidacloprid	113		P	40 - 160
Linuron	110		P	40 - 150
MCPP	79.5		P	40 - 150
Primidone	109		P	40 - 150
Triclopyr	79.5		P	40 - 150

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P338558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959680	Calcium	102		P	80 - 120
1959680	Iron	107		P	80 - 120
1959680	Magnesium	107		P	80 - 120
1959680	Potassium	109		P	80 - 120
1959680	Sodium	104		P	80 - 120
1959680	Zinc	103		P	80 - 120
1960659	Calcium	105		P	80 - 120
1960659	Iron	109	110	P/P	80 - 120
1960659	Magnesium	107		P	80 - 120
1960659	Potassium	105	105	P/P	80 - 120
1960659	Sodium	109	109	P/P	80 - 120
1960659	Zinc	102	103	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P338558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959680	Arsenic	99.8		P	80 - 120
1959680	Cadmium	95.7		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P338558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959680	Chromium	100		P	80 - 120
1959680	Copper	91.9		P	80 - 120
1959680	Lead	95.3		P	80 - 120
1959680	Nickel	94.6		P	80 - 120
1959680	Silver	102		P	80 - 120
1960659	Arsenic	97.1	98.1	P/P	80 - 120
1960659	Cadmium	97.8	98.6	P/P	80 - 120
1960659	Chromium	91.4	98.0	P/P	80 - 120
1960659	Copper	90.3	90.1	P/P	80 - 120
1960659	Lead	94.4	93.6	P/P	80 - 120
1960659	Nickel	92.8	93.4	P/P	80 - 120
1960659	Silver	102	103	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959249	Chloride	94.1		P	90 - 110
1959258	Chloride	92.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959249	Sulfate	96.3		P	90 - 110
1959258	Sulfate	91.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959527	Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338378

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959260	Kjeldahl Nitrogen	97.7	90.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959527	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338422

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959533	Total-P	99.6	99.6	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338372

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959528	O-Phosphate-P	97.0	97.6	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P338431

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959537	Sucralose	87.4	97.6	P/P	40 - 150

Reference Method: SM 5310 B-00
Batch ID: P338526

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959527	Organic Carbon	95.7	96.8	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P338349

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1959579	2,4-D	113	103	P/P	40 - 150
1959579	Acetaminophen	87.9	109	P/P	30 - 150
1959579	Bentazon	148	105	P/P	30 - 150
1959579	Carbamazepine	100	105	P/P	40 - 150
1959579	Diuron	74.3	85.4	P/P	40 - 150
1959579	Fenuron	107	93.4	P/P	40 - 150
1959579	Fluridone	83.5	47.8	P/P	40 - 150
1959579	Imidacloprid	161	223	F/F	40 - 160
1959579	Linuron	87.7	87.0	P/P	40 - 150
1959579	MCPP	97.1	75.7	P/P	40 - 150
1959579	Primidone	121	96.4	P/P	40 - 150
1959579	Triclopyr	90.9	75.1	P/P	40 - 150

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P338368

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959550	Turbidity	5.14	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P338558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1960659	Calcium	0.0851	Spike	P	0 - 20
1960659	Iron	0.984	Spike	P	0 - 20
1960659	Magnesium	1.13	Spike	P	0 - 20
1960659	Potassium	0.238	Spike	P	0 - 20
1960659	Sodium	0.272	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P338558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1960659	Zinc	1.39	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P338558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1960659	Arsenic	1.02	Spike	P	0 - 20
1960659	Cadmium	0.805	Spike	P	0 - 20
1960659	Chromium	6.69	Spike	P	0 - 20
1960659	Copper	0.251	Spike	P	0 - 20
1960659	Lead	0.797	Spike	P	0 - 20
1960659	Nickel	0.644	Spike	P	0 - 20
1960659	Silver	1.05	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959258	Chloride	2.09	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959258	Sulfate	2.57	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P338641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959527	Ammonia-N	1.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959260	Kjeldahl Nitrogen	4.78	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959527	NO2NO3-N	0.468	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338422

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959533	Total-P	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959528	O-Phosphate-P	0.617	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P338431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959537	Sucralose	11.0	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P338397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959526	Color (true)	2.12	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P338674

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1960002	Total Alkalinity	1.01	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P338696

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959532	TDS	0.813	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P339050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1960002	Fluoride	1.96	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P338526

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959527	Organic Carbon	0.938	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: USGS O-2060-01
Batch ID: P338349

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1959579	2,4-D	8.07	Spike	P	0 - 30
1959579	Acetaminophen	21.2	Spike	P	0 - 30
1959579	Bentazon	12.6	Spike	P	0 - 30
1959579	Carbamazepine	4.22	Spike	P	0 - 30
1959579	Diuron	12.2	Spike	P	0 - 30
1959579	Fenuron	13.3	Spike	P	0 - 30
1959579	Fluridone	36.3	Spike	F	0 - 30
1959579	Imidacloprid	28.3	Spike	P	0 - 30
1959579	Linuron	0.843	Spike	P	0 - 30
1959579	MCPP	23.6	Spike	P	0 - 30
1959579	Primidone	22.8	Spike	P	0 - 30
1959579	Triclopyr	19.0	Spike	P	0 - 30

* 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: 1959537
Field Sample ID: 44059

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	111	P	30 - 160
EPA 8321B	Carbamazepine-d10	118	P	30 - 160
EPA 8321B	Diuron-d6	97.9	P	30 - 160
EPA 8321B	Primidone-d5	123	P	30 - 160
EPA 8321B	Sucralose-d6	104	P	40 - 160
USGS O-2060-01	2,4-D-d3	61.8	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	111	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	118	P	30 - 160
USGS O-2060-01	Diuron-d6	97.9	P	30 - 160
USGS O-2060-01	Primidone-d5	123	P	30 - 160
USGS O-2060-01	Sucralose-d6	104	P	40 - 160

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A81498
Included Lab Sample IDs: 1959532

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A81499
Included Lab Sample IDs: 1959534

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A81499
Included Lab Sample IDs: 1959534

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A81512
Included Lab Sample IDs: 1959533

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

Reference Method: SM 2120 B
Run ID: A81514
Included Lab Sample IDs: 1959532

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.9	99.2	P/P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A81524
Included Lab Sample IDs: 1959532

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	105	P/P	90 - 110
Sulfate	100	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A81556
Included Lab Sample IDs: 1959533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A81564
Included Lab Sample IDs: 1959533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.3	92.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A81569
Included Lab Sample IDs: 1959533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.0	100	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A81591
Included Lab Sample IDs: 1959537

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	101	104	P/P	60 - 150

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A81608
Included Lab Sample IDs: 1959533

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

Reference Method: SM 2320 B-97
Run ID: A81614
Included Lab Sample IDs: 1959532

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.1	99.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A81615
Included Lab Sample IDs: 1959538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	101	P/P	90 - 110
Iron	101	102	P/P	90 - 110
Magnesium	101	102	P/P	90 - 110
Potassium	99.6	99.0	P/P	90 - 110
Sodium	102	102	P/P	90 - 110
Zinc	100	102	P/P	90 - 110

Reference Method: USGS O-2060-01
Run ID: A81623
Included Lab Sample IDs: 1959537

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	103	83.9	P/P	50 - 150
Acetaminophen	108	107	P/P	60 - 150
Bentazon	111	97.5	P/P	50 - 150
Carbamazepine	115	118	P/P	60 - 150
Diuron	112	113	P/P	60 - 150
Fenuron	108	109	P/P	60 - 150
Fluridone	117	114	P/P	60 - 160
Imidacloprid	107	112	P/P	60 - 150
Linuron	113	107	P/P	60 - 150
MCPP	103	101	P/P	50 - 150
Primidone	101	106	P/P	60 - 150
Triclopyr	109	88.0	P/P	50 - 150

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A81632
Included Lab Sample IDs: 1959538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.8	98.0	P/P	90 - 110
Cadmium	95.4	96.8	P/P	90 - 110
Copper	97.7	95.0	P/P	90 - 110
Lead	95.1	94.8	P/P	90 - 110
Nickel	98.9	95.6	P/P	90 - 110
Silver	96.0	96.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A81687
Included Lab Sample IDs: 1959538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	96.7	97.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A81747
Included Lab Sample IDs: 1959532

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

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						5.14	
EPA 200.7 Rev. 4.4	Calcium	107	102	105				0.0851
	Iron	108	107	109	110			0.984
	Magnesium	107	107	107				1.13
	Potassium	106	109	105	105			0.238
	Sodium	111	104	109	109			0.272
	Zinc	103	103	102	103			1.39
EPA 200.8 Rev. 5.4	Arsenic	98.7	99.8	97.1	98.1			1.02
	Cadmium	94.8	95.7	97.8	98.6			0.805
	Chromium	100	100	91.4	98.0			6.69
	Copper	93.9	91.9	90.3	90.1			0.251
	Lead	94.0	95.3	94.4	93.6			0.797
	Nickel	97.5	94.6	92.8	93.4			0.644
	Silver	104	102	102	103			1.05
EPA 300.0 Rev. 2.1	Chloride	99.4	92.9	94.1			2.09	
	Sulfate	96.6	91.2	96.3			2.57	
EPA 350.1 Rev. 2.0	Ammonia-N	101	99.7	101				1.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	97.7	90.6				4.78
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104	105				0.468
EPA 365.1 Rev. 2.0	Total-P	99.8	99.6	99.6				0.0
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.7	97.0	97.6				0.617
EPA 8321B	Sucralose	102	87.4	97.6				11.0
SM 2120 B	Color (true)						2.12	
SM 2320 B-97	Total Alkalinity	98.8					1.01	
SM 2540 C-97	TDS						0.813	
SM 4500 F-C-97	Fluoride	95.4						1.96
SM 5310 B-00	Organic Carbon	92.4	95.7	96.8				0.938
USGS O-2060-01	2,4-D	75.3	113	103				8.07
	Acetaminophen	98.5	87.9	109				21.2
	Bentazon	78.6	148	105				12.6
	Carbamazepine	114	100	105				4.22
	Diuron	102	74.3	85.4				12.2

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
USGS O-2060-01	Fenuron	114	107	93.4			13.3
	Fluridone	120	83.5	47.8			36.3
	Imidacloprid	113	161	223			28.3
	Linuron	110	87.7	87.0			0.843
	MCPP	79.5	97.1	75.7			23.6
	Primidone	109	121	96.4			22.8
	Triclopyr	79.5	90.9	75.1			19.0

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1959532
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1959538
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1959538
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1959532
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1959532
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1959533
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1959533
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1959533
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1959533
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1959534
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1959537
SM 2120 B / E31780	True Color measured at 450 nm	1959532
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1959532
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1959532
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1959532
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1959532
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1959533
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1959537
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1959537

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	01/17/2018			01/17/2018 16:19	DeAsia Armster	1959532
EPA 200.7 Rev. 4.4	01/17/2018	01/22/2018	Elliott D. Healy	01/23/2018	Martin Acosta	1959538
EPA 200.8 Rev. 5.4	01/17/2018	01/22/2018	Elliott D. Healy	01/24/2018	Robert K Palmer	1959538
	01/17/2018	01/22/2018	Elliott D. Healy	01/25/2018	Robert K Palmer	1959538
EPA 300.0 Rev. 2.1	01/17/2018			01/18/2018	Julia Storbeck	1959532
EPA 350.1 Rev. 2.0	01/17/2018			01/23/2018	Ping Hua	1959533
EPA 351.2 Rev. 2.0	01/17/2018	01/18/2018	Adrian Shelby	01/22/2018	Joseph Suarez	1959533
EPA 353.2 Rev. 2.0	01/17/2018			01/18/2018	Beverly Y. Sanders	1959533
EPA 365.1 Rev. 2.0	01/17/2018	01/18/2018	Sima Feizi	01/19/2018	Lipi Saha	1959533
EPA 365.1 Rev. 2.0 dissolved	01/17/2018			01/17/2018 16:49	Megan Treadwell	1959534
EPA 8321B	01/17/2018	01/19/2018	Juyoung Kim	01/20/2018	Juyoung Kim	1959537
SM 2120 B	01/17/2018			01/17/2018 16:48	Tanya Welborn	1959532
SM 2320 B-97	01/17/2018			01/23/2018	Dale L. Simmons	1959532
SM 2540 C-97	01/17/2018			01/19/2018	Yijie Li	1959532
SM 2540 D-97	01/17/2018			01/19/2018	Yijie Li	1959532
SM 4500 F-C-97	01/17/2018			01/30/2018	Lauren Bottorf	1959532
SM 5310 B-00	01/17/2018			01/19/2018	Megan Treadwell	1959533
USGS O-2060-01	01/17/2018	01/19/2018	Hoor Shaik	01/20/2018	Julie Michelle Frank	1959537