Chemical Analysis Report

WQAP-2017-05-24-06

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

Event Description: **C-kit_McKay**
Request ID: **RQ-2017-05-22-23**
Customer: **WQAP**
Project ID: **SMP**

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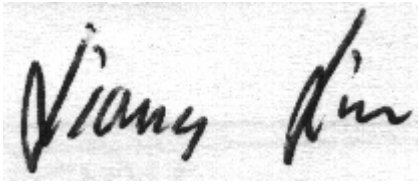
Certified by: Liang Lin, Environmental Administrator

Date Certified: 19-JUN-2017 15:03



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: McKay Creek **Collection Date/Time: 05/23/2017 12:00**

Field ID: G5SW0126 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1901212	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P325793	
	EPA 300.0 Rev. 2.1	Chloride	1.1E+03		mg Cl/L	P326773	MS
		Sulfate	160		mg SO4/L	P326775	
	SM 2120 B	Color (true)	37		PCU	P325783	
	SM 2320 B-97	Total Alkalinity	141		mg CaCO3/L	P325954	
	SM 2540 C-97	TDS	2.45E+03		mg/L	P326094	
	SM 2540 D-97	TSS	3	U	mg/L	P326271	
	SM 4500 F-C-97	Fluoride	0.40		mg F/L	P326250	RPD
1901213	EPA 350.1 Rev. 2.0	Ammonia-N	0.047		mg N/L	P325921	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P325867	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.053		mg N/L	P326084	
	EPA 365.1 Rev. 2.0	Total-P	0.37		mg P/L	P325872	
	SM 5310 B-00	Organic Carbon	8.5		mg C/L	P326193	
1901214	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.33		mg P/L	P325778	
1901220	EPA 200.7 Rev. 4.4	Calcium	82.2		mg/L	P325994	
		Iron	130	I	ug/L	P325994	
		Magnesium	73.2		mg/L	P325994	
		Potassium	21.7		mg/L	P325994	
		Sodium	559		mg/L	P325994	
	EPA 200.8 Rev. 5.4	Arsenic	3.43		ug/L	P325994	
		Cadmium	0.080	U	ug/L	P325994	
		Chromium	1.6	U	ug/L	P325994	
		Copper	0.80	U	ug/L	P325994	
		Lead	0.42	I	ug/L	P325994	
		Nickel	0.80	U	ug/L	P325994	
		Silver	0.040	U	ug/L	P325994	
		Zinc	4.0	U	ug/L	P325994	

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.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium, and sodium are unavailable because of high analyte concentration in the QC sample.

Sample Location: McKay Creek **Collection Date/Time: 05/23/2017 12:00**

Field ID: G5SW0126 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1901219	EPA 8321B	Sucralose**	1.2		ug/L	P325694	
	USGS O-2060-01	2,4-D	0.037		ug/L	P325789	
		Diuron	0.0054		ug/L	P325789	
		Fenuron	0.0040	U	ug/L	P325789	
		Imidacloprid	0.19		ug/L	P325789	
		Bentazon	0.021		ug/L	P325789	MS
		Linuron	0.0040	U	ug/L	P325789	

Field ID: G5SW0126 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1901219	USGS O-2060-01	Acetaminophen**	0.0080	U	ug/L	P325789	
		MCPP	0.012		ug/L	P325789	
		Carbamazepine**	0.0039		ug/L	P325789	
		Triclopyr**	0.0040	U	ug/L	P325789	
		Primidone**	0.011	I	ug/L	P325789	
		Fluridone**	0.017		ug/L	P325789	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P325793

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P325994

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325994

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
Zinc	1.0	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326773

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326775

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325921

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325867

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326084

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325872

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325778

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

Reference Method: EPA 8321B
Batch ID: P325694

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P325783

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P325954

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

Reference Method: SM 2540 C-97
Batch ID: P326094

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P326271

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P326250

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P326193

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

Reference Method: USGS O-2060-01
Batch ID: P325789

Component	Result	Code	Units
2,4-D	8.0E-04	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	8.0E-04	U	ug/L
Fenuron	0.0040	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	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: P325994

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	99.5		P	85 - 115
Iron	99.2		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	96.6		P	85 - 115
Sodium	98.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325994

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	94.8		P	85 - 115
Cadmium	95.9		P	85 - 115
Chromium	92.7		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325994

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	90.1		P	85 - 115
Lead	98.1		P	85 - 115
Nickel	93.2		P	85 - 115
Silver	92.5		P	85 - 115
Zinc	91.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326773

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326775

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325867

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326084

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: P325872

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325778

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

Reference Method: EPA 8321B
Batch ID: P325694

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P325694

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	76.7		P	40 - 140

Reference Method: SM 2320 B-97
Batch ID: P325954

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P326250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P326193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.2		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P325789

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	66.6		P	40 - 140
Acetaminophen	48.4		P	40 - 140
Bentazon	63.2		P	40 - 140
Carbamazepine	92.2		P	40 - 140
Diuron	89.0		P	40 - 140
Fenuron	88.8		P	40 - 140
Fluridone	85.0		P	40 - 140
Imidacloprid	77.0		P	40 - 160
Linuron	74.6		P	40 - 140
MCPP	81.2		P	40 - 140
Primidone	78.6		P	40 - 140
Triclopyr	77.4		P	40 - 140

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P325994

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901220	Iron	99.1	96.3	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325994

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901220	Arsenic	102	103	P/P	70 - 130

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325994

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901220	Cadmium	98.0	101	P/P	70 - 130
1901220	Chromium	90.7	91.6	P/P	70 - 130
1901220	Copper	92.4	93.0	P/P	70 - 130
1901220	Lead	99.7	103	P/P	70 - 130
1901220	Nickel	94.7	95.7	P/P	70 - 130
1901220	Silver	91.5	92.1	P/P	70 - 130
1901220	Zinc	95.8	96.5	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326773

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901061	Chloride	110		F	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900983	Sulfate	102		P	90 - 110
1901061	Sulfate	107		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901231	Ammonia-N	105	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325867

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901198	Kjeldahl Nitrogen	96.6	94.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901213	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901199	Total-P	94.7	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325778

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1901235	O-Phosphate-P	101	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P325694

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900888	Sucralose	99.0	68.0	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P326250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1902522	Fluoride	98.8	103	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P326193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900849	Organic Carbon	97.8	96.4	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P325789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1900995	2,4-D	71.4	63.8	P/P	40 - 140
1900995	Acetaminophen	79.2	75.4	P/P	40 - 140
1900995	Bentazon	31.4	28.0	F/F	40 - 140
1900995	Carbamazepine	69.6	62.2	P/P	40 - 140
1900995	Diuron	57.8	52.0	P/P	40 - 140
1900995	Fenuron	49.4	67.6	P/P	40 - 140
1900995	Fluridone	75.0	65.6	P/P	40 - 140
1900995	Imidacloprid	120	111	P/P	40 - 160
1900995	Linuron	77.0	70.4	P/P	40 - 140
1900995	MCPP	64.0	54.2	P/P	40 - 140
1900995	Primidone	64.2	62.4	P/P	40 - 140
1900995	Triclopyr	67.4	63.2	P/P	40 - 140

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P325793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901162	Turbidity	0.643	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P325994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901220	Calcium	1.73	Spike	P	0 - 20
1901220	Iron	2.79	Spike	P	0 - 20
1901220	Magnesium	3.57	Spike	P	0 - 20
1901220	Potassium	2.04	Spike	P	0 - 20
1901220	Sodium	3.88	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901220	Arsenic	0.893	Spike	P	0 - 20
1901220	Cadmium	2.91	Spike	P	0 - 20
1901220	Chromium	0.948	Spike	P	0 - 20
1901220	Copper	0.706	Spike	P	0 - 20
1901220	Lead	3.64	Spike	P	0 - 20
1901220	Nickel	1.06	Spike	P	0 - 20
1901220	Silver	0.654	Spike	P	0 - 20
1901220	Zinc	0.728	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326773

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901061	Chloride	0.161	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P326775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901061	Sulfate	0.331	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901231	Ammonia-N	0.876	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325867

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901198	Kjeldahl Nitrogen	1.62	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901213	NO2NO3-N	0.766	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901199	Total-P	0.815	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325778

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901235	O-Phosphate-P	1.18	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P325694

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900888	Sucralose	3.15	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P325783

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901170	Color (true)	4.92	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P325954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901339	Total Alkalinity	0.861	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P326094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1901517	TDS	3.10	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P326250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1902522	Fluoride	3.32	Spike	F	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P326193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900849	Organic Carbon	1.25	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P325789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900995	2,4-D	10.5	Spike	P	0 - 30
1900995	Acetaminophen	4.92	Spike	P	0 - 30

Quality Assurance Report
Precision

Reference Method: USGS O-2060-01
Batch ID: P325789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1900995	Bentazon	11.4	Spike	P	0 - 30
1900995	Carbamazepine	11.2	Spike	P	0 - 30
1900995	Diuron	10.6	Spike	P	0 - 30
1900995	Fenuron	23.4	Spike	P	0 - 30
1900995	Fluridone	13.4	Spike	P	0 - 30
1900995	Imidacloprid	7.63	Spike	P	0 - 30
1900995	Linuron	8.96	Spike	P	0 - 30
1900995	MCPP	16.6	Spike	P	0 - 30
1900995	Primidone	2.84	Spike	P	0 - 30
1900995	Triclopyr	6.43	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: 1901219
Field Sample ID: G5SW0126

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	70.0	P	40 - 150
USGS O-2060-01	2,4-D-d3	79.3	P	30 - 150
USGS O-2060-01	Acetaminophen-d4	83.5	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	92.9	P	30 - 160
USGS O-2060-01	Diuron-d6	71.7	P	30 - 160
USGS O-2060-01	Primidone-d5	97.7	P	30 - 150

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A76655
Included Lab Sample IDs: 1901214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	98.6	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A76656
Included Lab Sample IDs: 1901212

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A76659
Included Lab Sample IDs: 1901212

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A76659
Included Lab Sample IDs: 1901212

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A76718
Included Lab Sample IDs: 1901213

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

Reference Method: SM 2320 B-97
Run ID: A76730
Included Lab Sample IDs: 1901212

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	106	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A76745
Included Lab Sample IDs: 1901219

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	66.4	61.5	P/P	60 - 150

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A76764
Included Lab Sample IDs: 1901213

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A76779
Included Lab Sample IDs: 1901213

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A76797
Included Lab Sample IDs: 1901213

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A76844
Included Lab Sample IDs: 1901220

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.3	97.6	P/P	90 - 110
Iron	98.3	98.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A76844
Included Lab Sample IDs: 1901220

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Magnesium	98.9	99.3	P/P	90 - 110
Potassium	95.9	95.5	P/P	90 - 110
Sodium	96.1	96.2	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A76846
Included Lab Sample IDs: 1901213

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	99.6	P/P	90 - 110

Reference Method: USGS O-2060-01
Run ID: A76863
Included Lab Sample IDs: 1901219

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	84.8	84.8	P/P	50 - 150
Acetaminophen	104	96.8	P/P	60 - 150
Bentazon	112	111	P/P	50 - 150
Carbamazepine	105	107	P/P	60 - 150
Diuron	98.4	97.6	P/P	60 - 150
Fenuron	112	110	P/P	60 - 150
Fluridone	112	108	P/P	60 - 160
Imidacloprid	96.4	93.2	P/P	60 - 150
Linuron	88.4	100	P/P	60 - 150
MCPP	94.0	95.2	P/P	50 - 150
Primidone	95.2	98.4	P/P	60 - 150
Triclopyr	95.6	94.8	P/P	50 - 150

Reference Method: SM 4500 F-C-97
Run ID: A76873
Included Lab Sample IDs: 1901212

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A76969
Included Lab Sample IDs: 1901220

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	94.9	95.3	P/P	90 - 110
Cadmium	98.2	96.8	P/P	90 - 110
Chromium	98.7	96.3	P/P	90 - 110
Copper	91.6	92.8	P/P	90 - 110
Nickel	92.1	93.8	P/P	90 - 110
Silver	98.0	97.5	P/P	90 - 110
Zinc	94.1	94.9	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A77021
Included Lab Sample IDs: 1901220

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	96.1	99.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A77076
Included Lab Sample IDs: 1901212

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	98.4	P/P	90 - 110
Sulfate	101	105	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					0.643	
EPA 200.7 Rev. 4.4	Calcium	99.5					1.73
	Iron	99.2	99.1	96.3			2.79
	Magnesium	101					3.57
	Potassium	96.6					2.04
	Sodium	98.4					3.88
EPA 200.8 Rev. 5.4	Arsenic	94.8	102	103			0.893
	Cadmium	95.9	98.0	101			2.91
	Chromium	92.7	90.7	91.6			0.948
	Copper	90.1	92.4	93.0			0.706
	Lead	98.1	99.7	103			3.64
	Nickel	93.2	94.7	95.7			1.06
	Silver	92.5	91.5	92.1			0.654
	Zinc	91.6	95.8	96.5			0.728
EPA 300.0 Rev. 2.1	Chloride	107	110			0.161	
	Sulfate	106	107	102		0.331	
EPA 350.1 Rev. 2.0	Ammonia-N	96.3	105	106			0.876
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.4	96.6	94.6			1.62
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104	103			0.766
EPA 365.1 Rev. 2.0	Total-P	103	94.7	95.4			0.815
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	101	102			1.18
EPA 8321B	Sucralose	76.7	99.0	68.0			3.15
SM 2120 B	Color (true)					4.92	
SM 2320 B-97	Total Alkalinity	104				0.861	
SM 2540 C-97	TDS					3.10	
SM 4500 F-C-97	Fluoride	96.0	98.8	103			3.32
SM 5310 B-00	Organic Carbon	97.2	97.8	96.4			1.25
USGS O-2060-01	2,4-D	66.6	71.4	63.8			10.5
	Acetaminophen	48.4	79.2	75.4			4.92
	Bentazon	63.2	31.4	28.0			11.4
	Carbamazepine	92.2	69.6	62.2			11.2

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
USGS O-2060-01	Diuron	89.0	57.8	52.0			10.6
	Fenuron	88.8	49.4	67.6			23.4
	Fluridone	85.0	75.0	65.6			13.4
	Imidacloprid	77.0	120	111			7.63
	Linuron	74.6	77.0	70.4			8.96
	MCPP	81.2	64.0	54.2			16.6
	Primidone	78.6	64.2	62.4			2.84
	Triclopyr	77.4	67.4	63.2			6.43

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1901212
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1901220
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1901220
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1901212
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1901212
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1901213
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1901213
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1901213
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1901213
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1901214
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1901219
SM 2120 B / E31780	True Color measured at 450 nm	1901212
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1901212
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1901212
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1901212
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1901212
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1901213
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1901219
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1901219

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	05/24/2017			05/24/2017 16:45	Sima Feizi	1901212
EPA 200.7 Rev. 4.4	05/24/2017	05/30/2017	Elliott D. Healy	06/02/2017	Betina Topolski	1901220
EPA 200.8 Rev. 5.4	05/24/2017	05/30/2017	Elliott D. Healy	06/08/2017	Robert K Palmer	1901220
	05/24/2017	05/30/2017	Elliott D. Healy	06/12/2017	Robert K Palmer	1901220
EPA 300.0 Rev. 2.1	05/24/2017			06/13/2017	Julia Storbeck	1901212
EPA 350.1 Rev. 2.0	05/24/2017			05/26/2017	Julia Storbeck	1901213
EPA 351.2 Rev. 2.0	05/24/2017	05/26/2017	Adrian Shelby	05/31/2017	Joseph Suarez	1901213
EPA 353.2 Rev. 2.0	05/24/2017			06/01/2017	Beverly Y. Sanders	1901213
EPA 365.1 Rev. 2.0	05/24/2017	05/26/2017	Adrian Shelby	05/31/2017	Beverly Y. Sanders	1901213
EPA 365.1 Rev. 2.0 dissolved	05/24/2017			05/24/2017 15:45	Julia Storbeck	1901214
EPA 8321B	05/24/2017	05/27/2017	Mohammad Ghaffari	05/27/2017	Mohammad Ghaffari	1901219
SM 2120 B	05/24/2017			05/24/2017 15:25	Tanya Welborn	1901212
SM 2320 B-97	05/24/2017			05/27/2017	Dale L. Simmons	1901212
SM 2540 C-97	05/24/2017			05/26/2017	Yijie Li	1901212
SM 2540 D-97	05/24/2017			05/26/2017	Yijie Li	1901212
SM 4500 F-C-97	05/24/2017			06/03/2017	Dale L. Simmons	1901212
SM 5310 B-00	05/24/2017			06/03/2017	Julie Michelle Frank	1901213
USGS O-2060-01	05/24/2017	05/30/2017	Hoor Shaik	05/31/2017	Juyoung Kim	1901219