

Chemical Analysis Report

CEN-DIST-2017-01-26-01

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

Event Description: **Spruce (F)/UnBranch 2641/Groover/Spruce (S)**
Request ID: **RQ-2017-01-16-28**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 22-FEB-2017 10:41



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: Spruce Creek @ Spruce Creek Blvd

Collection Date/Time: 01/25/2017 13:05

Field ID: G5CE0083

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes		
1866711	EPA 180.1 Rev. 2.0	Turbidity	3.1	A	NTU	P318843			
	EPA 300.0 Rev. 2.1	Chloride	73		mg Cl/L	P319055			
		Sulfate	7.2		mg SO4/L	P319058			
	SM 2120 B	Color (true)	44		PCU	P318811			
	SM 2320 B-97	Total Alkalinity	227		mg CaCO3/L	P318979			
	SM 2540 C-97	TDS	340	A	mg/L	P319522			
	SM 2540 D-97	TSS	2	I	mg/L	P319303			
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P318983			
1866712	EPA 350.1 Rev. 2.0	Ammonia-N	0.02		mg N/L	P318947			
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P318821			
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.028		mg N/L	P318993			
	EPA 365.1 Rev. 2.0	Total-P	0.078		mg P/L	P318876			
	SM 5310 B-00	Organic Carbon	12		mg C/L	P318897			
1866713	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P318804			
1866760	EPA 200.7 Rev. 4.4	Calcium	88.2		mg/L	P318961			
		Iron	700		ug/L	P318961			
		Magnesium	7.29		mg/L	P318961			
		Potassium	2.1		mg/L	P318961			
		Sodium	40.0		mg/L	P318961			
		Zinc	5.0	U	ug/L	P318961			
	EPA 200.8 Rev. 5.4	Arsenic	0.38		ug/L	P318961			
		Cadmium	0.020	U	ug/L	P318961			
		Chromium	0.40	U	ug/L	P318961			
		Copper	0.25	I	ug/L	P318961			
		Lead	0.050	U	ug/L	P318961			
		Nickel	0.20	I	ug/L	P318961			
		Silver	0.010	U	ug/L	P319538			
		1866763	EPA 8321B	Sucralose**	0.90		ug/L	P318567	
			USGS O-2060-01	Diuron	0.0040	U	ug/L	P318793	
				Fenuron	0.0080	U	ug/L	P318793	
Imidacloprid	0.0057			I	ug/L	P318793			
Linuron	0.0040	U		ug/L	P318793				
Acetaminophen**	0.0040	U		ug/L	P318793				
Carbamazepine**	8.3E-04	I		ug/L	P318793				
Primidone**	0.0080	U		ug/L	P318793				
	Fluridone**	0.037		ug/L	P318793				

Ref. Method and Comment:

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

Sample Location: Groover Branch @ Airport Road

Collection Date/Time: 01/25/2017 10:40

Field ID: G5CE0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866717	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P318843	

Field ID: G5CE0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866717	EPA 300.0 Rev. 2.1	Chloride	78		mg Cl/L	P319055	
		Sulfate	17		mg SO4/L	P319058	
	SM 2120 B	Color (true)	80	A	PCU	P318811	
	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P318979	
	SM 2540 C-97	TDS	290		mg/L	P319522	
	SM 2540 D-97	TSS	2	I	mg/L	P319303	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P318983	
1866718	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P318947	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P318821	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.041		mg N/L	P318993	
	EPA 365.1 Rev. 2.0	Total-P	0.069		mg P/L	P318877	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P318897	
1866719	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P318804	

Ref. Method and Comment:

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

Sample Location: Unnamed Branch upstream of Airport Rd

Collection Date/Time: 01/25/2017 12:05

Field ID: G5CE0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1866714	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P318843	
	EPA 300.0 Rev. 2.1	Chloride	76		mg Cl/L	P319055	
		Sulfate	6.5		mg SO4/L	P319058	
	SM 2120 B	Color (true)	55		PCU	P318811	
	SM 2320 B-97	Total Alkalinity	108	A	mg CaCO3/L	P318979	
	SM 2540 C-97	TDS	281		mg/L	P319522	
	SM 2540 D-97	TSS	2	U	mg/L	P319303	
1866715	SM 4500 F-C-97	Fluoride	0.061	I	mg F/L	P318983	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P318947	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P318821	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P318993	
	EPA 365.1 Rev. 2.0	Total-P	0.049		mg P/L	P318877	
1866716	SM 5310 B-00	Organic Carbon	13		mg C/L	P318897	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P318804	
1866764	EPA 8321B	Sucralose**	0.047		ug/L	P318567	
	USGS O-2060-01	Diuron	0.0040	U	ug/L	P318793	
		Fenuron	0.0080	U	ug/L	P318793	
		Imidacloprid	0.0046	I	ug/L	P318793	
		Linuron	0.0040	U	ug/L	P318793	
		Acetaminophen**	0.0040	U	ug/L	P318793	
		Carbamazepine**	4.0E-04	U	ug/L	P318793	
		Primidone**	0.0080	U	ug/L	P318793	
		Fluridone**	0.0023		ug/L	P318793	

Ref. Method and Comment:

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: P318843

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318961

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: P318961

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319538

Component	Result	Code	Units
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319055

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319058

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318947

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318821

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318821

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318993

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318876

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318877

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318804

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

Reference Method: EPA 8321B
Batch ID: P318567

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P318811

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P318979

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

Reference Method: SM 2540 C-97
Batch ID: P319522

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
 Batch ID: P319303

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P318983

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P318897

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

Reference Method: USGS O-2060-01
 Batch ID: P318793

Component	Result	Code	Units
Acetaminophen	0.0040	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	0.0040	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	0.0040	U	ug/L
Linuron	0.0040	U	ug/L
Primidone	0.0080	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P318961

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	103		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	98.7		P	85 - 115
Sodium	102		P	85 - 115
Zinc	98.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P318961

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	96.9		P	85 - 115
Cadmium	93.9		P	85 - 115
Chromium	95.3		P	85 - 115
Copper	94.6		P	85 - 115
Lead	95.0		P	85 - 115
Nickel	97.3		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Silver	93.8		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319055

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319058

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318947

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318821

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318993

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318876

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	93.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318877

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318804

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P318567

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	92.6		P	40 - 140

Reference Method: SM 2320 B-97
Batch ID: P318979

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P318983

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P318897

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P318793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acetaminophen	78.8		P	40 - 140
Carbamazepine	94.8		P	40 - 140
Diuron	88.4		P	40 - 140
Fenuron	92.4		P	40 - 140
Fluridone	70.0		P	40 - 140
Imidacloprid	94.0		P	40 - 160
Linuron	74.4		P	40 - 140
Primidone	70.8		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318961

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866688	Calcium	101		P	80 - 120
1866688	Iron	106		P	80 - 120
1866688	Magnesium	107		P	80 - 120
1866688	Potassium	98.5		P	80 - 120
1866688	Sodium	100		P	80 - 120
1866688	Zinc	102		P	80 - 120
1867055	Calcium	102		P	80 - 120
1867055	Iron	105	105	P/P	80 - 120
1867055	Magnesium	104	105	P/P	80 - 120
1867055	Potassium	99.8	99.9	P/P	80 - 120
1867055	Sodium	103	101	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318961

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1867055	Zinc	99.7	98.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318961

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866688	Arsenic	97.8		P	80 - 120
1866688	Cadmium	94.5		P	80 - 120
1866688	Chromium	95.1		P	80 - 120
1866688	Copper	97.0		P	80 - 120
1866688	Lead	94.1		P	80 - 120
1866688	Nickel	96.8		P	80 - 120
1867055	Arsenic	99.0	96.7	P/P	80 - 120
1867055	Cadmium	99.1	98.1	P/P	80 - 120
1867055	Chromium	97.0	96.0	P/P	80 - 120
1867055	Copper	94.3	91.4	P/P	80 - 120
1867055	Lead	96.1	95.3	P/P	80 - 120
1867055	Nickel	97.2	94.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866687	Silver	90.8		P	80 - 120
1867053	Silver	93.1	93.4	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866724	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866724	Sulfate	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318947

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866712	Ammonia-N	96.1	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318821

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866684	Kjeldahl Nitrogen	101	96.1	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318993

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866509	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318876

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866508	Total-P	90.9	94.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318877

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866715	Total-P	92.6	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866685	O-Phosphate-P	95.7	98.9	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P318567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865382	Sucralose	136	132	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P318983

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866714	Fluoride	96.6	96.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P318897

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866625	Organic Carbon	97.3	99.7	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P318793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866907	Acetaminophen	72.4	74.4	P/P	40 - 140
1866907	Carbamazepine	99.3	103	P/P	40 - 140
1866907	Diuron	70.8	72.4	P/P	40 - 140
1866907	Fenuron	83.6	86.4	P/P	40 - 140
1866907	Fluridone	50.8	54.8	P/P	40 - 140
1866907	Imidacloprid	130	113	P/P	40 - 160
1866907	Linuron	80.4	73.6	P/P	40 - 140
1866907	Primidone	100	94.0	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P318843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866711	Turbidity	4.50	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318961

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1867055	Calcium	1.49	Spike	P	0 - 20
1867055	Iron	0.209	Spike	P	0 - 20
1867055	Magnesium	1.37	Spike	P	0 - 20
1867055	Potassium	0.0928	Spike	P	0 - 20
1867055	Sodium	1.45	Spike	P	0 - 20
1867055	Zinc	0.824	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318961

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1867055	Arsenic	2.42	Spike	P	0 - 20
1867055	Cadmium	1.00	Spike	P	0 - 20
1867055	Chromium	1.02	Spike	P	0 - 20
1867055	Copper	2.30	Spike	P	0 - 20
1867055	Lead	0.804	Spike	P	0 - 20
1867055	Nickel	2.40	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1867053	Silver	0.421	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866724	Chloride	1.10	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866724	Sulfate	1.59	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318947

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866712	Ammonia-N	3.36	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866684	Kjeldahl Nitrogen	4.49	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866509	NO2NO3-N	0.639	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866508	Total-P	3.48	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318877

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866715	Total-P	3.65	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866685	O-Phosphate-P	3.03	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P318567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865382	Sucralose	2.74	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P318811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866717	Color (true)	1.83	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P318979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866714	Total Alkalinity	0.122	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
 Batch ID: P319522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866711	TDS	0.588	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P318983

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866714	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P318897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866625	Organic Carbon	1.91	Spike	P	0 - 20

Reference Method: USGS O-2060-01
 Batch ID: P318793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866907	Acetaminophen	2.72	Spike	P	0 - 30
1866907	Carbamazepine	3.86	Spike	P	0 - 30
1866907	Diuron	1.79	Spike	P	0 - 30
1866907	Fenuron	3.29	Spike	P	0 - 30
1866907	Fluridone	7.30	Spike	P	0 - 30
1866907	Imidacloprid	12.9	Spike	P	0 - 30
1866907	Linuron	8.83	Spike	P	0 - 30
1866907	Primidone	6.58	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: 1866763
 Field Sample ID: G5CE0083

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	142	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	78.6	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	66.2	P	40 - 160

Quality Assurance Report Surrogates

Lab Sample ID: 1866763
 Field Sample ID: G5CE0083

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
USGS O-2060-01	Diuron-d6	48.4	P	40 - 150
USGS O-2060-01	Primidone-d5	95.2	P	40 - 150

Lab Sample ID: 1866764
 Field Sample ID: G5CE0084

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	114	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	69.0	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	81.6	P	40 - 160
USGS O-2060-01	Diuron-d6	70.0	P	40 - 150
USGS O-2060-01	Primidone-d5	98.2	P	40 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A74129
 Included Lab Sample IDs: 1866763, 1866764

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	106	143	P/P	60 - 150

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Run ID: A74133
 Included Lab Sample IDs: 1866713, 1866716, 1866719

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	99.4	P/P	90 - 110
O-Phosphate-P	99.7	98.5	P/P	90 - 110

Reference Method: SM 2120 B
 Run ID: A74134
 Included Lab Sample IDs: 1866711, 1866714, 1866717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.3	98.7	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
 Run ID: A74142
 Included Lab Sample IDs: 1866711, 1866714, 1866717

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

Reference Method: SM 5310 B-00
 Run ID: A74153
 Included Lab Sample IDs: 1866712, 1866715, 1866718

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A74153

Included Lab Sample IDs: 1866712, 1866715, 1866718

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74164

Included Lab Sample IDs: 1866712, 1866715, 1866718

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74168

Included Lab Sample IDs: 1866715

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74169

Included Lab Sample IDs: 1866712, 1866718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.3	97.7	P/P	90 - 110
Total-P	99.5	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74173

Included Lab Sample IDs: 1866712, 1866715, 1866718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.5	94.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A74180

Included Lab Sample IDs: 1866711, 1866714, 1866717

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

Reference Method: SM 4500 F-C-97

Run ID: A74180

Included Lab Sample IDs: 1866711, 1866714, 1866717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.0	P/P	90 - 110
Fluoride	99.0	99.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74186

Included Lab Sample IDs: 1866712, 1866715, 1866718

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A74206

Included Lab Sample IDs: 1866711, 1866714, 1866717

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	103	P/P	90 - 110
Sulfate	98.4	94.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A74222

Included Lab Sample IDs: 1866760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.0	100	P/P	90 - 110
Iron	99.6	99.5	P/P	90 - 110
Magnesium	99.8	99.6	P/P	90 - 110
Potassium	99.4	99.5	P/P	90 - 110
Sodium	98.1	101	P/P	90 - 110
Zinc	101	102	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A74237

Included Lab Sample IDs: 1866763, 1866764

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	101	112	P/P	60 - 150
Carbamazepine	120	115	P/P	60 - 150
Diuron	118	118	P/P	60 - 150
Fenuron	118	112	P/P	60 - 150
Fluridone	95.6	107	P/P	60 - 150
Imidacloprid	102	84.4	P/P	60 - 150
Linuron	102	111	P/P	60 - 150
Primidone	119	121	P/P	60 - 150

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A74299

Included Lab Sample IDs: 1866760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	98.6	99.3	P/P	90 - 110
Chromium	101	98.2	P/P	90 - 110
Copper	102	97.1	P/P	90 - 110
Lead	98.7	96.0	P/P	90 - 110
Nickel	103	98.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A74356

Included Lab Sample IDs: 1866760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	106	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A74420

Included Lab Sample IDs: 1866760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	108	107	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						4.50	
EPA 200.7 Rev. 4.4	Calcium	101	101	102				1.49
	Iron	103	106	105	105			0.209
	Magnesium	104	107	104	105			1.37
	Potassium	98.7	98.5	99.8	99.9			0.0928
	Sodium	102	100	103	101			1.45
	Zinc	98.9	102	99.7	98.9			0.824
EPA 200.8 Rev. 5.4	Arsenic	96.9	97.8	99.0	96.7			2.42
	Cadmium	93.9	94.5	99.1	98.1			1.00
	Chromium	95.3	95.1	97.0	96.0			1.02
	Copper	94.6	97.0	94.3	91.4			2.30
	Lead	95.0	94.1	96.1	95.3			0.804
	Nickel	97.3	96.8	97.2	94.9			2.40
	Silver	93.8	90.8	93.1	93.4			0.421
EPA 300.0 Rev. 2.1	Chloride	103	103				1.10	
	Sulfate	101	98.1				1.59	
EPA 350.1 Rev. 2.0	Ammonia-N	96.4	96.1	100				3.36
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.7	101	96.1				4.49
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102	102				0.639
EPA 365.1 Rev. 2.0	Total-P	93.4	90.9	94.8				3.48
	Total-P	94.6	92.6	96.5				3.65
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	95.7	98.9				3.03
EPA 8321B	Sucralose	92.6	136	132				2.74
SM 2120 B	Color (true)						1.83	
SM 2320 B-97	Total Alkalinity	103					0.122	
SM 2540 C-97	TDS						0.588	
SM 4500 F-C-97	Fluoride	96.1	96.6	96.6				0.0
SM 5310 B-00	Organic Carbon	102	97.3	99.7				1.91
USGS O-2060-01	Acetaminophen	78.8	72.4	74.4				2.72
	Carbamazepine	94.8	99.3	103				3.86
	Diuron	88.4	70.8	72.4				1.79
	Fenuron	92.4	83.6	86.4				3.29

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
USGS O-2060-01	Fluridone	70.0	50.8	54.8		7.30
	Imidacloprid	94.0	130	113		12.9
	Linuron	74.4	80.4	73.6		8.83
	Primidone	70.8	100	94.0		6.58

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1866711, 1866714, 1866717
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1866760
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1866760
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1866711, 1866714, 1866717
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1866711, 1866714, 1866717
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1866712, 1866715, 1866718
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1866712, 1866715, 1866718
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1866712, 1866715, 1866718
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1866712, 1866715, 1866718
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1866713, 1866716, 1866719
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1866763, 1866764
SM 2120 B / E31780	True Color measured at 450 nm	1866711, 1866714, 1866717
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1866711, 1866714, 1866717
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1866711, 1866714, 1866717
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1866711, 1866714, 1866717
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1866711, 1866714, 1866717
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1866712, 1866715, 1866718
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1866763, 1866764

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	01/26/2017			01/26/2017 15:52	Sima Feizi	1866711, 1866714, 1866717
EPA 200.7 Rev. 4.4	01/26/2017	01/30/2017	Elliott D. Healy	02/01/2017	Joshua Ayres	1866760
EPA 200.8 Rev. 5.4	01/26/2017	01/30/2017	Elliott D. Healy	02/06/2017	Betina Topolski	1866760
	01/26/2017	01/30/2017	Elliott D. Healy	02/08/2017	Betina Topolski	1866760
	01/26/2017	02/08/2017	Elliott D. Healy	02/11/2017	Betina Topolski	1866760
EPA 300.0 Rev. 2.1	01/26/2017			02/01/2017	Ping Hua	1866711, 1866714, 1866717
EPA 350.1 Rev. 2.0	01/26/2017			01/27/2017	Sofia Elnemr	1866712, 1866715, 1866718
EPA 351.2 Rev. 2.0	01/26/2017	01/27/2017	Adrian Shelby	01/30/2017	Joseph Suarez	1866712, 1866715, 1866718
EPA 353.2 Rev. 2.0	01/26/2017			01/31/2017	Beverly Y. Sanders	1866712, 1866715, 1866718
EPA 365.1 Rev. 2.0	01/26/2017	01/27/2017	Vijayalakshmi Reddy	01/30/2017	Lipi Saha	1866712, 1866715, 1866718
EPA 365.1 Rev. 2.0 dissolved	01/26/2017			01/26/2017 15:51	Julie Michelle Frank	1866713
	01/26/2017			01/26/2017 15:52	Julie Michelle Frank	1866716
	01/26/2017			01/26/2017 15:57	Julie Michelle Frank	1866719
EPA 8321B	01/26/2017	01/26/2017	Mohammad Ghaffari	01/26/2017	Mohammad Ghaffari	1866763, 1866764
SM 2120 B	01/26/2017			01/26/2017 17:15	Jared I. Manley	1866717
	01/26/2017			01/26/2017 17:18	Jared I. Manley	1866711
	01/26/2017			01/26/2017 17:19	Jared I. Manley	1866714
SM 2320 B-97	01/26/2017			01/30/2017	Dale L. Simmons	1866711, 1866714, 1866717
SM 2540 C-97	01/26/2017			01/30/2017	Sima Feizi	1866711, 1866714, 1866717
SM 2540 D-97	01/26/2017			01/30/2017	Sima Feizi	1866711, 1866714, 1866717
SM 4500 F-C-97	01/26/2017			01/30/2017	Dale L. Simmons	1866711, 1866714, 1866717
SM 5310 B-00	01/26/2017			01/26/2017	Jared I. Manley	1866712, 1866715, 1866718
USGS O-2060-01	01/26/2017	02/01/2017	Hoor Shaik	02/01/2017	Juyoung Kim	1866763, 1866764