

Chemical Analysis Report

CEN-DIST-2017-03-01-02

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

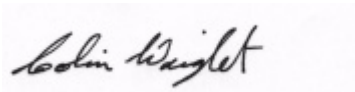
Event Description: **Rose Bay/Strickland x2/Spruce (s)/UnBranch 2642**
Request ID: **RQ-2017-02-20-44**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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Certified by: Colin Wright, Program Administrator

Date Certified: 29-MAR-2017 15:21

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

Case Narrative

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

Results for the following analytical groups are included in this report: Metals, Nutrients and Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Strickland Bay @ 875M East (Downstream) of RR crossing **Collection Date/Time: 02/28/2017 10:30**

Field ID: G5CE0074

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1876369	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P320746	
	SM 2320 B-97	Total Alkalinity	136		mg CaCO3/L	P321322	
	SM 2540 D-97	TSS	8	I	mg/L	P321222	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P321325	
1876370	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P321050	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P320816	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P320908	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P320926	
	SM 5310 B-00	Organic Carbon	4.2		mg C/L	P320854	
1876371	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.029		mg P/L	P320764	
1876414	EPA 200.7 Rev. 4.4	Iron	180	I	ug/L	P321305	
	EPA 200.8 Rev. 5.4	Arsenic	1.6	I	ug/L	P321305	
		Cadmium	0.20	U	ug/L	P321305	
		Chromium	1.2	U	ug/L	P321305	
		Copper	2.0	U	ug/L	P321305	
		Lead	0.80	U	ug/L	P321305	
		Nickel	1.0	U	ug/L	P321305	
		Silver	0.10	U	ug/L	P321305	
		Zinc	20	U	ug/L	P321305	

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 @ 750M US of Confluence w/ Tomoka River **Collection Date/Time: 02/28/2017 12:38**

Field ID: G5CE0017

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1876372	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P320746	
	SM 2320 B-97	Total Alkalinity	162		mg CaCO3/L	P321322	
	SM 2540 D-97	TSS	5	I	mg/L	P321222	
	SM 4500 F-C-97	Fluoride	0.54		mg F/L	P321325	
1876373	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P321050	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.91		mg N/L	P320816	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P320908	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P320926	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P320854	
1876374	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.080		mg P/L	P320764	

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: Strickland Bay @ 100M SW of US1 Bridge **Collection Date/Time: 02/28/2017 10:51**

Field ID: G5CE0090

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G5CE0090

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1876375	EPA 180.1 Rev. 2.0	Turbidity	6.0		NTU	P320746	
	SM 2320 B-97	Total Alkalinity	132		mg CaCO3/L	P321322	
	SM 2540 D-97	TSS	12		mg/L	P321222	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P321325	
1876376	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P321050	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P320884	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P320908	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P320926	
	SM 5310 B-00	Organic Carbon	3.4		mg C/L	P320854	
1876377	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P320764	
1876415	EPA 200.7 Rev. 4.4	Iron	270	I	ug/L	P321305	
	EPA 200.8 Rev. 5.4	Arsenic	1.7	I	ug/L	P321305	
		Cadmium	0.20	U	ug/L	P321305	
		Chromium	1.2	U	ug/L	P321305	
		Copper	2.0	U	ug/L	P321305	
		Lead	0.80	U	ug/L	P321305	
		Nickel	1.0	U	ug/L	P321305	
		Silver	0.10	U	ug/L	P321305	
		Zinc	20	U	ug/L	P321305	
1876417	EPA 8321B	Sucralose**	0.35		ug/L	P320643	
	USGS O-2060-01	Diuron	0.0040	U	ug/L	P320378	MS
		Fenuron	0.0080	U	ug/L	P320378	
		Imidacloprid	0.0040	U	ug/L	P320378	
		Linuron	0.0040	U	ug/L	P320378	
		Acetaminophen**	0.0040	U	ug/L	P320378	
		Carbamazepine**	0.0025		ug/L	P320378	
		Primidone**	0.0080	U	ug/L	P320378	
		Fluridone**	0.0017		ug/L	P320378	MS

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: Rose Bay @ 125M NE of Boat Ramp

Collection Date/Time: 02/28/2017 11:30

Field ID: G5CE0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1876378	EPA 180.1 Rev. 2.0	Turbidity	4.7	A	NTU	P320747	
	SM 2320 B-97	Total Alkalinity	136		mg CaCO3/L	P321322	
	SM 2540 D-97	TSS	9	I	mg/L	P321222	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P321325	
1876379	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P321050	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P320816	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P320908	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P320926	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P320901	
1876380	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.029		mg P/L	P320764	

Field ID: G5CE0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1876418	EPA 8321B	Sucralose**	0.74		ug/L	P320643	
	USGS O-2060-01	Diuron	0.0042	I	ug/L	P320378	MS
		Fenuron	0.0080	U	ug/L	P320378	
		Imidacloprid	0.0040	U	ug/L	P320378	
		Linuron	0.0040	U	ug/L	P320378	
		Acetaminophen**	0.0040	U	ug/L	P320378	
		Carbamazepine**	0.0036		ug/L	P320378	
		Primidone**	0.0080	U	ug/L	P320378	
		Fluridone**	0.0029		ug/L	P320378	MS

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: P320746

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P320747

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P321305

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P321305

Component	Result	Code	Units
Arsenic	0.25	U	ug/L
Cadmium	0.050	U	ug/L
Chromium	0.30	U	ug/L
Copper	0.50	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.25	U	ug/L
Silver	0.025	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P321050

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: P320816

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320884

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320908

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320926

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P320764

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

Reference Method: EPA 8321B
Batch ID: P320643

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2320 B-97
Batch ID: P321322

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

Reference Method: SM 2540 D-97
Batch ID: P321222

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P321325

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
 Batch ID: P320854

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

Reference Method: SM 5310 B-00
 Batch ID: P320901

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

Reference Method: USGS O-2060-01
 Batch ID: P320378

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: P321305

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P321305

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.7		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	103		P	85 - 115
Copper	100		P	85 - 115
Lead	104		P	85 - 115
Nickel	94.3		P	85 - 115
Silver	105		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P321050

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320816

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320884

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: P320908

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: P320926

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P320764

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

Reference Method: EPA 8321B
Batch ID: P320643

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	86.8		P	40 - 140

Reference Method: SM 2320 B-97
Batch ID: P321322

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

Reference Method: SM 4500 F-C-97
Batch ID: P321325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P320854

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.1		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P320901

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

Reference Method: USGS O-2060-01
Batch ID: P320378

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acetaminophen	69.6		P	40 - 140
Carbamazepine	96.8		P	40 - 140
Diuron	80.4		P	40 - 140
Fenuron	83.2		P	40 - 140
Fluridone	76.8		P	40 - 140
Imidacloprid	77.2		P	40 - 160
Linuron	78.8		P	40 - 140
Primidone	93.6		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321305

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1878215	Iron	96.0		P	70 - 130
1878526	Iron	98.3	97.9	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321305

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1878215	Arsenic	101		P	70 - 130
1878215	Cadmium	94.3		P	70 - 130
1878215	Chromium	107		P	80 - 120
1878215	Copper	95.3		P	80 - 120
1878215	Lead	112		P	80 - 120
1878215	Nickel	92.4		P	80 - 120
1878215	Silver	104		P	80 - 120
1878215	Zinc	98.8		P	80 - 120
1878526	Arsenic	102	96.3	P/P	70 - 130
1878526	Cadmium	95.8	87.9	P/P	70 - 130
1878526	Chromium	96.6	98.4	P/P	80 - 120
1878526	Copper	98.6	103	P/P	80 - 120
1878526	Lead	106	104	P/P	80 - 120
1878526	Nickel	97.4	90.9	P/P	80 - 120
1878526	Silver	95.9	97.5	P/P	80 - 120
1878526	Zinc	93.9	95.5	P/P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321050

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1876370	Ammonia-N	94.9	96.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1876379	Kjeldahl Nitrogen	100	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320884

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1876512	Kjeldahl Nitrogen	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320908

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1876370	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1876049	Total-P	98.2	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P320764

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1876371	O-Phosphate-P	97.2	99.4	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P320643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1875965	Sucralose	129	133	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P321325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1877747	Fluoride	96.2	97.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P320854

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1875768	Organic Carbon	94.8	94.4	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P320901

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1876379	Organic Carbon	101	102	P/P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
 Batch ID: P320378

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1875966	Acetaminophen	66.0	53.6	P/P	40 - 140
1875966	Carbamazepine	51.0	55.8	P/P	40 - 140
1875966	Diuron	40.8	36.8	P/F	40 - 140
1875966	Fenuron	45.6	47.6	P/P	40 - 140
1875966	Fluridone	37.7	44.0	F/P	40 - 140
1875966	Imidacloprid	86.7	107	P/P	40 - 160
1875966	Linuron	59.6	63.6	P/P	40 - 140
1875966	Primidone	59.2	68.0	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P320746

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1876302	Turbidity	2.89	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P320747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1876378	Turbidity	3.19	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P321305

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1878526	Iron	0.428	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P321305

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1878526	Arsenic	5.21	Spike	P	0 - 20
1878526	Cadmium	8.60	Spike	P	0 - 20
1878526	Chromium	1.81	Spike	P	0 - 20
1878526	Copper	4.36	Spike	P	0 - 20
1878526	Lead	1.37	Spike	P	0 - 20
1878526	Nickel	6.83	Spike	P	0 - 20
1878526	Silver	1.62	Spike	P	0 - 20
1878526	Zinc	1.64	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1876370	Ammonia-N	1.23	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1876379	Kjeldahl Nitrogen	2.40	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P320884

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1876512	Kjeldahl Nitrogen	0.717	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1876370	NO2NO3-N	0.935	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1876049	Total-P	0.525	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P320764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1876371	O-Phosphate-P	1.73	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P320643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1875965	Sucralose	2.92	Spike	P	0 - 30

Reference Method: SM 2320 B-97
Batch ID: P321322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877747	Total Alkalinity	0.498	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
 Batch ID: P321325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1877747	Fluoride	0.953	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P320854

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1875768	Organic Carbon	0.385	Spike	P	0 - 20

Reference Method: SM 5310 B-00
 Batch ID: P320901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1876379	Organic Carbon	0.496	Spike	P	0 - 20

Reference Method: USGS O-2060-01
 Batch ID: P320378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1875966	Acetaminophen	20.7	Spike	P	0 - 30
1875966	Carbamazepine	8.82	Spike	P	0 - 30
1875966	Diuron	10.2	Spike	P	0 - 30
1875966	Fenuron	4.29	Spike	P	0 - 30
1875966	Fluridone	15.3	Spike	P	0 - 30
1875966	Imidacloprid	20.0	Spike	P	0 - 30
1875966	Linuron	6.49	Spike	P	0 - 30
1875966	Primidone	13.8	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: 1876417
 Field Sample ID: G5CE0090

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	78.5	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	105	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	118	P	40 - 160
USGS O-2060-01	Diuron-d6	103	P	40 - 150
USGS O-2060-01	Primidone-d5	118	P	40 - 150

Lab Sample ID: 1876418
 Field Sample ID: G5CE0073

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
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Quality Assurance Report Surrogates

Lab Sample ID: 1876418
 Field Sample ID: G5CE0073

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	96.0	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	71.8	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	101	P	40 - 160
USGS O-2060-01	Diuron-d6	90.0	P	40 - 150
USGS O-2060-01	Primidone-d5	94.2	P	40 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
 Run ID: A74813
 Included Lab Sample IDs: 1876369, 1876372, 1876375, 1876378

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Run ID: A74815
 Included Lab Sample IDs: 1876371, 1876374, 1876377, 1876380

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

Reference Method: SM 5310 B-00
 Run ID: A74852
 Included Lab Sample IDs: 1876370, 1876373, 1876376

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	97.0	P/P	90 - 110

Reference Method: SM 5310 B-00
 Run ID: A74870
 Included Lab Sample IDs: 1876379

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	103	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Run ID: A74872
 Included Lab Sample IDs: 1876370, 1876373, 1876376, 1876379

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

Reference Method: USGS O-2060-01
 Run ID: A74876
 Included Lab Sample IDs: 1876417, 1876418

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

Reference Method: USGS O-2060-01

Run ID: A74876

Included Lab Sample IDs: 1876417, 1876418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	132	139	P/P	60 - 150
Carbamazepine	128	133	P/P	60 - 150
Diuron	115	119	P/P	60 - 150
Fenuron	112	108	P/P	60 - 150
Fluridone	104	105	P/P	60 - 150
Imidacloprid	99.2	108	P/P	60 - 150
Linuron	138	132	P/P	60 - 150
Primidone	121	124	P/P	60 - 150

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74890

Included Lab Sample IDs: 1876370, 1876373, 1876379

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.9	97.4	P/P	90 - 110
Kjeldahl Nitrogen	99.7	96.1	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A74898

Included Lab Sample IDs: 1876417, 1876418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	95.6	87.1	P/P	60 - 150

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74902

Included Lab Sample IDs: 1876373

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74906

Included Lab Sample IDs: 1876376

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74910

Included Lab Sample IDs: 1876370, 1876376, 1876379

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74921

Included Lab Sample IDs: 1876370, 1876373, 1876376, 1876379

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.3	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74921

Included Lab Sample IDs: 1876370, 1876373, 1876376, 1876379

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	98.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A75009

Included Lab Sample IDs: 1876369, 1876372, 1876375, 1876378

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A75009

Included Lab Sample IDs: 1876369, 1876372, 1876375, 1876378

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.5	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75100

Included Lab Sample IDs: 1876414, 1876415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	97.7	94.2	P/P	90 - 110
Copper	97.3	93.4	P/P	90 - 110
Lead	98.9	97.4	P/P	90 - 110
Silver	100	99.0	P/P	90 - 110
Zinc	97.4	95.1	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A75109

Included Lab Sample IDs: 1876414, 1876415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	97.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75414

Included Lab Sample IDs: 1876414, 1876415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	100	94.7	P/P	90 - 110
Cadmium	99.4	94.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75417

Included Lab Sample IDs: 1876414, 1876415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	92.3	98.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

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

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					2.89	
	Turbidity					3.19	
EPA 200.7 Rev. 4.4	Iron	103	96.0	98.3	97.9		0.428
EPA 200.8 Rev. 5.4	Arsenic	98.7	101	102	96.3		5.21
	Cadmium	103	94.3	95.8	87.9		8.60
	Chromium	103	107	96.6	98.4		1.81
	Copper	100	95.3	98.6	103		4.36
	Lead	104	112	106	104		1.37
	Nickel	94.3	92.4	97.4	90.9		6.83
	Silver	105	104	95.9	97.5		1.62
	Zinc	103	98.8	93.9	95.5		1.64
EPA 350.1 Rev. 2.0	Ammonia-N	102	94.9	96.4			1.23
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	100	97.4			2.40
	Kjeldahl Nitrogen	100	102	103			0.717
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	103			0.935
EPA 365.1 Rev. 2.0	Total-P	99.4	98.2	98.8			0.525
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	97.2	99.4			1.73
EPA 8321B	Sucralose	86.8	129	133			2.92
SM 2320 B-97	Total Alkalinity	104				0.498	
SM 4500 F-C-97	Fluoride	96.4	96.2	97.6			0.953
SM 5310 B-00	Organic Carbon	98.1	94.8	94.4			0.385
	Organic Carbon	100	101	102			0.496
USGS O-2060-01	Acetaminophen	69.6	66.0	53.6			20.7
	Carbamazepine	96.8	51.0	55.8			8.82
	Diuron	80.4	40.8	36.8			10.2
	Fenuron	83.2	45.6	47.6			4.29
	Fluridone	76.8	37.7	44.0			15.3
	Imidacloprid	77.2	86.7	107			20.0
	Linuron	78.8	59.6	63.6			6.49
	Primidone	93.6	59.2	68.0			13.8

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1876369, 1876372, 1876375, 1876378
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1876414, 1876415
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1876414, 1876415
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1876370, 1876373, 1876376, 1876379
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1876370, 1876373, 1876376, 1876379
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1876370, 1876373, 1876376, 1876379

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1876370, 1876373, 1876376, 1876379
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1876371, 1876374, 1876377, 1876380
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1876417, 1876418
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1876369, 1876372, 1876375, 1876378
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1876369, 1876372, 1876375, 1876378
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1876369, 1876372, 1876375, 1876378
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1876370, 1876373, 1876376, 1876379
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1876417, 1876418

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	03/01/2017			03/01/2017 15:14	Sima Feizi	1876369, 1876372, 1876375, 1876378
EPA 200.7 Rev. 4.4	03/01/2017	03/09/2017	Elliott D. Healy	03/14/2017	Martin Acosta	1876414, 1876415
EPA 200.8 Rev. 5.4	03/01/2017	03/09/2017	Elliott D. Healy	03/14/2017	Robert K Palmer	1876414, 1876415
	03/01/2017	03/09/2017	Elliott D. Healy	03/28/2017	Robert K Palmer	1876414, 1876415
EPA 350.1 Rev. 2.0	03/01/2017			03/06/2017	Sofia Elnemr	1876370, 1876373, 1876376, 1876379
EPA 351.2 Rev. 2.0	03/01/2017	03/02/2017	Adrian Shelby	03/03/2017	Joseph Suarez	1876370, 1876373, 1876379
	03/01/2017	03/03/2017	Adrian Shelby	03/06/2017	Joseph Suarez	1876376
EPA 353.2 Rev. 2.0	03/01/2017			03/03/2017	Beverly Y. Sanders	1876370, 1876373, 1876376, 1876379
EPA 365.1 Rev. 2.0	03/01/2017	03/03/2017	Vijayalakshmi Reddy	03/06/2017	Lipi Saha	1876370, 1876373, 1876376, 1876379
EPA 365.1 Rev. 2.0 dissolved	03/01/2017			03/01/2017 14:43	Julia Storbeck	1876371
	03/01/2017			03/01/2017 15:22	Julia Storbeck	1876374
	03/01/2017			03/01/2017 15:23	Julia Storbeck	1876377
	03/01/2017			03/01/2017 15:24	Julia Storbeck	1876380
EPA 8321B	03/01/2017	03/03/2017	Mohammad Ghaffari	03/03/2017	Mohammad Ghaffari	1876417, 1876418
SM 2320 B-97	03/01/2017			03/10/2017	Dale L. Simmons	1876369, 1876372, 1876375, 1876378
SM 2540 D-97	03/01/2017			03/03/2017	Yijie Li	1876369, 1876372, 1876375, 1876378
SM 4500 F-C-97	03/01/2017			03/10/2017	Dale L. Simmons	1876369, 1876372, 1876375, 1876378
SM 5310 B-00	03/01/2017			03/02/2017	Julie Michelle Frank	1876370, 1876373, 1876376
	03/01/2017			03/03/2017	Julie Michelle Frank	1876379
USGS O-2060-01	03/01/2017	03/01/2017	Hoor Shaik	03/03/2017	Juyoung Kim	1876417, 1876418