

Chemical Analysis Report

CEN-DIST-2016-12-08-01

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

Event Description: **Reference SCI_Mormon Branch**

Request ID: **RQ-2016-12-05-43**

Customer: **CEN-DIST**

Project ID: **SCIREF**

Send Reports to:

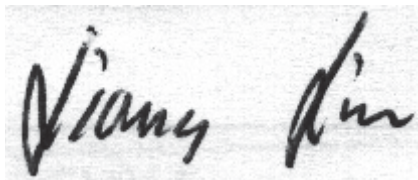
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Michael Linger

For additional information please contact

Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 03-JAN-2017 13:36

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

Case Narrative

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

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

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: MORMON BRANCH UPSTREAM OF SR 19

Collection Date/Time: 12/07/2016 13:50

Field ID: G2CE0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1856118	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P316443	
	EPA 300.0	Bromide**	0.094		mg Br/L	P316495	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P316504	
		Sulfate	21		mg SO4/L	P316830	
	SM 2120 B	Color (true)	15		PCU	P316450	
	SM 2320 B-97	Total Alkalinity	58		mg CaCO3/L	P316895	
	SM 2540 C-97	TDS	100		mg/L	P317006	
	SM 2540 D-97	TSS	9	I	mg/L	P317029	
	SM 4500 F-C-97	Fluoride	0.087	I	mg F/L	P316899	
1856119	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P316787	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P316741	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P316940	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P316589	
	SM 5310 B-00	Organic Carbon	2.1		mg C/L	P316491	
1856122	EPA 200.7 Rev. 4.4	Calcium	21.1		mg/L	P316806	
		Magnesium	8.60		mg/L	P316806	
		Potassium	0.61	I	mg/L	P316806	
		Sodium	14.2		mg/L	P316806	
1856123	EPA 8321B	Sucralose**	0.010	U	ug/L	P316462	
	USGS O-2060-01	Diuron	0.0040	U	ug/L	P316463	
		Fenuron	0.0080	U	ug/L	P316463	
		Imidacloprid	0.0040	U	ug/L	P316463	
		Linuron	0.0040	U	ug/L	P316463	
		Acetaminophen**	0.0040	U	ug/L	P316463	
		Carbamazepine**	4.0E-04	U	ug/L	P316463	
		Primidone**	0.0080	U	ug/L	P316463	
		Fluridone**	4.0E-04	U	ug/L	P316463	

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: P316443

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P316806

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0
Batch ID: P316495

Component	Result	Code	Units
Bromide	0.016	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316504

Component	Result	Code	Units
Chloride	0.27	I	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316830

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316787

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316741

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316940

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316589

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

Reference Method: EPA 8321B
Batch ID: P316462

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P316450

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P316895

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P317006

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P317029

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P316899

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P316491

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

Reference Method: USGS O-2060-01
Batch ID: P316463

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: P316806

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	104		P	85 - 115
Sodium	105		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P316495

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316504

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316830

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316787

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316741

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316940

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316589

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

Reference Method: EPA 8321B
Batch ID: P316462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	102		P	40 - 140

Reference Method: SM 2320 B-97
Batch ID: P316895

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P316899

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P316491

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P316463

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acetaminophen	86.4		P	40 - 140
Carbamazepine	138		P	40 - 140
Diuron	55.2		P	40 - 140
Fenuron	78.8		P	40 - 140
Fluridone	78.4		P	40 - 140
Imidacloprid	85.2		P	40 - 160
Linuron	49.2		P	40 - 140
Primidone	67.6		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P316806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855949	Calcium	109		P	80 - 120
1855949	Magnesium	105		P	80 - 120
1855949	Potassium	104		P	80 - 120
1855949	Sodium	105		P	80 - 120
1856410	Calcium	111	111	P/P	80 - 120
1856410	Magnesium	112	113	P/P	80 - 120
1856410	Potassium	108	105	P/P	80 - 120
1856410	Sodium	107	105	P/P	80 - 120

Reference Method: EPA 300.0
Batch ID: P316495

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852672	Bromide	105	105	P/P	90 - 110
1852673	Bromide	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316504

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852672	Chloride	98.0	93.3	P/P	90 - 110
1852673	Chloride	90.7		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852712	Sulfate	101		P	90 - 110
1852741	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856119	Ammonia-N	97.5	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856069	Kjeldahl Nitrogen	98.6	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856067	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316589

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856066	Total-P	103	101	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P316462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855728	Sucralose	79.0	81.7	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P316899

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855890	Fluoride	99.2	99.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P316491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1856066	Organic Carbon	96.3	96.1	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P316463

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855728	Acetaminophen	75.6	67.2	P/P	40 - 140
1855728	Carbamazepine	97.4	113	P/P	40 - 140
1855728	Diuron	44.8	43.2	P/P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P316463

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1855728	Fenuron	62.0	62.0	P/P	40 - 140
1855728	Fluridone	64.4	57.6	P/P	40 - 140
1855728	Imidacloprid	110	111	P/P	40 - 160
1855728	Linuron	56.8	57.6	P/P	40 - 140
1855728	Primidone	61.2	71.6	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856103	Turbidity	8.09	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P316806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856410	Calcium	0.221	Spike	P	0 - 20
1856410	Magnesium	0.209	Spike	P	0 - 20
1856410	Potassium	2.67	Spike	P	0 - 20
1856410	Sodium	1.47	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P316495

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852672	Bromide	0.0544	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316504

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852672	Chloride	3.95	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852712	Sulfate	1.17	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856119	Ammonia-N	0.382	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856069	Kjeldahl Nitrogen	1.70	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856067	NO2NO3-N	0.995	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856066	Total-P	1.48	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P316462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855728	Sucralose	2.80	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P316450

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856136	Color (true)	0.0815	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P316895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855890	Total Alkalinity	0.0334	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P317006

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856062	TDS	0.204	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
 Batch ID: P316899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855890	Fluoride	0.500	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P316491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1856066	Organic Carbon	0.119	Spike	P	0 - 20

Reference Method: USGS O-2060-01
 Batch ID: P316463

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1855728	Acetaminophen	11.8	Spike	P	0 - 30
1855728	Carbamazepine	14.4	Spike	P	0 - 30
1855728	Diuron	3.64	Spike	P	0 - 30
1855728	Fenuron	0.0	Spike	P	0 - 30
1855728	Fluridone	11.1	Spike	P	0 - 30
1855728	Imidacloprid	0.636	Spike	P	0 - 30
1855728	Linuron	1.40	Spike	P	0 - 30
1855728	Primidone	15.7	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: 1856123
 Field Sample ID: G2CE0052

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	76.4	P	30 - 150
EPA 8321B	Carbamazepine-d10	89.6	P	40 - 160
EPA 8321B	Diuron-d6	84.0	P	40 - 150
EPA 8321B	Primidone-d5	87.8	P	40 - 150
EPA 8321B	Sucralose-d6	97.0	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	76.4	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	89.6	P	40 - 160
USGS O-2060-01	Diuron-d6	84.0	P	40 - 150
USGS O-2060-01	Primidone-d5	87.8	P	40 - 150
USGS O-2060-01	Sucralose-d6	97.0	P	40 - 150

Quality Assurance Report Calibration Verification

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0
Run ID: A73219
Included Lab Sample IDs: 1856118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	100	104	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A73219
Included Lab Sample IDs: 1856118

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73258
Included Lab Sample IDs: 1856118

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

Reference Method: SM 2120 B
Run ID: A73259
Included Lab Sample IDs: 1856118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.9	100	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A73268
Included Lab Sample IDs: 1856119

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	100	P/P	90 - 110

Reference Method: USGS O-2060-01
Run ID: A73332
Included Lab Sample IDs: 1856123

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	112	86.0	P/P	60 - 150
Carbamazepine	122	134	P/P	60 - 150
Diuron	76.8	60.0	P/P	60 - 150
Fenuron	89.2	87.2	P/P	60 - 150
Fluridone	99.2	83.2	P/P	60 - 150
Imidacloprid	79.2	89.6	P/P	60 - 150
Linuron	114	97.2	P/P	60 - 150
Primidone	95.6	72.4	P/P	60 - 150

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73350
Included Lab Sample IDs: 1856119

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	97.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A73355
Included Lab Sample IDs: 1856123

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	125	139	P/P	60 - 150

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73369
Included Lab Sample IDs: 1856119

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73371
Included Lab Sample IDs: 1856119

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	99.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A73375
Included Lab Sample IDs: 1856118

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73405
Included Lab Sample IDs: 1856119

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.7	98.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A73415
Included Lab Sample IDs: 1856118

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.3	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A73415
Included Lab Sample IDs: 1856118

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A73494
Included Lab Sample IDs: 1856122

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	106	104	P/P	90 - 110
Magnesium	105	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A73494

Included Lab Sample IDs: 1856122

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Potassium	103	101	P/P	90 - 110
Sodium	101	101	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						8.09	
EPA 200.7 Rev. 4.4	Calcium	107	109	111	111			0.221
	Magnesium	110	105	112	113			0.209
	Potassium	104	104	108	105			2.67
	Sodium	105	105	107	105			1.47
EPA 300.0	Bromide	106	105	105	107			0.0544
EPA 300.0 Rev. 2.1	Chloride	98.9	98.0	93.3	90.7			3.95
	Sulfate	103	101	101			1.17	
EPA 350.1 Rev. 2.0	Ammonia-N	101	97.5	97.1				0.382
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	98.6	101				1.70
EPA 353.2 Rev. 2.0	NO2NO3-N	106	103	102				0.995
EPA 365.1 Rev. 2.0	Total-P	103	103	101				1.48
EPA 8321B	Sucralose	102	79.0	81.7				2.80
SM 2120 B	Color (true)						0.0815	
SM 2320 B-97	Total Alkalinity	98.4					0.0334	
SM 2540 C-97	TDS						0.204	
SM 4500 F-C-97	Fluoride	97.9	99.2	99.9				0.500
SM 5310 B-00	Organic Carbon	97.6	96.3	96.1				0.119
USGS O-2060-01	Acetaminophen	86.4	75.6	67.2				11.8
	Carbamazepine	138	97.4	113				14.4
	Diuron	55.2	44.8	43.2				3.64
	Fenuron	78.8	62.0	62.0				0.0
	Fluridone	78.4	64.4	57.6				11.1
	Imidacloprid	85.2	110	111				0.636
	Linuron	49.2	56.8	57.6				1.40
	Primidone	67.6	61.2	71.6				15.7

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1856118
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1856122
EPA 300.0 / E31780	Bromide in aqueous matrices	1856118
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1856118

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1856118
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1856119
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1856119
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1856119
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1856119
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1856123
SM 2120 B / E31780	True Color measured at 450 nm	1856118
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1856118
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1856118
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1856118
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1856118
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1856119
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1856123

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	12/08/2016			12/08/2016 16:30	Sima Feizi	1856118
EPA 200.7 Rev. 4.4	12/08/2016	12/14/2016	Elliott D. Healy	12/20/2016	Joshua Ayres	1856122
EPA 300.0	12/08/2016			12/08/2016	Ping Hua	1856118
EPA 300.0 Rev. 2.1	12/08/2016			12/08/2016	Ping Hua	1856118
	12/08/2016			12/14/2016	Ping Hua	1856118
EPA 350.1 Rev. 2.0	12/08/2016			12/13/2016	Sofia Elhemr	1856119
EPA 351.2 Rev. 2.0	12/08/2016	12/14/2016	Adrian Shelby	12/15/2016	Joseph Suarez	1856119
EPA 353.2 Rev. 2.0	12/08/2016			12/14/2016	Beverly Y. Sanders	1856119
EPA 365.1 Rev. 2.0	12/08/2016	12/12/2016	Vijayalakshmi Reddy	12/13/2016	Lipi Saha	1856119
EPA 8321B	12/08/2016	12/12/2016	Hoor Shaik	12/13/2016	Mohammad Ghaffari	1856123
SM 2120 B	12/08/2016			12/08/2016 16:08	Jared I. Manley	1856118
SM 2320 B-97	12/08/2016			12/15/2016	Dale L. Simmons	1856118
SM 2540 C-97	12/08/2016			12/12/2016	Sima Feizi	1856118
SM 2540 D-97	12/08/2016			12/12/2016	Sima Feizi	1856118
SM 4500 F-C-97	12/08/2016			12/15/2016	Dale L. Simmons	1856118
SM 5310 B-00	12/08/2016			12/09/2016	Julie Michelle Frank	1856119
USGS O-2060-01	12/08/2016	12/12/2016	Hoor Shaik	12/12/2016	Juyoung Kim	1856123