

Chemical Analysis Report

WQAP-2017-07-26-05

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

Event Description: **pesticide template kit: C**
Request ID: **RQ-2017-03-27-41**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
MS #3560
Tallahassee, FL 32399-2400
Attn: Mike Eckles

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 17-AUG-2017 13:46

A handwritten signature in black ink, appearing to read "Liang Lin", is written on a light-colored, textured 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 and Nutrients.

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: AUCILLA RIVER @ LAMONT TRACT

Collection Date/Time: 07/26/2017 10:50

Field ID: G1TLHR0019-2017-03

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1916662	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P329162	
	EPA 300.0 Rev. 2.1	Chloride	4.8		mg Cl/L	P329193	
		Sulfate	0.58		mg SO4/L	P329195	
	SM 2120 B	Color (true)	380		PCU	P329154	
	SM 2320 B-97	Total Alkalinity	33		mg CaCO3/L	P329383	
	SM 2540 C-97	TDS	108		mg/L	P329475	
	SM 2540 D-97	TSS	7	I	mg/L	P329783	
1916663	SM 4500 F-C-97	Fluoride	0.059	I	mg F/L	P329385	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P329430	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P329336	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.045		mg N/L	P329398	
	EPA 365.1 Rev. 2.0	Total-P	0.090		mg P/L	P329329	
1916664	SM 5310 B-00	Organic Carbon	33		mg C/L	P329479	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.045		mg P/L	P329163	
1916666	EPA 200.7 Rev. 4.4	Calcium	15.1		mg/L	P329237	
		Iron	1.34E+03		ug/L	P329237	
		Magnesium	2.94		mg/L	P329237	
		Potassium	0.45	I	mg/L	P329237	
		Sodium	2.7		mg/L	P329237	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P329237	
		Arsenic	0.46		ug/L	P329237	
		Cadmium	0.020	U	ug/L	P329237	
		Chromium	0.71	I	ug/L	P329237	
		Copper	0.20	U	ug/L	P329237	
		Lead	0.43		ug/L	P329237	
		Nickel	0.59	I	ug/L	P329237	
		Silver	0.010	U	ug/L	P329237	

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: P329162

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P329237

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P329237

Component	Result	Code	Units
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P329237

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329193

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329195

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329430

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329336

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329398

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329329

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329163

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

Reference Method: SM 2120 B
Batch ID: P329154

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P329383

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

Reference Method: SM 2540 C-97
Batch ID: P329475

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P329783

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P329385

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P329479

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P329237

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	110		P	85 - 115
Iron	109		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	104		P	85 - 115
Sodium	108		P	85 - 115
Zinc	105		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P329237

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	106		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	101		P	85 - 115
Copper	99.6		P	85 - 115
Lead	97.6		P	85 - 115
Nickel	103		P	85 - 115
Silver	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329193

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329195

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329430

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329336

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329398

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329329

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329163

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P329383

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P329385

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P329479

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P329237

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916226	Calcium	104		P	80 - 120
1916226	Iron	111		P	80 - 120
1916226	Magnesium	107		P	80 - 120
1916226	Potassium	104		P	80 - 120
1916226	Sodium	108		P	80 - 120
1916226	Zinc	103		P	80 - 120
1916433	Calcium	106		P	80 - 120
1916433	Iron	110	112	P/P	80 - 120
1916433	Magnesium	105		P	80 - 120
1916433	Potassium	104	106	P/P	80 - 120
1916433	Sodium	107	109	P/P	80 - 120
1916433	Zinc	106	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P329237

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916226	Arsenic	109		P	80 - 120
1916226	Cadmium	105		P	80 - 120
1916226	Chromium	100		P	80 - 120
1916226	Copper	96.8		P	80 - 120
1916226	Lead	98.0		P	80 - 120
1916226	Nickel	101		P	80 - 120
1916226	Silver	102		P	80 - 120
1916433	Arsenic	106	106	P/P	80 - 120
1916433	Cadmium	104	103	P/P	80 - 120
1916433	Chromium	98.5	97.8	P/P	80 - 120
1916433	Copper	96.5	96.6	P/P	80 - 120
1916433	Lead	96.5	96.1	P/P	80 - 120
1916433	Nickel	99.7	99.7	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P329237

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916433	Silver	100	100	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916441	Chloride	98.4		P	90 - 110
1916445	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916441	Sulfate	99.7		P	90 - 110
1916445	Sulfate	98.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329430

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916599	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916633	Kjeldahl Nitrogen	102	91.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916632	NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916669	Total-P	97.7	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329163

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916670	O-Phosphate-P	94.2	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P329385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916231	Fluoride	95.2	97.2	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P329479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1916451	Organic Carbon	96.9	97.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P329162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916631	Turbidity	10.6	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P329237

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916433	Calcium	0.561	Spike	P	0 - 20
1916433	Iron	1.43	Spike	P	0 - 20
1916433	Magnesium	1.58	Spike	P	0 - 20
1916433	Potassium	1.54	Spike	P	0 - 20
1916433	Sodium	1.17	Spike	P	0 - 20
1916433	Zinc	0.779	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P329237

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916433	Arsenic	0.589	Spike	P	0 - 20
1916433	Cadmium	0.946	Spike	P	0 - 20
1916433	Chromium	0.588	Spike	P	0 - 20
1916433	Copper	0.0720	Spike	P	0 - 20
1916433	Lead	0.379	Spike	P	0 - 20
1916433	Nickel	0.0296	Spike	P	0 - 20
1916433	Silver	0.109	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916445	Chloride	0.771	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P329195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916445	Sulfate	1.57	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P329430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916599	Ammonia-N	0.301	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P329336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916633	Kjeldahl Nitrogen	8.67	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P329398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916632	NO2NO3-N	0.172	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P329329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916669	Total-P	1.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P329163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916670	O-Phosphate-P	1.82	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P329154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916646	Color (true)	1.90	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P329383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916231	Total Alkalinity	0.286	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P329475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916631	TDS	6.45	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P329385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916231	Fluoride	1.45	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P329479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1916451	Organic Carbon	0.676	Spike	P	0 - 20

* 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 Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A77948
Included Lab Sample IDs: 1916662

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A77966
Included Lab Sample IDs: 1916662

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A77968
Included Lab Sample IDs: 1916664

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	98.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A77969
Included Lab Sample IDs: 1916662

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A78041
Included Lab Sample IDs: 1916666

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A78041

Included Lab Sample IDs: 1916666

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	103	P/P	90 - 110
Magnesium	102	102	P/P	90 - 110
Potassium	100	101	P/P	90 - 110
Sodium	101	102	P/P	90 - 110
Zinc	103	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A78042

Included Lab Sample IDs: 1916666

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	103	102	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Chromium	98.9	100	P/P	90 - 110
Copper	100	100	P/P	90 - 110
Lead	95.6	94.9	P/P	90 - 110
Nickel	100	100	P/P	90 - 110
Silver	95.4	95.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A78044

Included Lab Sample IDs: 1916662

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A78044

Included Lab Sample IDs: 1916662

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.6	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A78045

Included Lab Sample IDs: 1916663

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A78053

Included Lab Sample IDs: 1916663

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A78068

Included Lab Sample IDs: 1916663

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A78071

Included Lab Sample IDs: 1916663

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.0	99.3	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A78087

Included Lab Sample IDs: 1916663

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.9	99.2	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						10.6	
EPA 200.7 Rev. 4.4	Calcium	110	104	106				0.561
	Iron	109	111	110	112			1.43
	Magnesium	110	107	105				1.58
	Potassium	104	104	104	106			1.54
	Sodium	108	108	107	109			1.17
	Zinc	105	103	106	106			0.779
EPA 200.8 Rev. 5.4	Arsenic	106	109	106	106			0.589
	Cadmium	104	105	104	103			0.946
	Chromium	101	100	98.5	97.8			0.588
	Copper	99.6	96.8	96.5	96.6			0.0720
	Lead	97.6	98.0	96.5	96.1			0.379
	Nickel	103	101	99.7	99.7			0.0296
	Silver	101	102	100	100			0.109
EPA 300.0 Rev. 2.1	Chloride	101	99.7	98.4			0.771	
	Sulfate	101	98.3	99.7			1.57	
EPA 350.1 Rev. 2.0	Ammonia-N	98.1	102	103				0.301
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	102	91.8				8.67
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102					0.172
EPA 365.1 Rev. 2.0	Total-P	98.3	97.7	96.4				1.20
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	94.2	96.4				1.82
SM 2120 B	Color (true)						1.90	
SM 2320 B-97	Total Alkalinity	102					0.286	
SM 2540 C-97	TDS						6.45	
SM 4500 F-C-97	Fluoride	94.4	95.2	97.2				1.45

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
SM 5310 B-00	Organic Carbon	97.5	96.9 97.7			0.676

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1916662
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1916666
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1916666
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1916662
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1916662
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1916663
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1916663
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1916663
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1916663
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1916664
SM 2120 B / E31780	True Color measured at 450 nm	1916662
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1916662
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1916662
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1916662
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1916662
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1916663

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	07/26/2017			07/26/2017 15:19	DeAsia Armster	1916662
EPA 200.7 Rev. 4.4	07/26/2017	07/27/2017	Elliott D. Healy	07/28/2017	Betina Topolski	1916666
EPA 200.8 Rev. 5.4	07/26/2017	07/27/2017	Elliott D. Healy	07/28/2017	Nadine Brooks	1916666
EPA 300.0 Rev. 2.1	07/26/2017			07/26/2017	Julia Storbeck	1916662
EPA 350.1 Rev. 2.0	07/26/2017			07/31/2017	Sofia Elnemr	1916663
EPA 351.2 Rev. 2.0	07/26/2017	07/28/2017	Adrian Shelby	08/01/2017	Joseph Suarez	1916663
EPA 353.2 Rev. 2.0	07/26/2017			07/31/2017	Beverly Y. Sanders	1916663
EPA 365.1 Rev. 2.0	07/26/2017	07/28/2017	Adrian Shelby	07/31/2017	Lipi Saha	1916663
EPA 365.1 Rev. 2.0 dissolved	07/26/2017			07/26/2017 15:20	Ping Hua	1916664
SM 2120 B	07/26/2017			07/26/2017 15:33	Tanya Welborn	1916662
SM 2320 B-97	07/26/2017			07/28/2017	Dale L. Simmons	1916662
SM 2540 C-97	07/26/2017			07/28/2017	Yijie Li	1916662
SM 2540 D-97	07/26/2017			07/28/2017	Yijie Li	1916662
SM 4500 F-C-97	07/26/2017			07/28/2017	Dale L. Simmons	1916662
SM 5310 B-00	07/26/2017			08/01/2017	Sofia Elnemr	1916663