Chemical Analysis Report

SO-DIST-2018-05-11-03

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

Event Description: **CALOOSA LT 3240A**
Request ID: **RQ-2018-05-07-04**
Customer: **SO-DIST**
Project ID: **BMAP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: John Barrington

For additional information please contact
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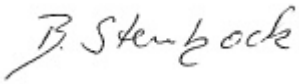
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 18-JUN-2018 11:47



NON-CONFORMANCE REPORT INCLUDED

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: USGSStation-PuntaBlanca **Collection Date/Time: 05/10/2018 10:05**

Field ID: G3SD0108 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992434	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P345490	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P345492	MS
1992438	SM 5310 B-00 dissolved	Organic Carbon	8.0		mg C/L	P345546	
1992442	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P345388	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P345823	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345352	
	EPA 365.1 Rev. 2.0	Total-P	0.076		mg P/L	P345382	
	SM 5310 B-00	Organic Carbon	7.4		mg C/L	P345787	
1992446	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.056		mg P/L	P345154	
1992461	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P345381	
	EPA 200.8 Rev. 5.4	Arsenic	2.09		ug/L	P345381	
		Cadmium	0.080	U	ug/L	P345381	
		Chromium	1.6	U	ug/L	P345381	
		Copper	1.1	I	ug/L	P345381	
		Lead	0.20	U	ug/L	P345381	
		Nickel	0.80	U	ug/L	P345381	
		Silver	0.040	U	ug/L	P345381	
		Zinc	4.0	U	ug/L	P345381	

Sample Location: USGS Station-ShellPoint **Collection Date/Time: 05/10/2018 10:30**

Field ID: G3SD0109 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992435	SM 2320 B-97	Total Alkalinity	72		mg CaCO3/L	P345490	
	SM 4500 F-C-97	Fluoride	0.72		mg F/L	P345492	MS
1992439	SM 5310 B-00 dissolved	Organic Carbon	5.8		mg C/L	P345546	
1992443	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P345388	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.55		mg N/L	P345824	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345352	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P345382	
	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P345787	
1992447	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.038		mg P/L	P345154	
1992462	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P345381	
	EPA 200.8 Rev. 5.4	Arsenic	2.10		ug/L	P345381	
		Cadmium	0.080	U	ug/L	P345381	
		Chromium	1.6	U	ug/L	P345381	
		Copper	1.4	I	ug/L	P345381	
		Lead	0.20	U	ug/L	P345381	
		Nickel	0.80	U	ug/L	P345381	
		Silver	0.040	U	ug/L	P345381	
		Zinc	15	I	ug/L	P345381	

Sample Location: Marker # 76 **Collection Date/Time: 05/10/2018 10:55**

Field ID: G3SD0110 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992436	SM 2320 B-97	Total Alkalinity	111		mg CaCO3/L	P345490	
	SM 4500 F-C-97	Fluoride	0.81		mg F/L	P345492	MS
1992440	SM 5310 B-00 dissolved	Organic Carbon	9.8		mg C/L	P345546	
1992444	EPA 350.1 Rev. 2.0	Ammonia-N	0.011	J	mg N/L	P345388	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72	J	mg N/L	P345824	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	IJ	mg N/L	P345352	
	EPA 365.1 Rev. 2.0	Total-P	0.10	J	mg P/L	P345382	
	SM 5310 B-00	Organic Carbon	9.7	J	mg C/L	P345787	
1992448	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.078		mg P/L	P345154	
1992463	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P345381	
	EPA 200.8 Rev. 5.4	Arsenic	2.04		ug/L	P345381	
		Cadmium	0.060	U	ug/L	P345381	
		Chromium	1.2	U	ug/L	P345381	
		Copper	1.4	I	ug/L	P345381	
		Lead	0.15	U	ug/L	P345381	
		Nickel	0.60	U	ug/L	P345381	
		Silver	0.030	U	ug/L	P345381	
		Zinc	3.0	U	ug/L	P345381	

Ref. Method and Comment:
EPA 350.1 Rev. 2.0: Container cap broken. Sample integrity may be compromised.
EPA 351.2 Rev. 2.0: Container cap broken. Sample integrity may be compromised.
EPA 353.2 Rev. 2.0: Container cap broken. Sample integrity may be compromised.
EPA 365.1 Rev. 2.0: Total-P: Container cap broken. Sample integrity may be compromised.
SM 5310 B-00: Container cap broken. Sample integrity may be compromised.

Sample Location: Marker # 52 **Collection Date/Time: 05/10/2018 11:30**

Field ID: G3SD0111 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992437	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P345490	
	SM 4500 F-C-97	Fluoride	0.54		mg F/L	P345492	MS
1992441	SM 5310 B-00 dissolved	Organic Carbon	13		mg C/L	P345787	
1992445	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P345388	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P345824	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345352	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P345382	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P345787	
1992449	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.094		mg P/L	P345154	
1992464	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P345381	
	EPA 200.8 Rev. 5.4	Arsenic	1.98		ug/L	P345381	
		Cadmium	0.060	U	ug/L	P345381	
		Chromium	1.2	U	ug/L	P345381	
		Copper	1.6	I	ug/L	P345381	
		Lead	0.15	U	ug/L	P345381	
		Nickel	0.60	U	ug/L	P345381	
		Silver	0.030	U	ug/L	P345381	

Field ID: G3SD0111 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1992464	EPA 200.8 Rev. 5.4	Zinc	3.0	U	ug/L	P345381	

Non-Conformance Report

NCR ID: 7027

Event(s)	Job(s)	Sample(s)	Test(s)
SO-DIST-2018-05-11-03	TLH-2018-05-11-66	1992464	

NCR Type: SHIPPING/RECEIVING **NCR Category: Preservation Not Intact**

Observation: Sample not preserved to pH < 2.

Resolution: Sample preserved in the laboratory with nitric acid 05-11-2018 at 11:43.

NITRIC ACID LOT:NA-7226050 EXP:08-14-18

Authorized by/Date: Joshua Ayres 5/15/2018

NCR ID: 7031

Event(s)	Job(s)	Sample(s)	Test(s)
SO-DIST-2018-05-11-03	TLH-2018-05-11-59	1992444	

NCR Type: CUSTODY **NCR Category: General**

Observation: Sample container dropped in receiving room resulting in a broken cap and sample loss. Sample integrity compromised.

Resolution: Broken cap replaced on 05/14/2018 at 15:38. Any data generated after this date/time will be qualified appropriately.

Authorized by/Date: Dr. rer. nat. Bettina Steinbock 6/15/2018

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P345381

Component	Result	Code	Units
Iron	30	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345381

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L
Zinc	1.0	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345388

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345823

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345824

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345352

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345382

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345154

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

Reference Method: SM 2320 B-97
Batch ID: P345490

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P345492

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P345787

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P345546

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P345787

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: P345381

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345381

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	100		P	85 - 115
Cadmium	97.0		P	85 - 115
Chromium	106		P	85 - 115
Copper	95.2		P	85 - 115
Lead	98.2		P	85 - 115
Nickel	98.0		P	85 - 115
Silver	105		P	85 - 115
Zinc	95.8		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345388

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: P345823

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345824

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: P345352

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345382

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345154

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

Reference Method: SM 2320 B-97
Batch ID: P345490

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P345492

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	92.9		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P345546

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00 dissolved
Batch ID: P345787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P345381

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992394	Iron	100	101	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345381

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992394	Arsenic	109	111	P/P	70 - 130
1992394	Cadmium	95.7	97.4	P/P	70 - 130
1992394	Chromium	104	104	P/P	70 - 130
1992394	Copper	90.2	92.1	P/P	70 - 130
1992394	Lead	105	105	P/P	70 - 130
1992394	Nickel	93.1	94.1	P/P	70 - 130
1992394	Silver	100	101	P/P	70 - 130
1992394	Zinc	95.2	96.2	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345388

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992442	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345823

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992442	Kjeldahl Nitrogen	96.8	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345824

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992443	Kjeldahl Nitrogen	96.6	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345352

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992378	NO2NO3-N	96.7	97.7	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992443	Total-P	91.5	95.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345154

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992446	O-Phosphate-P	96.2	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P345492

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991068	Fluoride	89.2	89.2	F/F	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992441	Organic Carbon	97.0	97.9	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P345546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1991941	Organic Carbon	94.9	94.4	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P345787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992441	Organic Carbon	97.0	97.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P345381

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992394	Iron	0.867	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345381

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992394	Arsenic	1.72	Spike	P	0 - 20
1992394	Cadmium	1.79	Spike	P	0 - 20
1992394	Chromium	0.454	Spike	P	0 - 20
1992394	Copper	1.90	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P345381

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992394	Lead	0.596	Spike	P	0 - 20
1992394	Nickel	1.09	Spike	P	0 - 20
1992394	Silver	0.905	Spike	P	0 - 20
1992394	Zinc	1.13	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345388

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992442	Ammonia-N	0.906	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992442	Kjeldahl Nitrogen	0.919	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345824

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992443	Kjeldahl Nitrogen	5.79	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345352

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992378	NO2NO3-N	1.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992443	Total-P	4.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345154

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992446	O-Phosphate-P	1.18	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-97
Batch ID: P345490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991068	Total Alkalinity	1.46	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P345492

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991068	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P345787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992441	Organic Carbon	0.694	Spike	P	0 - 20

Reference Method: SM 5310 B-00 dissolved
Batch ID: P345546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1991941	Organic Carbon	0.436	Spike	P	0 - 20

Reference Method: SM 5310 B-00 dissolved
Batch ID: P345787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992441	Organic Carbon	0.694	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 365.1 Rev. 2.0 dissolved
Run ID: A83830
Included Lab Sample IDs: 1992446, 1992447, 1992448, 1992449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.6	P/P	90 - 110
O-Phosphate-P	99.6	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83899
Included Lab Sample IDs: 1992442, 1992443, 1992444, 1992445

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A83925
Included Lab Sample IDs: 1992442, 1992443, 1992444, 1992445

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

Reference Method: SM 2320 B-97
Run ID: A83973
Included Lab Sample IDs: 1992434, 1992435, 1992436, 1992437

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.0	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83973
Included Lab Sample IDs: 1992434, 1992435, 1992436, 1992437

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.3	98.1	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A83986
Included Lab Sample IDs: 1992461, 1992462, 1992463, 1992464

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	99.7	98.4	P/P	90 - 110

Reference Method: SM 5310 B-00 dissolved
Run ID: A83989
Included Lab Sample IDs: 1992438, 1992439, 1992440

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.0	95.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84028
Included Lab Sample IDs: 1992461, 1992462, 1992463, 1992464

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.3	98.8	P/P	90 - 110
Cadmium	95.2	96.7	P/P	90 - 110
Copper	95.4	96.1	P/P	90 - 110
Lead	96.9	97.4	P/P	90 - 110
Nickel	94.2	94.1	P/P	90 - 110
Silver	104	105	P/P	90 - 110
Zinc	95.9	96.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84048
Included Lab Sample IDs: 1992442, 1992443

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A84054
Included Lab Sample IDs: 1992461, 1992462, 1992463, 1992464

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	105	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84065
Included Lab Sample IDs: 1992445

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

Reference Method: SM 5310 B-00
Run ID: A84099
Included Lab Sample IDs: 1992442, 1992443, 1992444, 1992445

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	99.8	P/P	90 - 110
Organic Carbon	98.4	97.8	P/P	90 - 110

Reference Method: SM 5310 B-00 dissolved
Run ID: A84099
Included Lab Sample IDs: 1992441

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.4	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84102
Included Lab Sample IDs: 1992444

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84147
Included Lab Sample IDs: 1992442, 1992443, 1992444, 1992445

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	94.1	P/P	90 - 110

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 200.7 Rev. 4.4	Iron	103	100	101			0.867
EPA 200.8 Rev. 5.4	Arsenic	100	109	111			1.72
	Cadmium	97.0	95.7	97.4			1.79

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 200.8 Rev. 5.4	Chromium	106	104	104			0.454
	Copper	95.2	90.2	92.1			1.90
	Lead	98.2	105	105			0.596
	Nickel	98.0	93.1	94.1			1.09
	Silver	105	100	101			0.905
	Zinc	95.8	95.2	96.2			1.13
EPA 350.1 Rev. 2.0	Ammonia-N	102	102	103			0.906
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	96.8	98.0			0.919
	Kjeldahl Nitrogen	100	96.6	104			5.79
EPA 353.2 Rev. 2.0	NO2NO3-N	103	96.7	97.7			1.03
EPA 365.1 Rev. 2.0	Total-P	102	91.5	95.5			4.03
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	96.2	98.0			1.18
SM 2320 B-97	Total Alkalinity	101				1.46	
SM 4500 F-C-97	Fluoride	92.9	89.2	89.2			0.0
SM 5310 B-00	Organic Carbon	98.8	97.0	97.9			0.694
SM 5310 B-00 dissolved	Organic Carbon	94.8	94.9	94.4			0.436
	Organic Carbon	98.8	97.0	97.9			0.694

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1992461, 1992462, 1992463, 1992464
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1992461, 1992462, 1992463, 1992464
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1992442, 1992443, 1992444, 1992445
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1992442, 1992443, 1992444, 1992445
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1992442, 1992443, 1992444, 1992445
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1992442, 1992443, 1992444, 1992445
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1992446, 1992447, 1992448, 1992449
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1992434, 1992435, 1992436, 1992437
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1992434, 1992435, 1992436, 1992437
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1992442, 1992443, 1992444, 1992445
SM 5310 B-00 dissolved / E31780	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	1992438, 1992439, 1992440, 1992441

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	05/11/2018	05/16/2018 12:00	Martin Acosta	05/18/2018 00:31	Betina Topolski	1992461
	05/11/2018	05/16/2018 12:00	Martin Acosta	05/18/2018 00:39	Betina Topolski	1992462
	05/11/2018	05/16/2018 12:00	Martin Acosta	05/18/2018 00:46	Betina Topolski	1992463
	05/11/2018	05/16/2018 12:00	Martin Acosta	05/18/2018 00:54	Betina Topolski	1992464
EPA 200.8 Rev. 5.4	05/11/2018	05/16/2018 12:00	Martin Acosta	05/18/2018 14:32	Robert K Palmer	1992461
	05/11/2018	05/16/2018 12:00	Martin Acosta	05/18/2018 14:41	Robert K Palmer	1992462
	05/11/2018	05/16/2018 12:00	Martin Acosta	05/18/2018 14:51	Robert K Palmer	1992463
	05/11/2018	05/16/2018 12:00	Martin Acosta	05/18/2018 15:00	Robert K Palmer	1992464
	05/11/2018	05/16/2018 12:00	Martin Acosta	05/21/2018 15:50	Robert K Palmer	1992461
	05/11/2018	05/16/2018 12:00	Martin Acosta	05/21/2018 15:56	Robert K Palmer	1992462
	05/11/2018	05/16/2018 12:00	Martin Acosta	05/21/2018 16:01	Robert K Palmer	1992463
	05/11/2018	05/16/2018 12:00	Martin Acosta	05/21/2018 16:07	Robert K Palmer	1992464
EPA 350.1 Rev. 2.0	05/11/2018			05/15/2018 12:47	Ping Hua	1992442
	05/11/2018			05/15/2018 12:52	Ping Hua	1992443
	05/11/2018			05/15/2018 12:53	Ping Hua	1992444
	05/11/2018			05/15/2018 12:55	Ping Hua	1992445
EPA 351.2 Rev. 2.0	05/11/2018	05/23/2018 16:00	Adrian Shelby	05/24/2018 14:03	Joseph Suarez	1992442
	05/11/2018	05/23/2018 16:00	Adrian Shelby	05/24/2018 14:11	Joseph Suarez	1992443
	05/11/2018	05/23/2018 16:00	Adrian Shelby	05/24/2018 14:15	Joseph Suarez	1992444
	05/11/2018	05/23/2018 16:00	Adrian Shelby	05/24/2018 14:17	Joseph Suarez	1992445
EPA 353.2 Rev. 2.0	05/11/2018			05/15/2018 13:57	Lauren Bottorf	1992442
	05/11/2018			05/15/2018 13:58	Lauren Bottorf	1992443
	05/11/2018			05/15/2018 14:00	Lauren Bottorf	1992444
	05/11/2018			05/15/2018 14:01	Lauren Bottorf	1992445
EPA 365.1 Rev. 2.0	05/11/2018	05/16/2018 08:57	Sima Feizi	05/21/2018 12:22	Beverly Y. Sanders	1992442
	05/11/2018	05/16/2018 08:57	Sima Feizi	05/21/2018 12:23	Beverly Y. Sanders	1992443
	05/11/2018	05/16/2018 08:57	Sima Feizi	05/22/2018 10:00	Beverly Y. Sanders	1992445
	05/11/2018	05/16/2018 08:57	Sima Feizi	05/23/2018 09:15	Beverly Y. Sanders	1992444
EPA 365.1 Rev. 2.0 dissolved	05/11/2018			05/11/2018 14:35	Julia Storbeck	1992446
	05/11/2018			05/11/2018 14:50	Julia Storbeck	1992447
	05/11/2018			05/11/2018 14:51	Julia Storbeck	1992448
	05/11/2018			05/11/2018 14:52	Julia Storbeck	1992449
SM 2320 B-97	05/11/2018			05/17/2018 00:53	Dale L. Simmons	1992434
	05/11/2018			05/17/2018 01:03	Dale L. Simmons	1992435
	05/11/2018			05/17/2018 01:12	Dale L. Simmons	1992436
	05/11/2018			05/17/2018 01:20	Dale L. Simmons	1992437
SM 4500 F-C-97	05/11/2018			05/16/2018 22:52	Dale L. Simmons	1992434
	05/11/2018			05/16/2018 22:56	Dale L. Simmons	1992435
	05/11/2018			05/16/2018 22:59	Dale L. Simmons	1992436
	05/11/2018			05/16/2018 23:03	Dale L. Simmons	1992437

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	05/11/2018			05/22/2018 06:04	Megan Treadwell	1992442
	05/11/2018			05/22/2018 06:16	Megan Treadwell	1992443
	05/11/2018			05/22/2018 06:41	Megan Treadwell	1992444
	05/11/2018			05/22/2018 07:20	Megan Treadwell	1992445
SM 5310 B-00 dissolved	05/11/2018			05/17/2018 09:52	Megan Treadwell	1992438
	05/11/2018			05/17/2018 10:20	Megan Treadwell	1992439
	05/11/2018			05/17/2018 10:36	Megan Treadwell	1992440
	05/11/2018			05/22/2018 05:27	Megan Treadwell	1992441