

Chemical Analysis Report

SO-DIST-2018-02-15-04

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-2018-02-12-20**
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

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 14-MAR-2018 14:17

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 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: CALOOSA RVR @ USGS-PUNTA BLANCA

Collection Date/Time: 02/14/2018 09:15

Field ID: SD021418-1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1967982	SM 2320 B-97	Total Alkalinity	116		mg CaCO3/L	P340382	
	SM 4500 F-C-97	Fluoride	0.91		mg F/L	P340384	
1967986	SM 5310 B-00 dissolved	Organic Carbon	6.8		mg C/L	P340428	
1967990	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P340626	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P340259	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P340436	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P340188	
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P340428	
1967994	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.037		mg P/L	P340066	
1968006	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P340282	
		Zinc	15	U	ug/L	P340282	
	EPA 200.8 Rev. 5.4	Arsenic	2.32		ug/L	P340282	
		Cadmium	0.060	U	ug/L	P340282	
		Chromium	1.2	U	ug/L	P340282	
		Copper	1.5	I	ug/L	P340282	
		Lead	0.50	U	ug/L	P340282	
		Nickel	0.60	U	ug/L	P340282	
		Silver	0.030	U	ug/L	P340282	

Sample Location: CALOOSA RVR @ USGS-SHELL POINT

Collection Date/Time: 02/14/2018 09:27

Field ID: SD021418-2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1967983	SM 2320 B-97	Total Alkalinity	115		mg CaCO3/L	P340382	
	SM 4500 F-C-97	Fluoride	0.88		mg F/L	P340384	
1967987	SM 5310 B-00 dissolved	Organic Carbon	7.2		mg C/L	P340428	
1967991	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P340626	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P340259	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P340437	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P340399	
	SM 5310 B-00	Organic Carbon	7.3		mg C/L	P340428	
1967995	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.036		mg P/L	P340066	
1968007	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P340282	
		Zinc	15	U	ug/L	P340282	
	EPA 200.8 Rev. 5.4	Arsenic	2.20		ug/L	P340282	
		Cadmium	0.060	U	ug/L	P340282	
		Chromium	1.2	U	ug/L	P340282	
		Copper	1.2	I	ug/L	P340282	
		Lead	0.50	U	ug/L	P340282	
		Nickel	0.60	U	ug/L	P340282	
		Silver	0.030	U	ug/L	P340282	

Sample Location: CALOOSA RVR @ MARKER # 76

Collection Date/Time: 02/14/2018 10:00

Field ID: SD021418-3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1967984	SM 2320 B-97	Total Alkalinity	138		mg CaCO3/L	P340382	
	SM 4500 F-C-97	Fluoride	0.64		mg F/L	P340384	
1967988	SM 5310 B-00 dissolved	Organic Carbon	10		mg C/L	P340428	
1967992	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P340626	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P340259	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P340437	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P340399	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P340502	
1967996	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.041		mg P/L	P340066	
1968008	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P340282	
		Zinc	15	U	ug/L	P340282	
	EPA 200.8 Rev. 5.4	Arsenic	1.94		ug/L	P340282	
		Cadmium	0.060	U	ug/L	P340282	
		Chromium	1.2	U	ug/L	P340282	
		Copper	1.5	I	ug/L	P340282	
		Lead	0.25	U	ug/L	P340282	
		Nickel	0.60	U	ug/L	P340282	
		Silver	0.030	U	ug/L	P340282	

Sample Location: CALOOSA RVR @ MARKER # 52

Collection Date/Time: 02/14/2018 10:37

Field ID: SD021418-4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1967985	SM 2320 B-97	Total Alkalinity	116		mg CaCO3/L	P340617	
	SM 4500 F-C-97	Fluoride	0.44		mg F/L	P340619	
1967989	SM 5310 B-00 dissolved	Organic Carbon	13		mg C/L	P340428	
1967993	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P340676	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P340259	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P340437	
	EPA 365.1 Rev. 2.0	Total-P	0.059		mg P/L	P340399	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P340502	
1967997	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.029		mg P/L	P340066	
1968009	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P340282	
		Zinc	15	U	ug/L	P340282	
	EPA 200.8 Rev. 5.4	Arsenic	1.72		ug/L	P340282	
		Cadmium	0.060	U	ug/L	P340282	
		Chromium	1.2	U	ug/L	P340282	
		Copper	1.6	I	ug/L	P340282	
		Lead	0.15	U	ug/L	P340282	
		Nickel	0.60	U	ug/L	P340282	
		Silver	0.030	U	ug/L	P340282	

**Quality Assurance Report
Method Blank Results**

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P340282

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P340282

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 350.1 Rev. 2.0
Batch ID: P340626

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340676

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340259

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340436

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340437

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340188

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
Batch ID: P340399

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340066

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

Reference Method: SM 2320 B-97
Batch ID: P340382

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

Reference Method: SM 2320 B-97
Batch ID: P340617

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

Reference Method: SM 4500 F-C-97
Batch ID: P340384

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P340619

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P340428

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

Reference Method: SM 5310 B-00
Batch ID: P340502

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P340428

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: P340282

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	107		P	85 - 115
Zinc	98.1		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P340282

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	103		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	109		P	85 - 115
Copper	104		P	85 - 115
Lead	105		P	85 - 115
Nickel	103		P	85 - 115
Silver	99.2		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340626

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340676

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340259

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340436

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340437

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340188

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340399

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: P340066

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.1		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P340382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P340617

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P340384

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.9		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P340619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P340428

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

Reference Method: SM 5310 B-00
Batch ID: P340502

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.6		P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P340428

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P340282

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1966626	Iron	104	101	P/P	80 - 120
1966626	Zinc	93.6	94.1	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P340282

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1966626	Arsenic	113	112	P/P	70 - 130
1966626	Cadmium	101	102	P/P	70 - 130
1966626	Chromium	109	105	P/P	70 - 130
1966626	Copper	100	99.8	P/P	70 - 130
1966626	Lead	110	110	P/P	70 - 130
1966626	Nickel	100	100	P/P	70 - 130
1966626	Silver	95.1	94.9	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967362	Ammonia-N	98.9	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340676

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967993	Ammonia-N	94.6	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967990	Kjeldahl Nitrogen	96.8	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967478	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340437

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967991	NO2NO3-N	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340188

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967615	Total-P	93.9	92.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340399

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967991	Total-P	95.0	94.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P340066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967798	O-Phosphate-P	97.9	98.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P340384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1966819	Fluoride	92.4	93.7	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P340619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1968447	Fluoride	98.4	94.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P340428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967160	Organic Carbon	102	104	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P340502

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967992	Organic Carbon	101	100	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P340428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967160	Organic Carbon	102	104	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P340282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966626	Iron	2.40	Spike	P	0 - 20
1966626	Zinc	0.543	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P340282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966626	Arsenic	0.364	Spike	P	0 - 20
1966626	Cadmium	1.06	Spike	P	0 - 20
1966626	Chromium	2.91	Spike	P	0 - 20
1966626	Copper	0.317	Spike	P	0 - 20
1966626	Lead	0.476	Spike	P	0 - 20
1966626	Nickel	0.0404	Spike	P	0 - 20
1966626	Silver	0.214	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967362	Ammonia-N	2.38	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967993	Ammonia-N	6.24	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P340259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967990	Kjeldahl Nitrogen	1.37	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967478	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340437

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967991	NO2NO3-N	0.454	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340188

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967615	Total-P	1.33	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P340399

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967991	Total-P	0.844	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P340066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967798	O-Phosphate-P	0.180	Spike	P	0 - 20

Reference Method: SM 2320 B-97

Batch ID: P340382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966819	Total Alkalinity	0.167	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97

Batch ID: P340617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1968447	Total Alkalinity	0.113	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97

Batch ID: P340384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966819	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97

Batch ID: P340619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1968447	Fluoride	2.90	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00

Batch ID: P340428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967160	Organic Carbon	1.78	Spike	P	0 - 20

Reference Method: SM 5310 B-00

Batch ID: P340502

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967992	Organic Carbon	0.670	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00 dissolved
Batch ID: P340428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967160	Organic Carbon	1.78	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: A82105
Included Lab Sample IDs: 1967994, 1967995, 1967996, 1967997

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A82163
Included Lab Sample IDs: 1967990

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A82219
Included Lab Sample IDs: 1968006, 1968007, 1968008, 1968009

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	99.5	99.5	P/P	90 - 110
Zinc	99.6	97.6	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A82220
Included Lab Sample IDs: 1967982, 1967983, 1967984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	96.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A82220
Included Lab Sample IDs: 1967982, 1967983, 1967984

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	109	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A82224
Included Lab Sample IDs: 1967990, 1967991, 1967992, 1967993

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82224

Included Lab Sample IDs: 1967990, 1967991, 1967992, 1967993

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	109	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A82231

Included Lab Sample IDs: 1967990, 1967991

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

Reference Method: SM 5310 B-00 dissolved

Run ID: A82231

Included Lab Sample IDs: 1967986, 1967987, 1967988, 1967989

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82232

Included Lab Sample IDs: 1967990, 1967991, 1967992, 1967993

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A82238

Included Lab Sample IDs: 1968006, 1968007, 1968008, 1968009

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	102	P/P	90 - 110
Arsenic	102	101	P/P	90 - 110
Cadmium	97.4	97.8	P/P	90 - 110
Cadmium	98.3	97.4	P/P	90 - 110
Copper	102	102	P/P	90 - 110
Copper	102	101	P/P	90 - 110
Lead	99.6	99.7	P/P	90 - 110
Nickel	102	101	P/P	90 - 110
Nickel	102	102	P/P	90 - 110
Silver	96.7	96.7	P/P	90 - 110
Silver	96.8	96.7	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A82257

Included Lab Sample IDs: 1967992, 1967993

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82258

Included Lab Sample IDs: 1967991, 1967992, 1967993

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A82263

Included Lab Sample IDs: 1968006, 1968007, 1968008, 1968009

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	103	103	P/P	90 - 110
Lead	103	97.8	P/P	90 - 110
Lead	97.8	103	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82295

Included Lab Sample IDs: 1967985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	97.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82295

Included Lab Sample IDs: 1967985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.1	96.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82297

Included Lab Sample IDs: 1967990, 1967991, 1967992

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82317

Included Lab Sample IDs: 1967993

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.5	99.9	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 200.7 Rev. 4.4	Iron	107	104 101			2.40

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
EPA 200.7 Rev. 4.4	Zinc	98.1	93.6	94.1			0.543
EPA 200.8 Rev. 5.4	Arsenic	103	113	112			0.364
	Cadmium	102	101	102			1.06
	Chromium	109	109	105			2.91
	Copper	104	100	99.8			0.317
	Lead	105	110	110			0.476
	Nickel	103	100	100			0.0404
	Silver	99.2	95.1	94.9			0.214
EPA 350.1 Rev. 2.0	Ammonia-N	103	98.9	103			2.38
	Ammonia-N	97.0	94.6	102			6.24
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.7	96.8	98.5			1.37
EPA 353.2 Rev. 2.0	NO2NO3-N	104	103	103			0.0
	NO2NO3-N	104	103	104			0.454
EPA 365.1 Rev. 2.0	Total-P	100	93.9	92.6			1.33
	Total-P	102	95.0	94.2			0.844
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.1	97.9	98.1			0.180
SM 2320 B-97	Total Alkalinity	99.3				0.167	
	Total Alkalinity	101				0.113	
SM 4500 F-C-97	Fluoride	93.9	92.4	93.7			0.946
	Fluoride	93.8	98.4	94.4			2.90
SM 5310 B-00	Organic Carbon	101	102	104			1.78
	Organic Carbon	99.6	101	100			0.670
SM 5310 B-00 dissolved	Organic Carbon	101	102	104			1.78

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	1968006, 1968007, 1968008, 1968009
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1968006, 1968007, 1968008, 1968009
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1967990, 1967991, 1967992, 1967993
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1967990, 1967991, 1967992, 1967993
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1967990, 1967991, 1967992, 1967993
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1967990, 1967991, 1967992, 1967993
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1967994, 1967995, 1967996, 1967997
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1967982, 1967983, 1967984, 1967985
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1967982, 1967983, 1967984, 1967985
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1967990, 1967991, 1967992, 1967993
SM 5310 B-00 dissolved / E31780	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	1967986, 1967987, 1967988, 1967989

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	02/15/2018	02/20/2018	Elliott D. Healy	02/21/2018	Betina Topolski	1968006, 1968007, 1968008, 1968009
EPA 200.8 Rev. 5.4	02/15/2018	02/20/2018	Elliott D. Healy	02/23/2018	Nadine Brooks	1968006, 1968007, 1968008, 1968009
EPA 350.1 Rev. 2.0	02/15/2018			02/26/2018	Julia Storbeck	1967990, 1967991, 1967992
	02/15/2018			02/27/2018	Ping Hua	1967993
EPA 351.2 Rev. 2.0	02/15/2018	02/20/2018	Adrian Shelby	02/22/2018	Joseph Suarez	1967990, 1967991, 1967992, 1967993
EPA 353.2 Rev. 2.0	02/15/2018			02/22/2018	Beverly Y. Sanders	1967990, 1967991, 1967992, 1967993
EPA 365.1 Rev. 2.0	02/15/2018	02/19/2018	Sima Feizi	02/20/2018	Lipi Saha	1967990
	02/15/2018	02/22/2018	Sima Feizi	02/23/2018	Lipi Saha	1967991, 1967992, 1967993
EPA 365.1 Rev. 2.0 dissolved	02/15/2018			02/15/2018 16:20	Megan Treadwell	1967994
	02/15/2018			02/15/2018 16:21	Megan Treadwell	1967995
	02/15/2018			02/15/2018 16:22	Megan Treadwell	1967996, 1967997
SM 2320 B-97	02/15/2018			02/22/2018	Dale L. Simmons	1967982, 1967983, 1967984
	02/15/2018			02/27/2018	Dale L. Simmons	1967985
SM 4500 F-C-97	02/15/2018			02/21/2018	Dale L. Simmons	1967982, 1967983, 1967984
	02/15/2018			02/26/2018	Dale L. Simmons	1967985
SM 5310 B-00	02/15/2018			02/22/2018	Megan Treadwell	1967990, 1967991
	02/15/2018			02/23/2018	Megan Treadwell	1967992, 1967993
SM 5310 B-00 dissolved	02/15/2018			02/22/2018	Megan Treadwell	1967986, 1967987, 1967988, 1967989