Chemical Analysis Report

SW-DIST-2016-07-22-02

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

Event Description: **Lake Rosalie-Ref Lake**
Request ID: **RQ-2016-07-18-54**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
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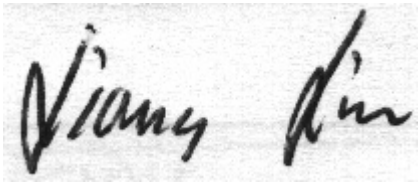
Certified by: Liang Lin, Environmental Administrator

Date Certified: 16-AUG-2016 14:37



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: LAKE ROSALIE **Collection Date/Time: 07/21/2016 13:40**

Field ID: TP12051L Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1818562	EPA 180.1 Rev. 2.0	Turbidity	2.8	A	NTU	P308500	
	EPA 300.0 Rev. 2.1	Chloride	12	A	mg Cl/L	P309263	
		Sulfate	8.4	A	mg SO4/L	P309266	
	SM 2120 B	Color (true)	86	A	PCU	P308489	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P308881	
	SM 2540 C-97	TDS	74		mg/L	P309039	
	SM 2540 D-97	TSS	4	I	mg/L	P309025	
	SM 4500 F-C-97	Fluoride	0.080	I	mg F/L	P308884	
1818563	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P308932	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P308979	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P309123	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P308696	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P309107	
1818564	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P308485	
1818567	EPA 200.7 Rev. 4.4	Calcium	6.66		mg/L	P308653	
		Iron	440		ug/L	P308653	
		Magnesium	3.29		mg/L	P308653	
		Potassium	3.1		mg/L	P308653	
		Sodium	6.0		mg/L	P308653	
		Zinc	5.0	U	ug/L	P308653	
	EPA 200.8 Rev. 5.4	Arsenic	0.75		ug/L	P308653	
		Cadmium	0.020	U	ug/L	P308653	
		Chromium	0.24		ug/L	P308653	
		Copper	0.39	I	ug/L	P308653	
		Lead	0.24		ug/L	P308653	
		Nickel	0.30		ug/L	P308653	
		Silver	0.0050	U	ug/L	P308653	

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: P308500

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308653

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: P308653

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: P308653

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309263

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309266

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308932

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308979

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309123

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308696

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: P308485

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

Reference Method: SM 2120 B
Batch ID: P308489

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P308881

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

Reference Method: SM 2540 C-97
Batch ID: P309039

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P309025

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P308884

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P309107

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: P308653

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	109		P	85 - 115
Iron	106		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	102		P	85 - 115
Sodium	105		P	85 - 115
Zinc	100		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308653

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	99.3		P	85 - 115
Chromium	97.7		P	85 - 115
Copper	98.9		P	85 - 115
Lead	98.6		P	85 - 115
Nickel	100		P	85 - 115
Silver	98.2		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309263

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309266

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308932

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: P308979

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: P309123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308696

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308485

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P308881

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

Reference Method: SM 4500 F-C-97
Batch ID: P308884

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P309107

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308653

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1817962	Calcium	109	106	P/P	80 - 120
1817962	Iron	107	103	P/P	80 - 120
1817962	Magnesium	109	104	P/P	80 - 120
1817962	Potassium	102	99.3	P/P	80 - 120
1817962	Sodium	103		P	80 - 120
1817962	Zinc	103	101	P/P	80 - 120
1818927	Calcium	108		P	80 - 120
1818927	Iron	107		P	80 - 120
1818927	Magnesium	102		P	80 - 120
1818927	Potassium	101		P	80 - 120
1818927	Sodium	104		P	80 - 120
1818927	Zinc	98.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308653

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1817962	Arsenic	99.6	99.9	P/P	80 - 120
1817962	Cadmium	100	99.5	P/P	80 - 120
1817962	Chromium	98.7	97.6	P/P	80 - 120
1817962	Copper	98.9	98.8	P/P	80 - 120
1817962	Lead	99.6	98.5	P/P	80 - 120
1817962	Nickel	100	99.9	P/P	80 - 120
1817962	Silver	98.2	98.0	P/P	80 - 120
1818927	Arsenic	101		P	80 - 120
1818927	Cadmium	101		P	80 - 120
1818927	Chromium	94.4		P	80 - 120
1818927	Copper	92.3		P	80 - 120
1818927	Lead	99.1		P	80 - 120
1818927	Nickel	94.0		P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308653

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818927	Silver	98.4		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309263

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818562	Chloride	97.8		P	90 - 110
1818618	Chloride	98.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309266

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818562	Sulfate	94.3		P	90 - 110
1818618	Sulfate	94.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308932

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818563	Ammonia-N	99.8	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308979

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818551	Kjeldahl Nitrogen	93.6	94.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818544	NO2NO3-N	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308696

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818547	Total-P	94.8	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308485

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818558	O-Phosphate-P	97.7	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P308884

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818863	Fluoride	98.1	97.6	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P309107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818479	Organic Carbon	95.9	96.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818562	Turbidity	2.83	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1817962	Calcium	2.33	Spike	P	0 - 20
1817962	Iron	3.86	Spike	P	0 - 20
1817962	Magnesium	3.96	Spike	P	0 - 20
1817962	Potassium	2.89	Spike	P	0 - 20
1817962	Sodium	1.87	Spike	P	0 - 20
1817962	Zinc	1.94	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1817962	Arsenic	0.305	Spike	P	0 - 20
1817962	Cadmium	0.412	Spike	P	0 - 20
1817962	Chromium	1.13	Spike	P	0 - 20
1817962	Copper	0.158	Spike	P	0 - 20
1817962	Lead	1.12	Spike	P	0 - 20
1817962	Nickel	0.256	Spike	P	0 - 20
1817962	Silver	0.216	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818562	Chloride	0.0540	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818562	Sulfate	0.922	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308932

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818563	Ammonia-N	1.24	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818551	Kjeldahl Nitrogen	0.879	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818544	NO2NO3-N	1.43	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308696

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818547	Total-P	6.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818558	O-Phosphate-P	0.917	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P308489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818562	Color (true)	1.26	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P308881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818863	Total Alkalinity	0.0457	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P309039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818516	TDS	3.50	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P308884

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818863	Fluoride	0.482	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P309107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818479	Organic Carbon	0.222	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: A70710
Included Lab Sample IDs: 1818564

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	98.4	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A70714
Included Lab Sample IDs: 1818562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.1	96.4	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70715
Included Lab Sample IDs: 1818562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A70804
Included Lab Sample IDs: 1818563

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A70820
Included Lab Sample IDs: 1818567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	101	P/P	90 - 110
Iron	99.6	100	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A70820
Included Lab Sample IDs: 1818567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Magnesium	99.7	101	P/P	90 - 110
Potassium	99.5	98.0	P/P	90 - 110
Sodium	101	98.2	P/P	90 - 110
Zinc	98.1	99.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A70823
Included Lab Sample IDs: 1818567

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	99.0	P/P	90 - 110
Cadmium	98.5	99.0	P/P	90 - 110
Chromium	98.0	98.4	P/P	90 - 110
Copper	101	99.5	P/P	90 - 110
Lead	97.6	96.7	P/P	90 - 110
Nickel	102	101	P/P	90 - 110
Silver	97.4	97.8	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A70836
Included Lab Sample IDs: 1818562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A70836
Included Lab Sample IDs: 1818562

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A70861
Included Lab Sample IDs: 1818563

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A70885
Included Lab Sample IDs: 1818562

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	99.5	P/P	90 - 110
Sulfate	99.8	96.2	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A70922
Included Lab Sample IDs: 1818563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70927
Included Lab Sample IDs: 1818563

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A71031
Included Lab Sample IDs: 1818563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.5	92.4	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 180.1 Rev. 2.0	Turbidity						2.83	
EPA 200.7 Rev. 4.4	Calcium	109	109	106	108			2.33
	Iron	106	107	103	107			3.86
	Magnesium	108	109	104	102			3.96
	Potassium	102	102	99.3	101			2.89
	Sodium	105	103	104				1.87
	Zinc	100	103	101	98.5			1.94
EPA 200.8 Rev. 5.4	Arsenic	101	99.6	99.9	101			0.305
	Cadmium	99.3	100	99.5	101			0.412
	Chromium	97.7	98.7	97.6	94.4			1.13
	Copper	98.9	98.9	98.8	92.3			0.158
	Lead	98.6	99.6	98.5	99.1			1.12
	Nickel	100	100	99.9	94.0			0.256
	Silver	98.2	98.2	98.0	98.4			0.216
EPA 300.0 Rev. 2.1	Chloride	98.3	97.8	98.0			0.0540	
	Sulfate	95.0	94.3	94.5			0.922	
EPA 350.1 Rev. 2.0	Ammonia-N	101	99.8	98.5				1.24
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	93.6	94.9				0.879
EPA 353.2 Rev. 2.0	NO2NO3-N	101	103	101				1.43
EPA 365.1 Rev. 2.0	Total-P	96.7	94.8	101				6.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	97.7	98.6				0.917
SM 2120 B	Color (true)						1.26	
SM 2320 B-97	Total Alkalinity	104					0.0457	
SM 2540 C-97	TDS						3.50	
SM 4500 F-C-97	Fluoride	97.8	98.1	97.6				0.482

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
SM 5310 B-00	Organic Carbon	102	95.9	96.2			0.222

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1818562
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1818567
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1818567
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1818562
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1818562
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1818563
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1818563
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1818563
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1818563
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1818564
SM 2120 B / E31780	True Color measured at 450 nm	1818562
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1818562
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1818562
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1818562
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1818562
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1818563

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	07/22/2016			07/22/2016 14:13	Rochelle Y Jackson	1818562
EPA 200.7 Rev. 4.4	07/22/2016	07/26/2016	Elliott D. Healy	07/28/2016	Joshua Ayres	1818567
EPA 200.8 Rev. 5.4	07/22/2016	07/26/2016	Elliott D. Healy	07/28/2016	Charles J. Peterson	1818567
EPA 300.0 Rev. 2.1	07/22/2016			08/04/2016	Ping Hua	1818562
EPA 350.1 Rev. 2.0	07/22/2016			07/29/2016	Julie Michelle Frank	1818563
EPA 351.2 Rev. 2.0	07/22/2016	08/02/2016	Sofia Elnemr	08/03/2016	Christopher Armour	1818563
EPA 353.2 Rev. 2.0	07/22/2016			08/03/2016	Virginia P. Brown	1818563
EPA 365.1 Rev. 2.0	07/22/2016	07/27/2016	Vijayalakshmi Reddy	07/28/2016	Lipi Saha	1818563
EPA 365.1 Rev. 2.0 dissolved	07/22/2016			07/22/2016 14:28	Julia Storbeck	1818564
SM 2120 B	07/22/2016			07/22/2016 14:59	Rochelle Y Jackson	1818562
SM 2320 B-97	07/22/2016			07/29/2016	Dale L. Simmons	1818562
SM 2540 C-97	07/22/2016			07/27/2016	Yijie Li	1818562
SM 2540 D-97	07/22/2016			07/27/2016	Yijie Li	1818562
SM 4500 F-C-97	07/22/2016			07/29/2016	Dale L. Simmons	1818562
SM 5310 B-00	07/22/2016			08/02/2016	Sofia Elnemr	1818563