

Chemical Analysis Report

NW-DIST-2018-07-26-01

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

Event Description: **Dune Lakes Run**
Request ID: **RQ-2018-07-23-29**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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Certified by: Colin Wright, Program Administrator

Date Certified: 14-AUG-2018 12:20

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored rectangular 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 group are included in this report: 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: ALLEN LAKE (MIDDLE)

Collection Date/Time: 07/25/2018 13:35

Field ID: G3NW0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2011083	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P349235	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P349591	
		Sulfate	3.9		mg SO4/L	P349594	
	SM 2120 B	Color (true)	170		PCU	P349231	
	SM 2320 B-97	Total Alkalinity	1.3	I	mg CaCO3/L	P349482	
	SM 2540 C-97	TDS	69		mg/L	P349478	
	SM 2540 D-97	TSS	2	U	mg/L	P349434	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P349486	
2011084	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P349525	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P349391	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P349408	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P349483	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P349689	
2011085	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P349240	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: HOGTOWN BAYOU AT CESSNA PARK

Collection Date/Time: 07/25/2018 14:20

Field ID: G3NW0152

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2011077	EPA 180.1 Rev. 2.0	Turbidity	7.0		NTU	P349235	
	SM 2320 B-97	Total Alkalinity	72		mg CaCO3/L	P349485	
	SM 2540 D-97	TSS	24	A	mg/L	P349437	
	SM 4500 F-C-97	Fluoride	0.59		mg F/L	P349489	
2011079	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P349521	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P349440	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P349443	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P349432	MS
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P349364	
2011081	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P349242	

Sample Location: Mack Bayou end of Bayou Rd

Collection Date/Time: 07/25/2018 14:45

Field ID: G3NW0144

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2011078	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P349235	
	SM 2320 B-97	Total Alkalinity	74		mg CaCO3/L	P349485	
	SM 2540 D-97	TSS	7	I	mg/L	P349437	
	SM 4500 F-C-97	Fluoride	0.60		mg F/L	P349489	
2011080	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P349521	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P349440	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P349443	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P349432	MS
	SM 5310 B-00	Organic Carbon	3.9		mg C/L	P349364	
2011082	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P349242	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349235

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349591

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349594

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349521

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349525

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349391

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349440

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349408

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349443

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349432

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349483

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349240

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349242

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

Reference Method: SM 2120 B
Batch ID: P349231

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P349482

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

Reference Method: SM 2320 B-97
Batch ID: P349485

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

Reference Method: SM 2540 C-97
Batch ID: P349478

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349434

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P349437

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P349486

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P349489

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P349364

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

Reference Method: SM 5310 B-00
Batch ID: P349689

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349591

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349594

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349521

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349525

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349391

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349440

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349408

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349443

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349432

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349483

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349240

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349242

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.7		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P349231

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.4		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P349482

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P349485

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P349486

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.8		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P349489

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

Reference Method: SM 5310 B-00
Batch ID: P349364

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P349689

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349591

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011059	Chloride	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349594

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011059	Sulfate	96.6		P	90 - 110
2011141	Sulfate	98.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010508	Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011026	Ammonia-N	102	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349391

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010996	Kjeldahl Nitrogen	90.3	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349440

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011079	Kjeldahl Nitrogen	103	93.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011060	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349443

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011079	NO2NO3-N	98.4	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349432

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010779	Total-P	89.4	90.7	F/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349483

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011060	Total-P	95.1	93.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349240

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011072	O-Phosphate-P	96.5	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349242

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011081	O-Phosphate-P	99.2	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P349486

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011483	Fluoride	96.8	95.4	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P349489

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011609	Fluoride	93.5	94.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P349364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2010509	Organic Carbon	95.2	96.4	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P349689

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2011487	Organic Carbon	98.0	99.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P349235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011058	Turbidity	6.03	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011059	Chloride	1.90	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011059	Sulfate	2.43	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010508	Ammonia-N	0.595	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P349525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011026	Ammonia-N	1.63	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010996	Kjeldahl Nitrogen	6.79	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P349440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011079	Kjeldahl Nitrogen	7.73	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011060	NO2NO3-N	0.464	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P349443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011079	NO2NO3-N	1.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010779	Total-P	1.33	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P349483

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011060	Total-P	2.19	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349240

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011072	O-Phosphate-P	0.504	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P349242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011081	O-Phosphate-P	0.303	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P349231

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010989	Color (true)	0.591	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P349482

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011483	Total Alkalinity	0.273	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P349485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011609	Total Alkalinity	1.34	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P349478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010992	TDS	3.06	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P349437

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011077	TSS	3.33	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P349486

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011483	Fluoride	0.959	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P349489

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011609	Fluoride	0.959	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P349364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2010509	Organic Carbon	0.957	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P349689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2011487	Organic Carbon	1.07	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: SM 2120 B
Run ID: A85507
Included Lab Sample IDs: 2011083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85508
Included Lab Sample IDs: 2011077, 2011078, 2011083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	104	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A85510
Included Lab Sample IDs: 2011081, 2011082, 2011085

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.8	96.5	P/P	90 - 110
O-Phosphate-P	97.4	96.8	P/P	90 - 110
O-Phosphate-P	98.8	97.1	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A85549
Included Lab Sample IDs: 2011079, 2011080

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85559
Included Lab Sample IDs: 2011084

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85560
Included Lab Sample IDs: 2011083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.1	99.5	P/P	90 - 110
Sulfate	97.6	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85582
Included Lab Sample IDs: 2011079, 2011080

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A85594

Included Lab Sample IDs: 2011084

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	91.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A85604

Included Lab Sample IDs: 2011079, 2011080

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	97.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A85607

Included Lab Sample IDs: 2011077, 2011078, 2011083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A85607

Included Lab Sample IDs: 2011077, 2011078, 2011083

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.5	P/P	90 - 110
Fluoride	99.5	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A85614

Included Lab Sample IDs: 2011079, 2011080

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A85621

Included Lab Sample IDs: 2011079, 2011080, 2011084

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A85636

Included Lab Sample IDs: 2011084

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A85704

Included Lab Sample IDs: 2011084

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	99.0	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	MS
EPA 180.1 Rev. 2.0	Turbidity				6.03	
EPA 300.0 Rev. 2.1	Chloride	105	98.6		1.90	
	Sulfate	105	96.6	98.3	2.43	
EPA 350.1 Rev. 2.0	Ammonia-N	102	103	102		0.595
	Ammonia-N	104	102	100		1.63
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	90.3	101		6.79
	Kjeldahl Nitrogen	99.4	103	93.4		7.73
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102		0.464
	NO2NO3-N	99.0	98.4	99.4		1.01
EPA 365.1 Rev. 2.0	Total-P	98.7	89.4	90.7		1.33
	Total-P	98.1	95.1	93.0		2.19
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.2	96.5	97.3		0.504
	O-Phosphate-P	98.7	99.2	98.9		0.303
SM 2120 B	Color (true)	98.4			0.591	
SM 2320 B-97	Total Alkalinity	103			0.273	
	Total Alkalinity	103			1.34	
SM 2540 C-97	TDS				3.06	
SM 2540 D-97	TSS				3.33	
SM 4500 F-C-97	Fluoride	94.8	96.8	95.4		0.959
	Fluoride	97.6	93.5	94.8		0.959
SM 5310 B-00	Organic Carbon	96.4	95.2	96.4		0.957
	Organic Carbon	95.9	98.0	99.1		1.07

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2011077, 2011078, 2011083
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2011083
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2011083
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2011079, 2011080, 2011084
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2011079, 2011080, 2011084
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2011079, 2011080, 2011084
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2011079, 2011080, 2011084
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2011081, 2011082, 2011085
SM 2120 B / E31780	True Color measured at 450 nm	2011083
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2011077, 2011078, 2011083
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2011083
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2011077, 2011078, 2011083
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2011077, 2011078, 2011083
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2011079, 2011080, 2011084

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	07/26/2018			07/26/2018 16:36	Blanca Fach	2011077, 2011078, 2011083
EPA 300.0 Rev. 2.1	07/26/2018			08/02/2018 12:43	Lipi Saha	2011083
EPA 350.1 Rev. 2.0	07/26/2018			08/01/2018 11:28	Ping Hua	2011079
	07/26/2018			08/01/2018 11:30	Ping Hua	2011080
	07/26/2018			08/01/2018 13:32	Ping Hua	2011084
EPA 351.2 Rev. 2.0	07/26/2018	07/30/2018 15:30	Adrian Shelby	07/31/2018 16:56	Joseph Suarez	2011084
	07/26/2018	07/31/2018 11:15	Adrian Shelby	08/01/2018 10:23	Joseph Suarez	2011079
	07/26/2018	07/31/2018 11:15	Adrian Shelby	08/01/2018 10:28	Joseph Suarez	2011080
EPA 353.2 Rev. 2.0	07/26/2018			07/30/2018 14:24	Lauren Bottorf	2011084
	07/26/2018			07/31/2018 11:16	Lauren Bottorf	2011079
	07/26/2018			07/31/2018 11:29	Lauren Bottorf	2011080
EPA 365.1 Rev. 2.0	07/26/2018	07/31/2018 10:30	Sima Feizi	08/01/2018 13:38	Beverly Y. Sanders	2011079
	07/26/2018	07/31/2018 10:30	Sima Feizi	08/01/2018 13:39	Beverly Y. Sanders	2011080
	07/26/2018	08/01/2018 12:35	Sima Feizi	08/02/2018 11:37	Beverly Y. Sanders	2011084
EPA 365.1 Rev. 2.0 dissolved	07/26/2018			07/26/2018 16:59	Julia Storbeck	2011081
	07/26/2018			07/26/2018 17:21	Julia Storbeck	2011082
	07/26/2018			07/26/2018 17:33	Julia Storbeck	2011085
SM 2120 B	07/26/2018			07/26/2018 16:18	Tanya Welborn	2011083
SM 2320 B-97	07/26/2018			07/31/2018 22:56	Dale L. Simmons	2011083
	07/26/2018			08/01/2018 07:00	Dale L. Simmons	2011077
	07/26/2018			08/01/2018 07:10	Dale L. Simmons	2011078
SM 2540 C-97	07/26/2018			07/27/2018 14:45	William L. Brown IV	2011083
SM 2540 D-97	07/26/2018			07/27/2018 14:57	William L. Brown IV	2011077, 2011078, 2011083
SM 4500 F-C-97	07/26/2018			07/31/2018 22:56	Dale L. Simmons	2011083
	07/26/2018			08/01/2018 06:06	Dale L. Simmons	2011077
	07/26/2018			08/01/2018 06:10	Dale L. Simmons	2011078
SM 5310 B-00	07/26/2018			07/28/2018 10:56	Megan Treadwell	2011079
	07/26/2018			07/28/2018 11:10	Megan Treadwell	2011080
	07/26/2018			08/03/2018 16:03	Julia Storbeck	2011084