

Chemical Analysis Report

NW-DIST-2016-09-23-02

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

Event Description: **Dune Lakes Run WBID 959G 1040A 881 959G 959B**
Request ID: **RQ-2016-09-19-30**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 20-OCT-2016 10:23

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: FULLER LAKE MIDDLE

Collection Date/Time: 09/22/2016 11:20

Field ID: G3NW0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834284	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P311760	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P312255	
		Sulfate	3.7		mg SO4/L	P312254	
	SM 2120 B	Color (true)	200		PCU	P311748	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P311965	
	SM 2540 C-97	TDS	52		mg/L	P312652	
	SM 2540 D-97	TSS	2	I	mg/L	P312181	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P311969	
1834287	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P312115	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P312214	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P312335	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P312434	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P312194	
1834290	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311763	

Sample Location: STALLWORTH LAKE CENTER

Collection Date/Time: 09/22/2016 12:00

Field ID: G3NW0083

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834293	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P311760	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P311964	
	SM 2540 D-97	TSS	4	I	mg/L	P312182	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P311968	
1834294	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P312119	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P312390	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312339	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P312830	
	SM 5310 B-00	Organic Carbon	9.1		mg C/L	P312194	
1834295	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311763	

Ref. Method and Comment:

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

Sample Location: ALLEN LAKE MIDDLE

Collection Date/Time: 09/22/2016 12:35

Field ID: G3NW0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834285	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P311760	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P312255	
		Sulfate	2.7		mg SO4/L	P312254	
	SM 2120 B	Color (true)	200		PCU	P311748	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P311965	
	SM 2540 C-97	TDS	51		mg/L	P312653	
	SM 2540 D-97	TSS	2	U	mg/L	P312182	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P311969	

Field ID: G3NW0085

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834288	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P312115	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P312214	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P312233	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P312434	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P312194	
1834291	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311763	

Ref. Method and Comment:

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

Sample Location: HOGTOWN DRAINAGE @ CHURCHILL BAYOU RD. **Collection Date/Time: 09/22/2016 13:55**

Field ID: G3NW0038

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834286	EPA 180.1 Rev. 2.0	Turbidity	16		NTU	P311760	
	EPA 300.0 Rev. 2.1	Chloride	1.3E+03		mg Cl/L	P312255	
		Sulfate	170		mg SO4/L	P312254	
	SM 2120 B	Color (true)	90		PCU	P311749	
	SM 2320 B-97	Total Alkalinity	70	A	mg CaCO3/L	P311966	
	SM 2540 C-97	TDS	2.25E+03		mg/L	P312653	
	SM 2540 D-97	TSS	4	I	mg/L	P312183	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P312095	
1834289	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P312900	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P312389	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.039		mg N/L	P312549	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P312525	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P312196	
1834292	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311764	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 4700 umhos/cm.

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: P311760

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P312254

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312255

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312115

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312119

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312900

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312214

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312389

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312390

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312233

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: P312335

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312339

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312549

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312434

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312525

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312830

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311763

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311764

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

Reference Method: SM 2120 B
Batch ID: P311748

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P311749

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P311964

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

Reference Method: SM 2320 B-97
Batch ID: P311965

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

Reference Method: SM 2320 B-97
Batch ID: P311966

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

Reference Method: SM 2540 C-97
Batch ID: P312652

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P312653

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P312181

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P312182

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P312183

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P311968

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P311969

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P312194

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

Reference Method: SM 5310 B-00
Batch ID: P312196

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: P312254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312255

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312115

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: P312119

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	108		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312900

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312900

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: P312214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	91.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312389

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312390

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312233

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312335

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312339

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312549

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: P312434

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.5		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312525

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312830

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311763

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311764

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

Reference Method: SM 2320 B-97
Batch ID: P311964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P311965

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P311966

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P311968

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.0		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P311969

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P312194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P312196

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834560	Sulfate	95.6		P	90 - 110
1834647	Sulfate	96.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834560	Chloride	97.8		P	90 - 110
1834647	Chloride	98.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312115

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834208	Ammonia-N	100	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834294	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312900

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1835656	Ammonia-N	95.3	98.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312214

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834306	Kjeldahl Nitrogen	94.2	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312389

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834498	Kjeldahl Nitrogen	109	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312390

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834497	Kjeldahl Nitrogen	98.3	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834253	NO2NO3-N	102	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834287	NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834294	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312549

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1833629	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834287	Total-P	97.0	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312525

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834222	Total-P	93.8	94.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834530	Total-P	104	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311763

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834258	O-Phosphate-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311764

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834292	O-Phosphate-P	103	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P311968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832596	Fluoride	99.1	101	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P311969

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834207	Fluoride	98.4	98.4	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834799	Fluoride	96.8	98.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P312194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834287	Organic Carbon	99.4	97.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P312196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1833837	Organic Carbon	88.9	91.6	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834245	Turbidity	4.44	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834560	Sulfate	2.06	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834560	Chloride	0.171	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834208	Ammonia-N	2.18	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834294	Ammonia-N	0.380	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1835656	Ammonia-N	2.23	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834306	Kjeldahl Nitrogen	2.44	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312389

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834498	Kjeldahl Nitrogen	7.59	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834497	Kjeldahl Nitrogen	1.67	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834253	NO2NO3-N	1.89	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834287	NO2NO3-N	1.94	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834294	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1833629	NO2NO3-N	0.488	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834288	Total-P	0.273	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834222	Total-P	1.09	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834530	Total-P	4.74	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834258	O-Phosphate-P	1.36	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834292	O-Phosphate-P	1.06	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P311748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834247	Color (true)	3.95	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P311749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834305	Color (true)	3.54	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P311964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832596	Total Alkalinity	0.0634	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P311965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834207	Total Alkalinity	0.0664	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P311966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834286	Total Alkalinity	0.356	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P312652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834069	TDS	1.39	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P312653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834304	TDS	1.75	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P312181

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834069	TSS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P311968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832596	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P311969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834207	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834799	Fluoride	1.47	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P312194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834287	Organic Carbon	0.964	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P312196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1833837	Organic Carbon	2.45	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

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A71806

Included Lab Sample IDs: 1834284, 1834285, 1834286

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.7	98.9	P/P	85 - 115
Color (true)	98.0	98.2	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A71808

Included Lab Sample IDs: 1834284, 1834285, 1834286, 1834293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A71809

Included Lab Sample IDs: 1834290, 1834291, 1834292, 1834295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	99.1	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A71875

Included Lab Sample IDs: 1834284, 1834285, 1834286, 1834293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	P/P	90 - 110
Total Alkalinity	103	101	P/P	90 - 110
Total Alkalinity	103	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71875

Included Lab Sample IDs: 1834284, 1834285, 1834293

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.5	P/P	90 - 110
Fluoride	99.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71882

Included Lab Sample IDs: 1834284, 1834285, 1834286

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	99.2	P/P	90 - 110
Chloride	98.4	100	P/P	90 - 110
Sulfate	96.7	99.0	P/P	90 - 110
Sulfate	99.0	98.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71907

Included Lab Sample IDs: 1834286

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71914

Included Lab Sample IDs: 1834287, 1834288, 1834294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	101	P/P	90 - 110
Ammonia-N	102	103	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A71942

Included Lab Sample IDs: 1834287, 1834288, 1834289, 1834294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	101	P/P	90 - 110
Organic Carbon	103	95.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71950

Included Lab Sample IDs: 1834288

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71983

Included Lab Sample IDs: 1834287, 1834294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110
NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A72035

Included Lab Sample IDs: 1834289

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72047

Included Lab Sample IDs: 1834287, 1834288

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.0	94.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72075

Included Lab Sample IDs: 1834289, 1834294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.2	98.7	P/P	90 - 110
Kjeldahl Nitrogen	98.7	94.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72124
Included Lab Sample IDs: 1834287, 1834288, 1834289

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72156
Included Lab Sample IDs: 1834289

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72178
Included Lab Sample IDs: 1834294

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

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

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				4.44	
EPA 300.0 Rev. 2.1	Chloride	97.6	97.8 98.3		0.171	
	Sulfate	94.9	95.6 96.3		2.06	
EPA 350.1 Rev. 2.0	Ammonia-N	102	100 102			2.18
	Ammonia-N	108	103 104			0.380
	Ammonia-N	101	95.3 98.5			2.23
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	91.7	94.2 97.6			2.44
	Kjeldahl Nitrogen	107	109 99.7			7.59
	Kjeldahl Nitrogen	102	98.3 101			1.67
EPA 353.2 Rev. 2.0	NO2NO3-N	103	102 99.4			1.89
	NO2NO3-N	106	102 100			1.94
	NO2NO3-N	108	106 106			0.0
	NO2NO3-N	103	103 102			0.488
EPA 365.1 Rev. 2.0	Total-P	98.5	97.0 97.3			0.273
	Total-P	101	93.8 94.9			1.09
	Total-P	103	104 96.8			4.74
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105	102 104			1.36
	O-Phosphate-P	102	103 104			1.06
SM 2120 B	Color (true)				3.95	
	Color (true)				3.54	
SM 2320 B-97	Total Alkalinity	103			0.0634	
	Total Alkalinity	103			0.0664	
	Total Alkalinity	103			0.356	
SM 2540 C-97	TDS				1.39	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
SM 2540 C-97	TDS					1.75	
SM 2540 D-97	TSS					0.0	
SM 4500 F-C-97	Fluoride	97.0	99.1	101			0.946
	Fluoride	97.9	98.4	98.4			0.0
	Fluoride	98.1	96.8	98.4			1.47
SM 5310 B-00	Organic Carbon	98.4	99.4	97.6			0.964
	Organic Carbon	98.6	88.9	91.6			2.45

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1834284, 1834285, 1834286, 1834293
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1834284, 1834285, 1834286
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1834284, 1834285, 1834286
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1834287, 1834288, 1834289, 1834294
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1834287, 1834288, 1834289, 1834294
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1834287, 1834288, 1834289, 1834294
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1834287, 1834288, 1834289, 1834294
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1834290, 1834291, 1834292, 1834295
SM 2120 B / E31780	True Color measured at 450 nm	1834284, 1834285, 1834286
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1834284, 1834285, 1834286, 1834293
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1834284, 1834285, 1834286
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1834284, 1834285, 1834286, 1834293
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1834284, 1834285, 1834286, 1834293
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1834287, 1834288, 1834289, 1834294

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	09/23/2016			09/23/2016 15:22	Sima Feizi	1834284, 1834285, 1834286, 1834293
EPA 300.0 Rev. 2.1	09/23/2016			10/01/2016	Ping Hua	1834284, 1834285, 1834286
EPA 350.1 Rev. 2.0	09/23/2016			09/28/2016	Sofia Elnemr	1834287, 1834288, 1834294
	09/23/2016			10/07/2016	Sofia Elnemr	1834289
EPA 351.2 Rev. 2.0	09/23/2016	09/30/2016	Adrian Shelby	10/06/2016	Christopher Armour	1834287, 1834288
	09/23/2016	10/04/2016	Adrian Shelby	10/06/2016	Christopher Armour	1834289, 1834294
EPA 353.2 Rev. 2.0	09/23/2016			09/30/2016	Beverly Y. Sanders	1834288
	09/23/2016			10/03/2016	Beverly Y. Sanders	1834287, 1834294
	09/23/2016			10/05/2016	Beverly Y. Sanders	1834289
EPA 365.1 Rev. 2.0	09/23/2016	10/05/2016	Vijayalakshmi Reddy	10/10/2016	Lipi Saha	1834287, 1834288, 1834289
	09/23/2016	10/11/2016	Vijayalakshmi Reddy	10/12/2016	Lipi Saha	1834294
EPA 365.1 Rev. 2.0 dissolved	09/23/2016			09/23/2016 16:36	Julia Storbeck	1834292
	09/23/2016			09/23/2016 16:51	Julia Storbeck	1834290
	09/23/2016			09/23/2016 16:52	Julia Storbeck	1834291
	09/23/2016			09/23/2016 16:53	Julia Storbeck	1834295
SM 2120 B	09/23/2016			09/23/2016 15:10	Blanca Fach	1834284
	09/23/2016			09/23/2016 15:11	Blanca Fach	1834285
	09/23/2016			09/23/2016 15:29	Blanca Fach	1834286
SM 2320 B-97	09/23/2016			09/26/2016	Dale L. Simmons	1834293
	09/23/2016			09/27/2016	Dale L. Simmons	1834284, 1834285, 1834286
SM 2540 C-97	09/23/2016			09/26/2016	Sima Feizi	1834284, 1834285, 1834286
SM 2540 D-97	09/23/2016			09/26/2016	Sima Feizi	1834284, 1834285, 1834286, 1834293
SM 4500 F-C-97	09/23/2016			09/26/2016	Dale L. Simmons	1834293
	09/23/2016			09/27/2016	Dale L. Simmons	1834284, 1834285
	09/23/2016			09/29/2016	Dale L. Simmons	1834286
SM 5310 B-00	09/23/2016			09/28/2016	Julie Michelle Frank	1834287
	09/23/2016			09/29/2016	Julie Michelle Frank	1834288, 1834289, 1834294