

Chemical Analysis Report

NE-DIST-2016-04-20-02

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

Event Description: **ALACHUA LAKES**
Request ID: **RQ-2016-04-18-15**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way
Jacksonville, FL 32256
Attn: J. Gruentzel

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 13-MAY-2016 17:58

A handwritten signature in black ink, appearing to read "Colin Wright", is written 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: 20020140 LAKE WAUBERG CENTER

Collection Date/Time: 04/19/2016 11:10

Field ID: 20020140

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1790706	EPA 180.1 Rev. 2.0	Turbidity	30		NTU	P302624	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P303123	
		Sulfate	0.20	U	mg SO4/L	P303125	
	SM 2120 B	Color (true)	32		PCU	P302598	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P302875	
	SM 2540 C-97	TDS	82		mg/L	P303353	
	SM 2540 D-97	TSS	58		mg/L	P303213	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P302878	
1790710	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P303369	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.0		mg N/L	P303457	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P303002	
	EPA 365.1 Rev. 2.0	Total-P	0.17		mg P/L	P303169	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P303343	
1790714	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302614	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: 20020140 LAKE WAUBERG CTR- DUP

Collection Date/Time: 04/19/2016 11:20

Field ID: 20020140 dup

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1790707	EPA 180.1 Rev. 2.0	Turbidity	30		NTU	P302624	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P303123	
		Sulfate	0.20	U	mg SO4/L	P303125	
	SM 2120 B	Color (true)	32		PCU	P302598	
	SM 2320 B-97	Total Alkalinity	17		mg CaCO3/L	P302875	
	SM 2540 C-97	TDS	82		mg/L	P303353	
	SM 2540 D-97	TSS	64		mg/L	P303213	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P302878	
1790711	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P303369	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.1		mg N/L	P303457	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P303002	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P303169	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P303343	
1790715	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302617	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: G3NE0002 HAMMOCK LAKE

Collection Date/Time: 04/19/2016 14:30

Field ID: G3NE0002 HAMMOCK LAKE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1790708	EPA 180.1 Rev. 2.0	Turbidity	16		NTU	P302624	
	EPA 300.0 Rev. 2.1	Chloride	39		mg Cl/L	P303123	
		Sulfate	8.4		mg SO4/L	P303125	

Field ID: G3NE0002 HAMMOCK LAKE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1790708	SM 2120 B	Color (true)	34		PCU	P302598	
	SM 2320 B-97	Total Alkalinity	73		mg CaCO3/L	P302875	
	SM 2540 C-97	TDS	171		mg/L	P303353	
	SM 2540 D-97	TSS	14	I	mg/L	P303213	
	SM 4500 F-C-97	Fluoride	0.25		mg F/L	P302878	
1790712	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P303369	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P303457	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P303002	
	EPA 365.1 Rev. 2.0	Total-P	0.26		mg P/L	P303169	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P303343	
1790716	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.091		mg P/L	P302617	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample. The PQL was elevated due to sample matrix interference.

Sample Location: G3NE0001 MOON LAKE

Collection Date/Time: 04/19/2016 13:00

Field ID: G3NE0001 MOON LAKE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1790709	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P302624	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P303123	
		Sulfate	14		mg SO4/L	P303125	
	SM 2120 B	Color (true)	45	A	PCU	P302594	
	SM 2320 B-97	Total Alkalinity	29	A	mg CaCO3/L	P302875	
	SM 2540 C-97	TDS	95		mg/L	P303353	
	SM 2540 D-97	TSS	2	U	mg/L	P303213	
	SM 4500 F-C-97	Fluoride	0.23		mg F/L	P302878	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P303369	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P303457	
1790713	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P303002	
	EPA 365.1 Rev. 2.0	Total-P	0.47		mg P/L	P303170	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P303343	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.38		mg P/L	P302617	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Field Blank

Collection Date/Time: 04/19/2016 13:30

Field ID: Field Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1790718	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P302624	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P303123	
		Sulfate	0.20	U	mg SO4/L	P303125	
	SM 2120 B	Color (true)	2.5	U	PCU	P302594	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302875	

Field ID: Field Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1790718	SM 2540 C-97	TDS	15	U	mg/L	P303352	
	SM 2540 D-97	TSS	2	U	mg/L	P303212	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302878	
1790719	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P303370	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P303458	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P303002	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P303170	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P303344	
1790720	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302617	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample. The result was confirmed on 05/04/2016.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P302624

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P303123

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P303125

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P303369

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P303370

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P303457

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303458

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303002

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303169

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303170

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302614

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302617

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

Reference Method: SM 2120 B
Batch ID: P302594

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P302598

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P302875

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P303352

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P303353

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303212

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303213

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P302878

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P303343

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

Reference Method: SM 5310 B-00
Batch ID: P303344

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: P303123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	96.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303125

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303125

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303369

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303370

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303457

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303458

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: P303002

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303169

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303170

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: P302614

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302617

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

Reference Method: SM 2320 B-97
Batch ID: P302875

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.8		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P302878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P303343

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

Reference Method: SM 5310 B-00
Batch ID: P303344

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790694	Chloride	93.4		P	90 - 110
1790709	Chloride	95.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303125

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790694	Sulfate	93.7		P	90 - 110
1790709	Sulfate	92.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303369

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790699	Ammonia-N	99.7	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303370

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790766	Ammonia-N	98.9	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303457

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790686	Kjeldahl Nitrogen	98.4	95.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790698	NO2NO3-N	99.5	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303169

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790672	Total-P	98.3	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790659	O-Phosphate-P	94.5	94.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790744	O-Phosphate-P	99.8	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P302878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790709	Fluoride	94.6	96.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P303343

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790568	Organic Carbon	96.0	96.8	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P303344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1790741	Organic Carbon	96.2	94.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P302624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790697	Turbidity	7.72	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790694	Chloride	0.161	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790694	Sulfate	0.597	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790699	Ammonia-N	4.10	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303370

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790766	Ammonia-N	0.209	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790686	Kjeldahl Nitrogen	2.02	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303458

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790743	Kjeldahl Nitrogen	1.81	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P303002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790698	NO2NO3-N	1.50	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303169

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790672	Total-P	0.942	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P303170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790713	Total-P	2.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790659	O-Phosphate-P	0.422	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790744	O-Phosphate-P	0.677	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790709	Color (true)	4.81	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302598

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790799	Color (true)	0.753	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P302875

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790709	Total Alkalinity	0.0277	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P303352

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790663	TDS	6.20	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P303353

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790685	TDS	8.22	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P302878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790709	Fluoride	0.979	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P303343

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790568	Organic Carbon	0.829	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P303344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1790741	Organic Carbon	0.791	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: A68985
Included Lab Sample IDs: 1790706, 1790707, 1790708, 1790709, 1790718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	98.5	P/P	90 - 115
Color (true)	99.6	100	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A68990
Included Lab Sample IDs: 1790714, 1790715, 1790716, 1790717, 1790720

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.6	P/P	90 - 110
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	98.3	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A68992

Included Lab Sample IDs: 1790706, 1790707, 1790708, 1790709, 1790718

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

Reference Method: SM 2320 B-97

Run ID: A69069

Included Lab Sample IDs: 1790706, 1790707, 1790708, 1790709, 1790718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.2	96.3	P/P	90 - 110
Total Alkalinity	96.3	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A69069

Included Lab Sample IDs: 1790706, 1790707, 1790708, 1790709, 1790718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.7	96.7	P/P	90 - 110
Fluoride	96.7	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69105

Included Lab Sample IDs: 1790710, 1790711, 1790712, 1790713, 1790719

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69144

Included Lab Sample IDs: 1790706, 1790707, 1790708, 1790709, 1790718

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	100	100	P/P	90 - 110
Sulfate	99.1	99.3	P/P	90 - 110
Sulfate	99.3	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69158

Included Lab Sample IDs: 1790710, 1790711, 1790712, 1790713

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69171

Included Lab Sample IDs: 1790719

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69207

Included Lab Sample IDs: 1790710, 1790711, 1790712, 1790713, 1790719

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	99.4	P/P	90 - 110
Ammonia-N	99.4	98.3	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69209

Included Lab Sample IDs: 1790710, 1790711, 1790712, 1790713, 1790719

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.6	96.0	P/P	90 - 110
Organic Carbon	96.0	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69327

Included Lab Sample IDs: 1790719

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.1	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69328

Included Lab Sample IDs: 1790710, 1790711, 1790712, 1790713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	96.5	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				7.72	
EPA 300.0 Rev. 2.1	Chloride	96.2	93.4 95.6		0.161	
	Sulfate	95.7	93.7 92.8		0.597	
EPA 350.1 Rev. 2.0	Ammonia-N	99.3	99.7 105			4.10
	Ammonia-N	98.8	98.9 98.6			0.209
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.0	98.4 95.1			2.02
	Kjeldahl Nitrogen	102				1.81
EPA 353.2 Rev. 2.0	NO2NO3-N	104	99.5 101			1.50
EPA 365.1 Rev. 2.0	Total-P	100	98.3 96.9			0.942
	Total-P	98.1				2.53
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	94.5 94.9			0.422
	O-Phosphate-P	103	99.8 101			0.677
SM 2120 B	Color (true)				4.81	
	Color (true)				0.753	
SM 2320 B-97	Total Alkalinity	98.8			0.0277	
SM 2540 C-97	TDS				6.20	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
SM 2540 C-97	TDS				8.22	
SM 4500 F-C-97	Fluoride	94.9	94.6	96.1		0.979
SM 5310 B-00	Organic Carbon	96.4	96.0	96.8		0.829
	Organic Carbon	99.4	96.2	94.8		0.791

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1790706, 1790707, 1790708, 1790709, 1790718
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1790706, 1790707, 1790708, 1790709, 1790718
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1790706, 1790707, 1790708, 1790709, 1790718
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1790710, 1790711, 1790712, 1790713, 1790719
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1790710, 1790711, 1790712, 1790713, 1790719
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1790710, 1790711, 1790712, 1790713, 1790719
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1790710, 1790711, 1790712, 1790713, 1790719
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1790714, 1790715, 1790716, 1790717, 1790720
SM 2120 B / E31780	True Color measured at 450 nm	1790706, 1790707, 1790708, 1790709, 1790718
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1790706, 1790707, 1790708, 1790709, 1790718
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1790706, 1790707, 1790708, 1790709, 1790718
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1790706, 1790707, 1790708, 1790709, 1790718
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1790706, 1790707, 1790708, 1790709, 1790718
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1790710, 1790711, 1790712, 1790713, 1790719

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	04/20/2016			04/20/2016 14:20	Sima Feizi	1790706, 1790707, 1790708, 1790709, 1790718
EPA 300.0 Rev. 2.1	04/20/2016			04/27/2016	Elisa J Lutz	1790706, 1790707, 1790708, 1790709, 1790718
EPA 350.1 Rev. 2.0	04/20/2016			05/02/2016	Diana M. Turner	1790710, 1790711, 1790712, 1790713, 1790719
EPA 351.2 Rev. 2.0	04/20/2016	05/04/2016	Sofia Elnemr	05/06/2016	Christopher Armour	1790710, 1790711, 1790712, 1790713, 1790719
EPA 353.2 Rev. 2.0	04/20/2016			04/26/2016	Peter D. Kaus	1790710, 1790711, 1790712, 1790713, 1790719
EPA 365.1 Rev. 2.0	04/20/2016	04/28/2016	Lipi Saha	04/28/2016	Lipi Saha	1790710, 1790711, 1790712, 1790713
	04/20/2016	04/28/2016	Lipi Saha	04/29/2016	Lipi Saha	1790719
EPA 365.1 Rev. 2.0 dissolved	04/20/2016			04/20/2016 14:26	Ping Hua	1790714
	04/20/2016			04/20/2016 14:27	Ping Hua	1790715
	04/20/2016			04/20/2016 14:28	Ping Hua	1790716
	04/20/2016			04/20/2016 15:37	Ping Hua	1790717
	04/20/2016			04/20/2016 15:42	Ping Hua	1790720
SM 2120 B	04/20/2016			04/20/2016 13:05	Rochelle Y Jackson	1790709
	04/20/2016			04/20/2016 13:06	Rochelle Y Jackson	1790718
	04/20/2016			04/20/2016 13:56	Rochelle Y Jackson	1790706
	04/20/2016			04/20/2016 13:57	Rochelle Y Jackson	1790707
	04/20/2016			04/20/2016 13:58	Rochelle Y Jackson	1790708
SM 2320 B-97	04/20/2016			04/22/2016	Dale L. Simmons	1790706, 1790707, 1790708, 1790709, 1790718
SM 2540 C-97	04/20/2016			04/22/2016	Yijie Li	1790706, 1790707, 1790708, 1790709, 1790718
SM 2540 D-97	04/20/2016			04/22/2016	Yijie Li	1790706, 1790707, 1790708, 1790709, 1790718
SM 4500 F-C-97	04/20/2016			04/22/2016	Dale L. Simmons	1790706, 1790707, 1790708, 1790709, 1790718
SM 5310 B-00	04/20/2016			04/29/2016	Sofia Elnemr	1790710
	04/20/2016			04/30/2016	Sofia Elnemr	1790711, 1790712, 1790713, 1790719