

Chemical Analysis Report

SO-DIST-2016-05-25-04

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

Event Description: **SMP: Highlands Lakes**

Request ID: **RQ-2016-05-09-11**

Customer: **SO-DIST**

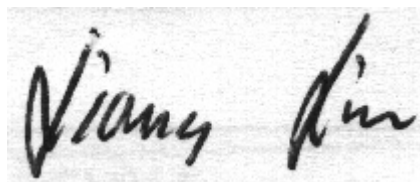
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-JUN-2016 11:43

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical 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: Lake Sirena @ West Side

Collection Date/Time: 05/24/2016 12:10

Field ID: G4HL052016-H

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1801996	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P305039	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P305473	
		Sulfate	25		mg SO4/L	P305476	
	SM 2120 B	Color (true)	6.8		PCU	P305065	
	SM 2320 B-97	Total Alkalinity	8.6		mg CaCO3/L	P305452	
	SM 2540 C-97	TDS	103		mg/L	P305632	
	SM 2540 D-97	TSS	2	I	mg/L	P305823	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P305459	
1802001	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P305504	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P305419	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305109	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P305711	
	SM 5310 B-00	Organic Carbon	5.4		mg C/L	P305779	
1802006	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305027	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 148 umhos/cm.

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

Sample Location: Lake Sirena @ North Side

Collection Date/Time: 05/24/2016 11:50

Field ID: G4HL052016-G

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1801997	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P305039	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P305473	
		Sulfate	25		mg SO4/L	P305476	
	SM 2120 B	Color (true)	5.6	I	PCU	P305065	
	SM 2320 B-97	Total Alkalinity	8.7		mg CaCO3/L	P305452	
	SM 2540 C-97	TDS	108		mg/L	P305632	
	SM 2540 D-97	TSS	3	I	mg/L	P305823	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P305459	
1802002	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P305504	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P305419	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305110	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P305711	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P305779	
1802007	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305027	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 148 umhos/cm.

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

Sample Location: Lake Sirena @ Middle

Collection Date/Time: 05/24/2016 12:00

Field ID: G4HL052016-F

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1801998	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P305039	

Field ID: G4HL052016-F

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1801998	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P305473	
		Sulfate	25		mg SO4/L	P305476	
		Color (true)	5.9	I	PCU	P305065	
	SM 2120 B	Total Alkalinity	8.9		mg CaCO3/L	P305452	
	SM 2540 C-97	TDS	93		mg/L	P305632	
	SM 2540 D-97	TSS	3	I	mg/L	P305823	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P305459	
1802003	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P305504	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P305419	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305110	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P305712	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P305779	
1802008	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305027	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 149 umhos/cm.

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

Sample Location: Lake Sirena @ East Side

Collection Date/Time: 05/24/2016 11:40

Field ID: G4HL052016-K

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1801999	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P305039	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P305473	
		Sulfate	25		mg SO4/L	P305476	
		Color (true)	6.1		PCU	P305065	
	SM 2120 B	Total Alkalinity	8.7		mg CaCO3/L	P305452	
	SM 2540 C-97	TDS	95		mg/L	P305632	
	SM 2540 D-97	TSS	3	I	mg/L	P305823	
1802004	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P305459	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P305504	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P305419	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305110	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P305712	
1802009	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P305779	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305027	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 148 umhos/cm.

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

Sample Location: Lake Sirena @ South Side

Collection Date/Time: 05/24/2016 12:20

Field ID: G4HL052016-J

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802000	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P305039	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P305473	
		Sulfate	25		mg SO4/L	P305476	

Field ID: G4HL052016-J

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802000	SM 2120 B	Color (true)	5.9	I	PCU	P305065	
	SM 2320 B-97	Total Alkalinity	8.6		mg CaCO3/L	P305452	
	SM 2540 C-97	TDS	91		mg/L	P305632	
	SM 2540 D-97	TSS	3	I	mg/L	P305823	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P305459	
1802005	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P305504	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P305419	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P305110	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P305712	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P305779	
1802010	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P305028	

Ref. Method and Comment:
 SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 148 umhos/cm.
 SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P305039

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P305473

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P305476

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P305504

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P305419

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P305109

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305110

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305711

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305712

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305027

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305028

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

Reference Method: SM 2120 B
Batch ID: P305065

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305452

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

Reference Method: SM 2540 C-97
Batch ID: P305632

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305823

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P305459

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P305779

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: P305473

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305476

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305504

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305419

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305109

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305110

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305711

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305711

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305712

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305027

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305028

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

Reference Method: SM 2320 B-97
Batch ID: P305452

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305459

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P305779

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801904	Chloride	99.1		P	90 - 110
1801920	Chloride	101		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801904	Sulfate	97.1		P	90 - 110
1801920	Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305504

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801925	Ammonia-N	99.7	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801928	Kjeldahl Nitrogen	96.2	95.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801864	NO2NO3-N	97.0	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802002	NO2NO3-N	99.0	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801911	Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802045	Total-P	99.0	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305027

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802007	O-Phosphate-P	97.4	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802010	O-Phosphate-P	99.4	99.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P305459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801861	Fluoride	96.7	97.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P305779

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802063	Organic Carbon	97.0	96.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801921	Turbidity	0.398	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801920	Chloride	0.252	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801920	Sulfate	5.26	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305504

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801925	Ammonia-N	0.543	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801928	Kjeldahl Nitrogen	0.791	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801864	NO2NO3-N	1.19	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802002	NO2NO3-N	2.00	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801911	Total-P	0.990	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802045	Total-P	2.52	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802007	O-Phosphate-P	1.43	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802010	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801922	Color (true)	1.87	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P305452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801861	Total Alkalinity	0.884	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P305632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802056	TDS	4.98	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P305459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801861	Fluoride	0.492	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P305779

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802063	Organic Carbon	0.758	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A69693
Included Lab Sample IDs: 1802006, 1802007, 1802008, 1802009, 1802010

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.5	P/P	90 - 110
O-Phosphate-P	99.4	100	P/P	90 - 110
O-Phosphate-P	99.7	99.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69695
Included Lab Sample IDs: 1801996, 1801997, 1801998, 1801999, 1802000

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

Reference Method: SM 2120 B
Run ID: A69704
Included Lab Sample IDs: 1801996, 1801997, 1801998, 1801999, 1802000

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.4	97.2	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A69717
Included Lab Sample IDs: 1802001, 1802002, 1802003, 1802004, 1802005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69717

Included Lab Sample IDs: 1802001, 1802002, 1802003, 1802004, 1802005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A69805

Included Lab Sample IDs: 1801996, 1801997, 1801998, 1801999, 1802000

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

Reference Method: SM 4500 F-C-97

Run ID: A69805

Included Lab Sample IDs: 1801996, 1801997, 1801998, 1801999, 1802000

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	99.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69814

Included Lab Sample IDs: 1801996, 1801997, 1801998, 1801999, 1802000

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	92.5	97.6	P/P	90 - 110
Sulfate	97.6	91.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69820

Included Lab Sample IDs: 1802001, 1802002, 1802003, 1802004, 1802005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	100	P/P	90 - 110
Ammonia-N	99.4	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69880

Included Lab Sample IDs: 1802001, 1802002, 1802003, 1802004, 1802005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.5	99.8	P/P	90 - 110
Kjeldahl Nitrogen	95.9	95.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69914

Included Lab Sample IDs: 1802001, 1802002, 1802003, 1802004, 1802005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.6	97.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69947

Included Lab Sample IDs: 1802001, 1802002, 1802003, 1802004, 1802005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.5	P/P	90 - 110
Total-P	99.0	98.0	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.398	
EPA 300.0 Rev. 2.1	Chloride	99.6	101 99.1		0.252	
	Sulfate	97.5	99.4 97.1		5.26	
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	99.7 100			0.543
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.0	96.2 95.1			0.791
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.0 99.0			1.19
	NO2NO3-N	100	99.0 101			2.00
EPA 365.1 Rev. 2.0	Total-P	105	104 105			0.990
	Total-P	101	99.0 102			2.52
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	97.4 98.8			1.43
	O-Phosphate-P	105	99.4 99.4			0.0
SM 2120 B	Color (true)				1.87	
SM 2320 B-97	Total Alkalinity	103			0.884	
SM 2540 C-97	TDS				4.98	
SM 4500 F-C-97	Fluoride	98.3	96.7 97.2			0.492
SM 5310 B-00	Organic Carbon	97.2	97.0 96.0			0.758

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1801996, 1801997, 1801998, 1801999, 1802000
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1801996, 1801997, 1801998, 1801999, 1802000
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1801996, 1801997, 1801998, 1801999, 1802000
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1802001, 1802002, 1802003, 1802004, 1802005
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1802001, 1802002, 1802003, 1802004, 1802005
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1802001, 1802002, 1802003, 1802004, 1802005
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1802001, 1802002, 1802003, 1802004, 1802005
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1802006, 1802007, 1802008, 1802009, 1802010
SM 2120 B / E31780	True Color measured at 450 nm	1801996, 1801997, 1801998, 1801999, 1802000

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1801996, 1801997, 1801998, 1801999, 1802000
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1801996, 1801997, 1801998, 1801999, 1802000
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1801996, 1801997, 1801998, 1801999, 1802000
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1801996, 1801997, 1801998, 1801999, 1802000
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1802001, 1802002, 1802003, 1802004, 1802005

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	05/25/2016			05/25/2016 16:22	Sima Feizi	1801996, 1801997, 1801998, 1801999, 1802000
EPA 300.0 Rev. 2.1	05/25/2016			06/02/2016	Elisa J Lutz	1801996, 1801997, 1801998, 1801999, 1802000
EPA 350.1 Rev. 2.0	05/25/2016			06/02/2016	Diana M. Turner	1802001, 1802002, 1802003, 1802004, 1802005
EPA 351.2 Rev. 2.0	05/25/2016	06/02/2016	Sofia Elnemr	06/06/2016	Christopher Armour	1802001, 1802002, 1802003, 1802004, 1802005
EPA 353.2 Rev. 2.0	05/25/2016			05/26/2016	Peter D. Kaus	1802001, 1802002, 1802003, 1802004, 1802005
EPA 365.1 Rev. 2.0	05/25/2016	06/07/2016	Vijayalakshmi Reddy	06/09/2016	Virginia P. Brown	1802001, 1802002, 1802003, 1802004, 1802005
EPA 365.1 Rev. 2.0 dissolved	05/25/2016			05/25/2016 14:39	Julia Storbeck	1802007
	05/25/2016			05/25/2016 14:43	Julia Storbeck	1802010
	05/25/2016			05/25/2016 14:57	Julia Storbeck	1802006
	05/25/2016			05/25/2016 14:58	Julia Storbeck	1802008
	05/25/2016			05/25/2016 15:17	Julia Storbeck	1802009
SM 2120 B	05/25/2016			05/25/2016 17:35	Chrisoulla Rakowski	1801996, 1801997
	05/25/2016			05/25/2016 17:36	Chrisoulla Rakowski	1801998
	05/25/2016			05/25/2016 17:37	Chrisoulla Rakowski	1801999
	05/25/2016			05/25/2016 17:38	Chrisoulla Rakowski	1802000
SM 2320 B-97	05/25/2016			06/01/2016	Dale L. Simmons	1801996, 1801997, 1801998, 1801999, 1802000
SM 2540 C-97	05/25/2016			05/27/2016	Yijie Li	1801996, 1801997, 1801998, 1801999, 1802000
SM 2540 D-97	05/25/2016			05/27/2016	Yijie Li	1801996, 1801997, 1801998, 1801999, 1802000
SM 4500 F-C-97	05/25/2016			06/01/2016	Dale L. Simmons	1801996, 1801997, 1801998, 1801999, 1802000
SM 5310 B-00	05/25/2016			06/08/2016	Diana M. Turner	1802001, 1802002, 1802003, 1802004, 1802005