

Chemical Analysis Report

SO-DIST-2016-01-12-01

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-2016-01-04-63**

Customer: **SO-DIST**

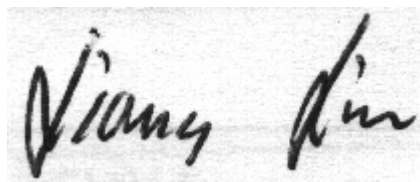
Project ID: **SMP**

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: 29-JAN-2016 14:45

A handwritten signature in black ink, appearing to read "Liang Lin", is written on a light-colored, textured 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 ADELAIDE CENTER SOUTH

Collection Date/Time: 01/11/2016 11:15

Field ID: SD011116-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762173	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P296970	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P297430	
		Sulfate	13		mg SO4/L	P297435	
	SM 2120 B	Color (true)	53		PCU	P296954	
	SM 2320 B-97	Total Alkalinity	5.7		mg CaCO3/L	P297129	
	SM 2540 C-97	TDS	76		mg/L	P297495	
	SM 2540 D-97	TSS	5	I	mg/L	P297421	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P297122	
1762179	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P297233	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P297113	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P297168	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P297134	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P297070	
1762185	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P296958	

Ref. Method and Comment:

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

SM 4500 F-C-97: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: LAKE LETTA @ CENTER

Collection Date/Time: 01/11/2016 12:30

Field ID: SD011116-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762174	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P296970	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P297430	
		Sulfate	23		mg SO4/L	P297435	
	SM 2120 B	Color (true)	16	A	PCU	P296954	
	SM 2320 B-97	Total Alkalinity	16		mg CaCO3/L	P297130	
	SM 2540 C-97	TDS	87		mg/L	P297496	
	SM 2540 D-97	TSS	2	I	mg/L	P297422	
	SM 4500 F-C-97	Fluoride	0.082	I	mg F/L	P297123	
1762180	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P297233	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P297113	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P297168	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P297134	
	SM 5310 B-00	Organic Carbon	5.9		mg C/L	P297554	
1762186	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P296958	

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: RED WATER LAKE @ CENTER

Collection Date/Time: 01/11/2016 14:40

Field ID: SD011116-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762175	EPA 180.1 Rev. 2.0	Turbidity	7.4		NTU	P296970	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P297430	

Field ID: SD011116-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762175	EPA 300.0 Rev. 2.1	Sulfate	28		mg SO4/L	P297435	
	SM 2120 B	Color (true)	22		PCU	P296954	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P297130	
	SM 2540 C-97	TDS	111		mg/L	P297496	
	SM 2540 D-97	TSS	6	I	mg/L	P297422	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P297123	
1762181	EPA 350.1 Rev. 2.0	Ammonia-N	0.045		mg N/L	P297233	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P297114	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.35		mg N/L	P297168	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P297134	
	SM 5310 B-00	Organic Carbon	9.6		mg C/L	P297554	
1762187	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P296958	

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: LITTLE BONNET LAKE @ CENTER

Collection Date/Time: 01/11/2016 12:05

Field ID: SD011116-4

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762176	EPA 180.1 Rev. 2.0	Turbidity	4.8		NTU	P296970	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P297430	
		Sulfate	20		mg SO4/L	P297435	
	SM 2120 B	Color (true)	18		PCU	P296954	
	SM 2320 B-97	Total Alkalinity	32		mg CaCO3/L	P297130	
	SM 2540 C-97	TDS	106		mg/L	P297496	
	SM 2540 D-97	TSS	5	I	mg/L	P297422	
	SM 4500 F-C-97	Fluoride	0.076	I	mg F/L	P297123	
1762182	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P297233	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P297114	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.57		mg N/L	P297168	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P297134	
	SM 5310 B-00	Organic Carbon	6.3		mg C/L	P297554	
1762188	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P296958	

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: LITTLE BONNET LAKE NW BY TEE BOX

Collection Date/Time: 01/11/2016 12:00

Field ID: SD011116-5

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762177	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P296970	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P297430	
		Sulfate	20		mg SO4/L	P297435	
	SM 2120 B	Color (true)	17		PCU	P296954	
	SM 2320 B-97	Total Alkalinity	32	A	mg CaCO3/L	P297130	
	SM 2540 C-97	TDS	112	A	mg/L	P297496	

Field ID: SD011116-5

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762177	SM 2540 D-97	TSS	5	I	mg/L	P297422	
	SM 4500 F-C-97	Fluoride	0.078	I	mg F/L	P297123	
1762183	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P297233	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P297114	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.59		mg N/L	P297168	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P297135	
	SM 5310 B-00	Organic Carbon	6.5		mg C/L	P297554	
1762189	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P296958	

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: FIELD BLANK

Collection Date/Time: 01/11/2016 12:30

Field ID: SD011116-FB

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1762178	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P296970	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P297430	
		Sulfate	0.20	U	mg SO4/L	P297435	
	SM 2120 B	Color (true)	2.5	U	PCU	P296954	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P297130	
	SM 2540 C-97	TDS	15	U	mg/L	P297494	
	SM 2540 D-97	TSS	2	U	mg/L	P297420	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P297123	
1762184	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P297234	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P297114	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P297168	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P297135	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P297554	
1762190	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P296958	

Ref. Method and Comment:

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: P296970

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P297430

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297435

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297233

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297234

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297113

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297114

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297168

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297134

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297135

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P296958

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P296954

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P297129

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

Reference Method: SM 2320 B-97
Batch ID: P297130

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

Reference Method: SM 2540 C-97
Batch ID: P297494

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P297495

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P297496

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P297420

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P297421

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P297422

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P297122

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P297123

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P297070

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

Reference Method: SM 5310 B-00
Batch ID: P297554

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: P297430

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297435

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297233

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297234

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297113

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297113

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297114

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297168

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297134

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297135

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P296958

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

Reference Method: SM 2320 B-97
Batch ID: P297129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.2		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P297130

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P297122

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.0		P	94 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P297123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P297070

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P297554

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297430

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762150	Chloride	104		P	90 - 110
1762173	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297435

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762150	Sulfate	100		P	90 - 110
1762173	Sulfate	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762137	Ammonia-N	98.6	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297234

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762193	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297113

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762083	Kjeldahl Nitrogen	96.7	97.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297114

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762181	Kjeldahl Nitrogen	103	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762165	NO2NO3-N	93.5	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297134

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762136	Total-P	104	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762183	Total-P	98.4	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P296958

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762186	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P297123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762177	Fluoride	96.6	97.7	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P297070

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762036	Organic Carbon	103		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P297554

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1762180	Organic Carbon	91.6	93.1	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P296970

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762164	Turbidity	8.24	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297430

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762150	Chloride	0.232	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P297435

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762150	Sulfate	0.0507	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762137	Ammonia-N	1.80	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P297234

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762193	Ammonia-N	0.358	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762083	Kjeldahl Nitrogen	0.732	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P297114

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762181	Kjeldahl Nitrogen	1.60	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P297168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762165	NO2NO3-N	1.62	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762136	Total-P	4.97	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P297135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762183	Total-P	0.362	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P296958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762186	O-Phosphate-P	0.885	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P296954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762174	Color (true)	3.02	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P297129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762476	Total Alkalinity	1.61	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P297130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762177	Total Alkalinity	3.44	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P297494

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762027	TDS	6.48	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P297495

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762032	TDS	4.43	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P297496

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762177	TDS	4.44	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P297122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762476	Fluoride	0.483	Spike	P	0 - 3.7

Reference Method: SM 4500 F-C-97
Batch ID: P297123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762177	Fluoride	0.979	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P297070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762036	Organic Carbon	2.38	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P297554

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1762180	Organic Carbon	1.19	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: A67051
Included Lab Sample IDs: 1762173, 1762174, 1762175, 1762176, 1762177, 1762178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.7	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67052
Included Lab Sample IDs: 1762185, 1762186, 1762187, 1762188, 1762189, 1762190

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	99.6	P/P	90 - 110
O-Phosphate-P	98.5	98.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A67056

Included Lab Sample IDs: 1762173, 1762174, 1762175, 1762176, 1762177, 1762178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A67083

Included Lab Sample IDs: 1762179

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

Reference Method: SM 4500 F-C-97

Run ID: A67106

Included Lab Sample IDs: 1762173, 1762174, 1762175, 1762176, 1762177, 1762178

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

Reference Method: SM 2320 B-97

Run ID: A67108

Included Lab Sample IDs: 1762173, 1762174, 1762175, 1762176, 1762177, 1762178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67118

Included Lab Sample IDs: 1762179, 1762180, 1762181, 1762182, 1762183, 1762184

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67146

Included Lab Sample IDs: 1762179, 1762180, 1762181, 1762182, 1762183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110
Total-P	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67151

Included Lab Sample IDs: 1762184

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67153

Included Lab Sample IDs: 1762179, 1762180, 1762181, 1762182, 1762183, 1762184

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67153

Included Lab Sample IDs: 1762179, 1762180, 1762181, 1762182, 1762183, 1762184

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	102	P/P	90 - 110
Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67154

Included Lab Sample IDs: 1762179, 1762180, 1762181, 1762182, 1762183, 1762184

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A67217

Included Lab Sample IDs: 1762173, 1762174, 1762175, 1762176, 1762177, 1762178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Chloride	102	102	P/P	90 - 110
Sulfate	103	98.6	P/P	90 - 110
Sulfate	98.6	99.0	P/P	90 - 110
Sulfate	99.0	98.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A67265

Included Lab Sample IDs: 1762180, 1762181, 1762182, 1762183, 1762184

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.4	93.8	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				8.24	
EPA 300.0 Rev. 2.1	Chloride	103	104	99.7	0.232	
	Sulfate	101	100	96.1	0.0507	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	98.6	101		1.80
	Ammonia-N	98.7	102	103		0.358
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.6	96.7	97.9		0.732
	Kjeldahl Nitrogen	100	103	99.8		1.60
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	93.5	92.0		1.62
EPA 365.1 Rev. 2.0	Total-P	99.8	104	98.5		4.97
	Total-P	95.9	98.4	98.7		0.362

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	101	102		0.885
SM 2120 B	Color (true)				3.02	
SM 2320 B-97	Total Alkalinity	99.2			1.61	
	Total Alkalinity	102			3.44	
SM 2540 C-97	TDS				6.48	
	TDS				4.43	
	TDS				4.44	
SM 4500 F-C-97	Fluoride	97.0				0.483
	Fluoride	96.5	96.6	97.7		0.979
SM 5310 B-00	Organic Carbon	104	103			2.38
	Organic Carbon	94.4	91.6	93.1		1.19

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1762179, 1762180, 1762181, 1762182, 1762183, 1762184
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1762179, 1762180, 1762181, 1762182, 1762183, 1762184
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1762179, 1762180, 1762181, 1762182, 1762183, 1762184
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1762179, 1762180, 1762181, 1762182, 1762183, 1762184
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1762185, 1762186, 1762187, 1762188, 1762189, 1762190
SM 2120 B / E31780	True Color measured at 450 nm	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1762179, 1762180, 1762181, 1762182, 1762183, 1762184

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	01/12/2016			01/12/2016 14:43	Sima Feizi	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
EPA 300.0 Rev. 2.1	01/12/2016			01/20/2016	Ping Hua	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
EPA 350.1 Rev. 2.0	01/12/2016			01/19/2016	Diana M. Turner	1762179, 1762180, 1762181, 1762182, 1762183, 1762184
EPA 351.2 Rev. 2.0	01/12/2016	01/15/2016	Christopher Armour	01/19/2016	Bryan A. Werth	1762179, 1762180, 1762181, 1762182, 1762183, 1762184
EPA 353.2 Rev. 2.0	01/12/2016			01/15/2016	Diana M. Turner	1762179, 1762180, 1762181, 1762182, 1762183, 1762184
EPA 365.1 Rev. 2.0	01/12/2016	01/15/2016	Christopher Armour	01/19/2016	Lipi Saha	1762179, 1762180, 1762181, 1762182, 1762183, 1762184
EPA 365.1 Rev. 2.0 dissolved	01/12/2016			01/12/2016 12:56	Julia Storbeck	1762186
	01/12/2016			01/12/2016 12:59	Julia Storbeck	1762190
	01/12/2016			01/12/2016 13:25	Julia Storbeck	1762185, 1762187
	01/12/2016			01/12/2016 13:26	Julia Storbeck	1762188
	01/12/2016			01/12/2016 13:27	Julia Storbeck	1762189
SM 2120 B	01/12/2016			01/12/2016 14:06	Rochelle Y Jackson	1762173
	01/12/2016			01/12/2016 14:08	Rochelle Y Jackson	1762174
	01/12/2016			01/12/2016 14:09	Rochelle Y Jackson	1762175, 1762176
	01/12/2016			01/12/2016 14:10	Rochelle Y Jackson	1762177
	01/12/2016			01/12/2016 14:11	Rochelle Y Jackson	1762178
SM 2320 B-97	01/12/2016			01/14/2016	Dale L. Simmons	1762173
	01/12/2016			01/15/2016	Dale L. Simmons	1762174, 1762175, 1762176, 1762177, 1762178
SM 2540 C-97	01/12/2016			01/15/2016	Yijie Li	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
SM 2540 D-97	01/12/2016			01/15/2016	Yijie Li	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
SM 4500 F-C-97	01/12/2016			01/14/2016	Dale L. Simmons	1762173, 1762174, 1762175, 1762176, 1762177, 1762178
SM 5310 B-00	01/12/2016			01/14/2016	Sofia Elnemr	1762179
	01/12/2016			01/25/2016	Sofia Elnemr	1762180, 1762181, 1762182, 1762183, 1762184