

Chemical Analysis Report

SW-DIST-2016-03-03-01

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

Event Description: **1423A,1423B,1409A,1420,1432A**

Request ID: **RQ-2016-02-29-27**

Customer: **SW-DIST**

Project ID: **SMP**

Send Reports to:

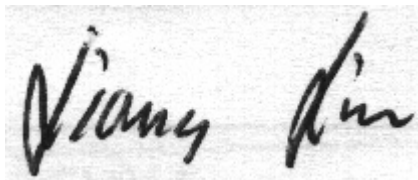
FL Dept. of Environmental Protection
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13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Stephen Clingerman

For additional information please contact

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 22-MAR-2016 17:53

A handwritten signature in black ink, appearing to read "Liang Lin", is shown 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: G5SW0102

Collection Date/Time: 03/02/2016 09:30

Field ID: G5SW0102

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776721	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P299700	
	EPA 300.0 Rev. 2.1	Chloride	150		mg Cl/L	P299993	
		Sulfate	40		mg SO4/L	P299995	
	SM 2120 B	Color (true)	16		PCU	P299715	
	SM 2320 B-97	Total Alkalinity	187		mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	526		mg/L	P300232	
	SM 2540 D-97	TSS	6	I	mg/L	P300197	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P300249	
1776728	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P300432	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P300095	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300164	
	EPA 365.1 Rev. 2.0	Total-P	0.069		mg P/L	P300204	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P300106	
1776735	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P299687	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

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

Sample Location: G5SW0030

Collection Date/Time: 03/02/2016 10:35

Field ID: G5SW0030

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776722	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P299700	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P299993	
		Sulfate	0.94		mg SO4/L	P299995	
	SM 2120 B	Color (true)	150		PCU	P299715	
	SM 2320 B-97	Total Alkalinity	71		mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	157	A	mg/L	P300232	
	SM 2540 D-97	TSS	2	U	mg/L	P300197	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P300249	
1776729	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P300432	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P300095	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300164	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P300204	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P300106	
1776736	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P299687	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

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

Sample Location: G5SW0101

Collection Date/Time: 03/02/2016 11:20

Field ID: G5SW0101

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776723	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P299700	

Field ID: G5SW0101

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776723	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P299993	
		Sulfate	1.9		mg SO4/L	P299995	
	SM 2120 B	Color (true)	41	A	PCU	P299715	
	SM 2320 B-97	Total Alkalinity	26	A	mg CaCO3/L	P300054	
	SM 2540 C-97	TDS	100		mg/L	P300232	
	SM 2540 D-97	TSS	2	I	mg/L	P300197	
	SM 4500 F-C-97	Fluoride	0.080	I	mg F/L	P300249	
1776730	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P300432	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.87		mg N/L	P300095	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300164	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P300204	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P300106	
1776737	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299687	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

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

Sample Location: G5SW0100

Collection Date/Time: 03/02/2016 11:30

Field ID: G5SW0100

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776724	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P299700	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P299993	
		Sulfate	1.9		mg SO4/L	P299995	
	SM 2120 B	Color (true)	40		PCU	P299715	
	SM 2320 B-97	Total Alkalinity	26	A	mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	100		mg/L	P300232	
	SM 2540 D-97	TSS	3	I	mg/L	P300197	
1776731	SM 4500 F-C-97	Fluoride	0.079	I	mg F/L	P300249	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P300432	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P300095	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300165	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P300206	
1776738	SM 5310 B-00	Organic Carbon	12		mg C/L	P300106	
		O-Phosphate-P	0.004	U	mg P/L	P299687	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

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

Sample Location: G5SW0104

Collection Date/Time: 03/02/2016 13:00

Field ID: G5SW0104

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776725	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P299700	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P299993	
		Sulfate	1.0		mg SO4/L	P299995	

Field ID: G5SW0104

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776725	SM 2120 B	Color (true)	33		PCU	P299715	
	SM 2320 B-97	Total Alkalinity	4.0		mg CaCO3/L	P300245	
	SM 2540 C-97	TDS	40		mg/L	P300232	
	SM 2540 D-97	TSS	2	U	mg/L	P300197	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P300249	
1776732	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P300432	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P300097	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300165	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P300206	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P300106	
1776739	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299687	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

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

Sample Location: G5SW0108

Collection Date/Time: 03/02/2016 13:45

Field ID: G5SW0108

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776726	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P299700	
	EPA 300.0 Rev. 2.1	Chloride	16	A	mg Cl/L	P299993	
		Sulfate	0.31	I	mg SO4/L	P299995	
	SM 2120 B	Color (true)	29		PCU	P299715	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P300268	
	SM 2540 C-97	TDS	63		mg/L	P300232	
	SM 2540 D-97	TSS	2	U	mg/L	P300197	
	SM 4500 F-C-97	Fluoride	0.063	I	mg F/L	P300254	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P300432	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P300097	
1776733	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P300165	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P300206	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P300106	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299687	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.

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

Sample Location: G5SW0107

Collection Date/Time: 03/02/2016 14:00

Field ID: G5SW0107

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776727	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P299700	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P299993	
		Sulfate	0.29	I	mg SO4/L	P299995	
	SM 2120 B	Color (true)	29		PCU	P299715	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P300268	

Field ID: G5SW0107

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1776727	SM 2540 C-97	TDS	60		mg/L	P300232	
	SM 2540 D-97	TSS	2	U	mg/L	P300197	
	SM 4500 F-C-97	Fluoride	0.063	I	mg F/L	P300254	
1776734	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P300432	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P300097	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P300165	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P300206	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P300106	
1776741	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299688	

Ref. Method and Comment:
 EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.
 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: P299700

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P299993

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P299995

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P300432

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P300095

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P300097

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300164

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300165

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300204

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300206

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299687

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299688

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

Reference Method: SM 2120 B
Batch ID: P299715

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P300054

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

Reference Method: SM 2320 B-97
Batch ID: P300245

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P300268

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

Reference Method: SM 2540 C-97
Batch ID: P300232

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300197

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P300254

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P300106

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: P299993

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299995

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300432

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300432

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: P300095

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300097

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300164

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: P300165

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: P300204

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300206

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299687

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299688

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P300054

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.9		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P300245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P300268

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

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	94 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P300254

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P300106

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299993

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776726	Chloride	103		P	90 - 110
1776795	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776726	Sulfate	100		P	90 - 110
1776795	Sulfate	100		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300432

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776708	Ammonia-N	100	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300095

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776586	Kjeldahl Nitrogen	94.7	92.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776732	Kjeldahl Nitrogen	99.9	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776707	NO2NO3-N	96.4	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300165

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776731	NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300204

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776555	Total-P	104	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300206

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776731	Total-P	103	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776735	O-Phosphate-P	96.7	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299688

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776814	O-Phosphate-P	102	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P300249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776724	Fluoride	98.5	99.1	P/P	94 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P300254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1777174	Fluoride	97.8	97.2	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P300106

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1776314	Organic Carbon	97.2		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P299700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776607	Turbidity	8.45	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299993

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776726	Chloride	0.0255	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776708	Ammonia-N	0.426	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776586	Kjeldahl Nitrogen	1.45	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776732	Kjeldahl Nitrogen	3.50	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776707	NO2NO3-N	1.43	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300165

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776731	NO2NO3-N	0.501	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300204

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776555	Total-P	3.11	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300206

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776731	Total-P	3.89	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776735	O-Phosphate-P	2.38	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776814	O-Phosphate-P	1.07	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P299715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776723	Color (true)	1.41	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P300054

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776723	Total Alkalinity	0.695	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P300245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776724	Total Alkalinity	1.16	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
 Batch ID: P300268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1777174	Total Alkalinity	0.524	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
 Batch ID: P300232

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776722	TDS	1.27	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P300249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776724	Fluoride	0.490	Spike	P	0 - 3.7

Reference Method: SM 4500 F-C-97
 Batch ID: P300254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1777174	Fluoride	0.467	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
 Batch ID: P300106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1776314	Organic Carbon	0.521	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: A67978
 Included Lab Sample IDs: 1776735, 1776736, 1776737, 1776738, 1776739, 1776740, 1776741

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.9	P/P	90 - 110
O-Phosphate-P	98.8	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A67983

Included Lab Sample IDs: 1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727

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

Reference Method: SM 2120 B

Run ID: A67985

Included Lab Sample IDs: 1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.7	95.5	P/P	85 - 115
Color (true)	96.9	96.8	P/P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A68089

Included Lab Sample IDs: 1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.2	99.9	P/P	90 - 110
Chloride	99.9	98.9	P/P	90 - 110
Sulfate	98.2	98.8	P/P	90 - 110
Sulfate	98.8	97.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A68109

Included Lab Sample IDs: 1776723

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	98.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A68126

Included Lab Sample IDs: 1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.7	94.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68145

Included Lab Sample IDs: 1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734

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

Reference Method: SM 2320 B-97

Run ID: A68179

Included Lab Sample IDs: 1776721, 1776722, 1776724, 1776725

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.9	P/P	90 - 110
Total Alkalinity	98.9	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A68179

Included Lab Sample IDs: 1776721, 1776722, 1776723, 1776724, 1776725

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

Reference Method: SM 4500 F-C-97

Run ID: A68180

Included Lab Sample IDs: 1776726, 1776727

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68184

Included Lab Sample IDs: 1776728

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

Reference Method: SM 2320 B-97

Run ID: A68185

Included Lab Sample IDs: 1776726, 1776727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.0	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68203

Included Lab Sample IDs: 1776729, 1776730, 1776731, 1776732, 1776733, 1776734

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	100	P/P	90 - 110
Total-P	98.0	98.5	P/P	90 - 110
Total-P	98.5	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68211

Included Lab Sample IDs: 1776732, 1776733, 1776734

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.2	94.7	P/P	90 - 110
Kjeldahl Nitrogen	97.5	96.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68230

Included Lab Sample IDs: 1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.8	99.5	P/P	90 - 110
Ammonia-N	99.1	98.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68241

Included Lab Sample IDs: 1776728, 1776729, 1776730, 1776731

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.5	94.3	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				8.45	
EPA 300.0 Rev. 2.1	Chloride	104	103 102		0.0255	
	Sulfate	100	100 100			
EPA 350.1 Rev. 2.0	Ammonia-N	98.7	100 99.5			0.426
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.5	94.7 92.0			1.45
	Kjeldahl Nitrogen	98.3	99.9 105			3.50
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.4 98.4			1.43
	NO2NO3-N	100	99.5 100			0.501
EPA 365.1 Rev. 2.0	Total-P	104	104 101			3.11
	Total-P	97.9	103 98.6			3.89
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.8	96.7 99.2			2.38
	O-Phosphate-P	103	102 103			1.07
SM 2120 B	Color (true)				1.41	
SM 2320 B-97	Total Alkalinity	99.9			0.695	
	Total Alkalinity	101			1.16	
	Total Alkalinity	102			0.524	
SM 2540 C-97	TDS				1.27	
SM 4500 F-C-97	Fluoride	98.4	98.5 99.1			0.490
	Fluoride	100	97.8 97.2			0.467
SM 5310 B-00	Organic Carbon	94.0	97.2			0.521

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1776735, 1776736, 1776737, 1776738, 1776739, 1776740, 1776741

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2120 B / E31780	True Color measured at 450 nm	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734

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	03/03/2016			03/03/2016 14:38	Sima Feizi	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
EPA 300.0 Rev. 2.1	03/03/2016			03/08/2016	Julia Storbeck	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
EPA 350.1 Rev. 2.0	03/03/2016			03/15/2016	Diana M. Turner	1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734
EPA 351.2 Rev. 2.0	03/03/2016	03/10/2016	Christopher Armour	03/14/2016	Rochelle Y Jackson	1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734
EPA 353.2 Rev. 2.0	03/03/2016			03/10/2016	Peter D. Kaus	1776728, 1776729, 1776730, 1776731, 1776732, 1776733, 1776734
EPA 365.1 Rev. 2.0	03/03/2016	03/11/2016	Christopher Armour	03/11/2016	Lipi Saha	1776728
	03/03/2016	03/11/2016	Christopher Armour	03/14/2016	Lipi Saha	1776729, 1776730, 1776731, 1776732, 1776733, 1776734
EPA 365.1 Rev. 2.0 dissolved	03/03/2016			03/03/2016 13:34	Julia Storbeck	1776735
	03/03/2016			03/03/2016 14:24	Julia Storbeck	1776736
	03/03/2016			03/03/2016 14:25	Julia Storbeck	1776737, 1776738
	03/03/2016			03/03/2016 14:26	Julia Storbeck	1776739
	03/03/2016			03/03/2016 14:27	Julia Storbeck	1776740
	03/03/2016			03/03/2016 14:28	Julia Storbeck	1776741
SM 2120 B	03/03/2016			03/03/2016 15:21	Blanca Fach	1776723
	03/03/2016			03/03/2016 15:22	Blanca Fach	1776721
	03/03/2016			03/03/2016 15:23	Blanca Fach	1776724
	03/03/2016			03/03/2016 15:24	Blanca Fach	1776725
	03/03/2016			03/03/2016 15:25	Blanca Fach	1776726, 1776727
	03/03/2016			03/03/2016 15:58	Blanca Fach	1776722
SM 2320 B-97	03/03/2016			03/09/2016	Dale L. Simmons	1776723
	03/03/2016			03/10/2016	Dale L. Simmons	1776721, 1776722, 1776724, 1776725
	03/03/2016			03/13/2016	Dale L. Simmons	1776726, 1776727
SM 2540 C-97	03/03/2016			03/07/2016	Sima Feizi	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
SM 2540 D-97	03/03/2016			03/07/2016	Sima Feizi	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
SM 4500 F-C-97	03/03/2016			03/10/2016	Dale L. Simmons	1776721, 1776722, 1776723, 1776724, 1776725, 1776726, 1776727
SM 5310 B-00	03/03/2016			03/08/2016	Sofia Elnemr	1776728
	03/03/2016			03/09/2016	Sofia Elnemr	1776729, 1776730, 1776731, 1776732, 1776733, 1776734