

Chemical Analysis Report

SW-DIST-2016-03-16-01

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

Event Description: **1329Z, 1329P, 1329A**

Request ID: **RQ-2016-03-14-42**

Customer: **SW-DIST**

Project ID: **SMP**

Send Reports to:

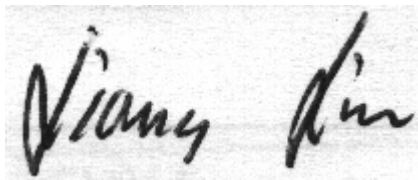
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Stephen Clingerman

For additional information please contact

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 01-APR-2016 11:28

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: G4SW0087

Collection Date/Time: 03/15/2016 12:30

Field ID: G4SW0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780604	EPA 180.1 Rev. 2.0	Turbidity	8.0		NTU	P300520	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P300752	
		Sulfate	1.5		mg SO4/L	P300754	
	SM 2120 B	Color (true)	160		PCU	P300500	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P300688	
	SM 2540 C-97	TDS	66		mg/L	P301167	
	SM 2540 D-97	TSS	8	I	mg/L	P300951	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P300691	
1780612	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P301192	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P301046	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300804	
	EPA 365.1 Rev. 2.0	Total-P	0.076		mg P/L	P301034	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P300879	
1780620	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P300516	

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: G4SW0090

Collection Date/Time: 03/15/2016 12:45

Field ID: G4SW0090

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780605	EPA 180.1 Rev. 2.0	Turbidity	7.2		NTU	P300520	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P300752	
		Sulfate	1.5		mg SO4/L	P300754	
	SM 2120 B	Color (true)	150		PCU	P300500	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P300688	
	SM 2540 C-97	TDS	63		mg/L	P301167	
	SM 2540 D-97	TSS	8	I	mg/L	P300951	
	SM 4500 F-C-97	Fluoride	0.083	I	mg F/L	P300691	
1780613	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P301192	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P301046	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300804	
	EPA 365.1 Rev. 2.0	Total-P	0.073		mg P/L	P301053	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P300879	
1780621	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P300516	

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: G4SW0089

Collection Date/Time: 03/15/2016 13:05

Field ID: G4SW0089

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780606	EPA 180.1 Rev. 2.0	Turbidity	8.3		NTU	P300520	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P300752	
		Sulfate	1.5		mg SO4/L	P300754	

Field ID: G4SW0089

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780606	SM 2120 B	Color (true)	160		PCU	P300500	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P300764	
	SM 2540 C-97	TDS	69		mg/L	P301168	
	SM 2540 D-97	TSS	12		mg/L	P300952	
	SM 4500 F-C-97	Fluoride	0.076	I	mg F/L	P300766	
1780614	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P301192	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P301046	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300804	
	EPA 365.1 Rev. 2.0	Total-P	0.093		mg P/L	P301053	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P300879	
1780622	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300516	

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: G4SW0088

Collection Date/Time: 03/15/2016 13:15

Field ID: G4SW0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780607	EPA 180.1 Rev. 2.0	Turbidity	7.9		NTU	P300520	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P300752	
		Sulfate	1.5		mg SO4/L	P300754	
	SM 2120 B	Color (true)	160		PCU	P300500	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P300764	
	SM 2540 C-97	TDS	60		mg/L	P301168	
	SM 2540 D-97	TSS	9	I	mg/L	P300952	
	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P300766	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P301192	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P301046	
1780615	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300804	
	EPA 365.1 Rev. 2.0	Total-P	0.079		mg P/L	P301053	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P300879	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300516	

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: G5SW0019

Collection Date/Time: 03/15/2016 14:10

Field ID: G5SW0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780608	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P300520	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P300752	
		Sulfate	6.6		mg SO4/L	P300754	
	SM 2120 B	Color (true)	9.7		PCU	P300500	
	SM 2320 B-97	Total Alkalinity	35		mg CaCO3/L	P300764	
	SM 2540 C-97	TDS	73		mg/L	P301168	
	SM 2540 D-97	TSS	2	I	mg/L	P300952	

Field ID: G5SW0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780608	SM 4500 F-C-97	Fluoride	0.098	I	mg F/L	P300766	
1780616	EPA 350.1 Rev. 2.0	Ammonia-N	0.095		mg N/L	P301192	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P301046	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300804	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P301130	
	SM 5310 B-00	Organic Carbon	8.0		mg C/L	P300879	
1780624	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300516	

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: G5SW0018

Collection Date/Time: 03/15/2016 14:30

Field ID: G5SW0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780609	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P300520	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P300752	
		Sulfate	6.6		mg SO4/L	P300754	
	SM 2120 B	Color (true)	8.9		PCU	P300506	
	SM 2320 B-97	Total Alkalinity	36		mg CaCO3/L	P300764	
	SM 2540 C-97	TDS	70		mg/L	P301168	
	SM 2540 D-97	TSS	2	I	mg/L	P300952	
	SM 4500 F-C-97	Fluoride	0.098	I	mg F/L	P300766	
1780617	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P301192	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.61		mg N/L	P301047	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300804	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P301053	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P300879	
1780625	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P300516	

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: G4SW0083

Collection Date/Time: 03/15/2016 15:30

Field ID: G4SW0083

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780610	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P300520	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P300752	
		Sulfate	4.4		mg SO4/L	P300754	
	SM 2120 B	Color (true)	62		PCU	P300506	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P300764	
	SM 2540 C-97	TDS	57		mg/L	P301168	
	SM 2540 D-97	TSS	3	I	mg/L	P300952	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P300766	
1780618	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P301192	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P301047	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P300804	

Field ID: G4SW0083

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780618	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P301053	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P300879	
1780626	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.036		mg P/L	P300516	

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: G4SW0084

Collection Date/Time: 03/15/2016 15:45

Field ID: G4SW0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1780611	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P300520	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P300752	
		Sulfate	4.4		mg SO4/L	P300754	
	SM 2120 B	Color (true)	62	A	PCU	P300506	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P300764	
	SM 2540 C-97	TDS	61		mg/L	P301168	
	SM 2540 D-97	TSS	4	I	mg/L	P300952	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P300766	
1780619	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P301192	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P301047	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300805	
	EPA 365.1 Rev. 2.0	Total-P	0.077		mg P/L	P301053	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P300879	
1780627	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.036		mg P/L	P300516	

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: P300520

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P300752

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P300754

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301192

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301046

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301047

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300804

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300805

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301034

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301053

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301130

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300516

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: P300500

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P300506

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P300688

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

Reference Method: SM 2320 B-97
Batch ID: P300764

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

Reference Method: SM 2540 C-97
Batch ID: P301167

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P301168

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300951

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300952

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P300691

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P300766

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P300879

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: P300752

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300754

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301192

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301046

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301047

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300804

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	101		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300805

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300805

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301034

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301053

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: P301130

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300516

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

Reference Method: SM 2320 B-97
Batch ID: P300688

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

Reference Method: SM 2320 B-97
Batch ID: P300764

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

Reference Method: SM 4500 F-C-97
Batch ID: P300691

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	94 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P300766

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P300879

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	108		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780610	Chloride	99.6	100	P/P	90 - 110
1780611	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780610	Sulfate	100	101	P/P	90 - 110
1780611	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301192

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780618	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301046

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780563	Kjeldahl Nitrogen	101	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301047

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780671	Kjeldahl Nitrogen	107	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780600	NO2NO3-N	97.0	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780619	NO2NO3-N	97.0	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780563	Total-P	97.4	98.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780613	Total-P	97.5	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780616	Total-P	100	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780625	O-Phosphate-P	98.8	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P300691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780201	Fluoride	99.6	101	P/P	94 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P300766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1781390	Fluoride	100	101	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P300879

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1780485	Organic Carbon	102		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P300520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780598	Turbidity	7.41	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780610	Chloride	0.289	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780610	Sulfate	0.346	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780618	Ammonia-N	0.470	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780563	Kjeldahl Nitrogen	2.49	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780671	Kjeldahl Nitrogen	5.55	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780600	NO2NO3-N	1.83	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780619	NO2NO3-N	5.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780563	Total-P	0.476	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780613	Total-P	4.00	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780616	Total-P	1.06	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780625	O-Phosphate-P	1.21	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P300500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780598	Color (true)	0.0452	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P300506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780611	Color (true)	1.18	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P300688

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780201	Total Alkalinity	0.0829	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P300764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1781390	Total Alkalinity	0.187	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P301167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780483	TDS	1.52	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P301168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780680	TDS	1.85	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P300691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780201	Fluoride	0.979	Spike	P	0 - 3.7

Reference Method: SM 4500 F-C-97
Batch ID: P300766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1781390	Fluoride	0.500	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P300879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1780485	Organic Carbon	0.383	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 300.0 Rev. 2.1
Run ID: A68261
Included Lab Sample IDs: 1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	102	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Sulfate	98.1	99.8	P/P	90 - 110
Sulfate	98.2	101	P/P	90 - 110
Sulfate	99.8	98.2	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A68263
Included Lab Sample IDs: 1780604, 1780605, 1780606, 1780607, 1780608

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.5	99.4	P/P	85 - 115
Color (true)	99.4	95.4	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A68264

Included Lab Sample IDs: 1780609, 1780610, 1780611

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.9	100	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A68269

Included Lab Sample IDs: 1780620, 1780621, 1780622, 1780623, 1780624, 1780625, 1780626, 1780627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	98.9	P/P	90 - 110
O-Phosphate-P	98.7	99.2	P/P	90 - 110
O-Phosphate-P	98.9	98.7	P/P	90 - 110
O-Phosphate-P	99.2	98.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A68270

Included Lab Sample IDs: 1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611

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

Reference Method: SM 2320 B-97

Run ID: A68331

Included Lab Sample IDs: 1780604, 1780605

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68331

Included Lab Sample IDs: 1780604, 1780605

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

Reference Method: SM 2320 B-97

Run ID: A68354

Included Lab Sample IDs: 1780606, 1780607, 1780608, 1780609, 1780610, 1780611

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.1	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68354

Included Lab Sample IDs: 1780606, 1780607, 1780608, 1780609, 1780610, 1780611

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68374

Included Lab Sample IDs: 1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619

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

Reference Method: SM 5310 B-00

Run ID: A68400

Included Lab Sample IDs: 1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.4	98.7	P/P	90 - 110
Organic Carbon	98.7	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68456

Included Lab Sample IDs: 1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	97.8	P/P	90 - 110
Kjeldahl Nitrogen	96.6	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68462

Included Lab Sample IDs: 1780612

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68482

Included Lab Sample IDs: 1780613, 1780614, 1780615, 1780618, 1780619

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68500

Included Lab Sample IDs: 1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68505

Included Lab Sample IDs: 1780617

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68517

Included Lab Sample IDs: 1780616

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.2	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				7.41	
EPA 300.0 Rev. 2.1	Chloride	100	99.6 100 100			0.289
	Sulfate	100	100 101 101			0.346
EPA 350.1 Rev. 2.0	Ammonia-N	98.6	101 100			0.470
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	101 104			2.49
	Kjeldahl Nitrogen	95.9	107 97.8			5.55
EPA 353.2 Rev. 2.0	NO2NO3-N	101	97.0 99.0			1.83
	NO2NO3-N	99.5	97.0 102			5.03
EPA 365.1 Rev. 2.0	Total-P	106	97.4 98.1			0.476
	Total-P	105	97.5 102			4.00
	Total-P	96.6	100 99.2			1.06
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	98.8 100			1.21
SM 2120 B	Color (true)				0.0452	
	Color (true)				1.18	
SM 2320 B-97	Total Alkalinity	103			0.0829	
	Total Alkalinity	101			0.187	
SM 2540 C-97	TDS				1.52	
	TDS				1.85	
SM 4500 F-C-97	Fluoride	99.8	99.6 101			0.979
	Fluoride	98.4	100 101			0.500
SM 5310 B-00	Organic Carbon	108	102			0.383

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1780620, 1780621, 1780622, 1780623, 1780624, 1780625, 1780626, 1780627
SM 2120 B / E31780	True Color measured at 450 nm	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619

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	03/16/2016			03/16/2016 16:50	Sima Feizi	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
EPA 300.0 Rev. 2.1	03/16/2016			03/18/2016	Ping Hua	1780604, 1780605, 1780606, 1780607, 1780608, 1780610, 1780611
	03/16/2016			03/19/2016	Ping Hua	1780609
EPA 350.1 Rev. 2.0	03/16/2016			03/28/2016	Diana M. Turner	1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619
EPA 351.2 Rev. 2.0	03/16/2016	03/25/2016	Sofia Elnemr	03/27/2016	Rochelle Y Jackson	1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619
EPA 353.2 Rev. 2.0	03/16/2016			03/22/2016	Peter D. Kaus	1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619
EPA 365.1 Rev. 2.0	03/16/2016	03/25/2016	Lipi Saha	03/25/2016	Lipi Saha	1780612
	03/16/2016	03/25/2016	Lipi Saha	03/28/2016	Lipi Saha	1780613, 1780614, 1780615, 1780617, 1780618, 1780619
	03/16/2016	03/28/2016	Christopher Armour	03/29/2016	Lipi Saha	1780616
EPA 365.1 Rev. 2.0 dissolved	03/16/2016			03/16/2016 16:20	Julia Storbeck	1780625
	03/16/2016			03/16/2016 16:31	Julia Storbeck	1780620
	03/16/2016			03/16/2016 16:32	Julia Storbeck	1780621, 1780622
	03/16/2016			03/16/2016 16:33	Julia Storbeck	1780623
	03/16/2016			03/16/2016 16:34	Julia Storbeck	1780624
	03/16/2016			03/16/2016 16:47	Julia Storbeck	1780626
	03/16/2016			03/16/2016 16:52	Julia Storbeck	1780627
SM 2120 B	03/16/2016			03/16/2016 16:04	Blanca Fach	1780608
	03/16/2016			03/16/2016 16:11	Blanca Fach	1780604
	03/16/2016			03/16/2016 16:12	Blanca Fach	1780605, 1780606
	03/16/2016			03/16/2016 16:13	Blanca Fach	1780607
	03/16/2016			03/16/2016 16:26	Rochelle Y Jackson	1780609, 1780610
	03/16/2016			03/16/2016 16:28	Rochelle Y Jackson	1780611
SM 2320 B-97	03/16/2016			03/18/2016	Dale L. Simmons	1780604, 1780605
	03/16/2016			03/21/2016	Dale L. Simmons	1780606, 1780607, 1780608, 1780609, 1780610, 1780611
SM 2540 C-97	03/16/2016			03/21/2016	Yijie Li	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
SM 2540 D-97	03/16/2016			03/21/2016	Yijie Li	1780604, 1780605, 1780606, 1780607, 1780608, 1780609, 1780610, 1780611
SM 4500 F-C-97	03/16/2016			03/18/2016	Dale L. Simmons	1780604, 1780605
	03/16/2016			03/21/2016	Dale L. Simmons	1780606, 1780607, 1780608, 1780609, 1780610, 1780611
SM 5310 B-00	03/16/2016			03/22/2016	Sofia Elnemr	1780612, 1780613, 1780614, 1780615, 1780616, 1780617, 1780618, 1780619