

Chemical Analysis Report

SW-DIST-2016-02-23-01

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

Event Description: **1758F,1435,1329G**

Request ID: **RQ-2016-02-22-11**

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

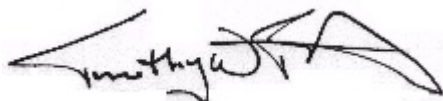
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This Report replaces the previous Report Serial Number: 0086645

Revision certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 15-MAR-2016 11:02



Report Comments:
Corrected Field IDs for G5SW0111 and G5SW0112.

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: G4SW0099

Collection Date/Time: 02/22/2016 10:30

Field ID: G4SW0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773688	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P299104	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P299332	
		Sulfate	0.20	U	mg SO4/L	P299335	
	SM 2120 B	Color (true)	440		PCU	P299084	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P299770	
	SM 2540 C-97	TDS	138		mg/L	P299756	
	SM 2540 D-97	TSS	2	I	mg/L	P299679	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P299331	
1773693	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P299633	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P299840	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299497	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P299425	
	SM 5310 B-00	Organic Carbon	56		mg C/L	P299377	
1773698	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P299091	

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: G4SW0093

Collection Date/Time: 02/22/2016 11:15

Field ID: G4SW0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773689	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P299104	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P299332	
		Sulfate	2.5		mg SO4/L	P299335	
	SM 2120 B	Color (true)	500		PCU	P299084	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P299770	
	SM 2540 C-97	TDS	154		mg/L	P299756	
	SM 2540 D-97	TSS	6	I	mg/L	P299679	
	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P299331	
1773694	EPA 350.1 Rev. 2.0	Ammonia-N	0.33		mg N/L	P299633	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.2		mg N/L	P299840	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.073		mg N/L	P299497	
	EPA 365.1 Rev. 2.0	Total-P	1.3		mg P/L	P299425	
	SM 5310 B-00	Organic Carbon	49		mg C/L	P299377	
1773699	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	1.1		mg P/L	P299091	

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: G4SW0094

Collection Date/Time: 02/22/2016 11:40

Field ID: G4SW0094

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773690	EPA 180.1 Rev. 2.0	Turbidity	9.4		NTU	P299104	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P299332	
		Sulfate	2.5		mg SO4/L	P299335	

Field ID: G4SW0094

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773690	SM 2120 B	Color (true)	490		PCU	P299084	
	SM 2320 B-97	Total Alkalinity	28		mg CaCO3/L	P299770	
	SM 2540 C-97	TDS	152		mg/L	P299756	
	SM 2540 D-97	TSS	6	I	mg/L	P299679	
	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P299331	
1773695	EPA 350.1 Rev. 2.0	Ammonia-N	0.30		mg N/L	P299633	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.5		mg N/L	P299840	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.092		mg N/L	P299497	
	EPA 365.1 Rev. 2.0	Total-P	1.3		mg P/L	P299425	
	SM 5310 B-00	Organic Carbon	49		mg C/L	P299377	
1773700	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	1.1		mg P/L	P299091	

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: G5SW0111

Collection Date/Time: 02/22/2016 13:20

Field ID: G5SW0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773691	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P299104	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P299332	
		Sulfate	7.6		mg SO4/L	P299335	
	SM 2120 B	Color (true)	28		PCU	P299084	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P299770	
	SM 2540 C-97	TDS	65		mg/L	P299756	
	SM 2540 D-97	TSS	2	U	mg/L	P299679	
	SM 4500 F-C-97	Fluoride	0.076	I	mg F/L	P299391	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P299634	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P299840	
1773696	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299497	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P299521	
	SM 5310 B-00	Organic Carbon	8.1		mg C/L	P299377	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299091	

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: G5SW0112

Collection Date/Time: 02/22/2016 13:35

Field ID: G5SW0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773692	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P299104	
	EPA 300.0 Rev. 2.1	Chloride	22	A	mg Cl/L	P299332	
		Sulfate	7.6	A	mg SO4/L	P299335	
	SM 2120 B	Color (true)	27		PCU	P299084	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P299770	
	SM 2540 C-97	TDS	63		mg/L	P299756	
	SM 2540 D-97	TSS	3	I	mg/L	P299679	

Field ID: G5SW0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1773692	SM 4500 F-C-97	Fluoride	0.076	I	mg F/L	P299391	
1773697	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P299634	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P299840	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P299497	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P299522	
	SM 5310 B-00	Organic Carbon	8.2		mg C/L	P299378	
1773702	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299091	

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: P299104

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P299332

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P299335

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P299633

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P299634

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P299840

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P299497

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299425

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299521

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299522

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299091

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

Reference Method: SM 2120 B
Batch ID: P299084

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P299770

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

Reference Method: SM 2540 C-97
Batch ID: P299756

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299679

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P299331

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: P299391

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P299377

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

Reference Method: SM 5310 B-00
Batch ID: P299378

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: P299332

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299335

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299633

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299634

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299840

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299497

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: P299497

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: P299425

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299521

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299522

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299091

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

Reference Method: SM 2320 B-97
Batch ID: P299770

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

Reference Method: SM 4500 F-C-97
Batch ID: P299331

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	94 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P299391

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P299377

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P299378

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773691	Chloride	102		P	90 - 110
1773692	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773691	Sulfate	100		P	90 - 110
1773692	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299633

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773675	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773696	Ammonia-N	99.6	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773696	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773675	NO2NO3-N	98.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299425

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773463	Total-P	101	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P299521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773696	Total-P	102	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P299522

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773697	Total-P	98.7	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P299091

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773702	O-Phosphate-P	103	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P299331

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773459	Fluoride	96.5	98.9	P/P	94 - 107

Reference Method: SM 4500 F-C-97
 Batch ID: P299391

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774012	Fluoride	96.0	96.7	P/P	94 - 107

Reference Method: SM 5310 B-00
 Batch ID: P299377

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773348	Organic Carbon	106	105	P/P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P299378

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1773697	Organic Carbon	102	102	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P299104

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773674	Turbidity	1.83	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773692	Chloride	0.153	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773692	Sulfate	0.876	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773675	Ammonia-N	0.515	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773696	Ammonia-N	0.714	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773696	Kjeldahl Nitrogen	0.0670	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773675	NO2NO3-N	0.368	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773463	Total-P	1.12	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773696	Total-P	3.29	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773697	Total-P	4.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773702	O-Phosphate-P	0.291	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P299084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773674	Color (true)	2.01	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P299770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773988	Total Alkalinity	0.785	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P299756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773718	TDS	4.68	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P299331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773459	Fluoride	1.45	Spike	P	0 - 3.7

Reference Method: SM 4500 F-C-97
Batch ID: P299391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774012	Fluoride	0.473	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P299377

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773348	Organic Carbon	0.482	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P299378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1773697	Organic Carbon	0.175	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: A67740
Included Lab Sample IDs: 1773688, 1773689, 1773690, 1773691, 1773692

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Chloride	102	101	P/P	90 - 110
Sulfate	97.4	99.1	P/P	90 - 110
Sulfate	97.7	98.7	P/P	90 - 110
Sulfate	99.1	97.7	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A67756
Included Lab Sample IDs: 1773688, 1773689, 1773690, 1773691, 1773692

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	94.3	95.2	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67763
Included Lab Sample IDs: 1773698, 1773699, 1773700, 1773701, 1773702

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	99.9	P/P	90 - 110
O-Phosphate-P	99.9	99.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67767
Included Lab Sample IDs: 1773688, 1773689, 1773690, 1773691, 1773692

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

Reference Method: SM 4500 F-C-97
Run ID: A67857
Included Lab Sample IDs: 1773688, 1773689, 1773690

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A67869

Included Lab Sample IDs: 1773693, 1773694, 1773695, 1773696, 1773697

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.6	P/P	90 - 110
Organic Carbon	100	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A67872

Included Lab Sample IDs: 1773691, 1773692

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67904

Included Lab Sample IDs: 1773694, 1773695

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67914

Included Lab Sample IDs: 1773693, 1773694, 1773695, 1773696, 1773697

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67920

Included Lab Sample IDs: 1773693

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67947

Included Lab Sample IDs: 1773696, 1773697

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67955

Included Lab Sample IDs: 1773693, 1773694, 1773695, 1773696, 1773697

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	99.2	99.4	P/P	90 - 110
Ammonia-N	99.4	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A68005

Included Lab Sample IDs: 1773688, 1773689, 1773690, 1773691, 1773692

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.4	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68087

Included Lab Sample IDs: 1773693, 1773694, 1773695, 1773696, 1773697

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	104	P/P	90 - 110
Kjeldahl Nitrogen	107	106	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				1.83	
EPA 300.0 Rev. 2.1	Chloride	103	103 102		0.153	
	Sulfate	99.7	101 100		0.876	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	101 102			0.515
	Ammonia-N	99.0	99.6 100			0.714
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	101 101			0.0670
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.8			0.368
EPA 365.1 Rev. 2.0	Total-P	97.2	101 102			1.12
	Total-P	103	102 98.3			3.29
	Total-P	102	98.7 103			4.16
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	103 103			0.291
SM 2120 B	Color (true)				2.01	
SM 2320 B-97	Total Alkalinity	103			0.785	
SM 2540 C-97	TDS				4.68	
SM 4500 F-C-97	Fluoride	96.3	96.5 98.9			1.45
	Fluoride	96.8	96.0 96.7			0.473
SM 5310 B-00	Organic Carbon	101	106 105			0.482
	Organic Carbon	101	102 102			0.175

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1773688, 1773689, 1773690, 1773691, 1773692
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1773688, 1773689, 1773690, 1773691, 1773692
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1773688, 1773689, 1773690, 1773691, 1773692
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1773693, 1773694, 1773695, 1773696, 1773697

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1773693, 1773694, 1773695, 1773696, 1773697
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1773693, 1773694, 1773695, 1773696, 1773697
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1773693, 1773694, 1773695, 1773696, 1773697
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1773698, 1773699, 1773700, 1773701, 1773702
SM 2120 B / E31780	True Color measured at 450 nm	1773688, 1773689, 1773690, 1773691, 1773692
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1773688, 1773689, 1773690, 1773691, 1773692
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1773688, 1773689, 1773690, 1773691, 1773692
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1773688, 1773689, 1773690, 1773691, 1773692
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1773688, 1773689, 1773690, 1773691, 1773692
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1773693, 1773694, 1773695, 1773696, 1773697

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	02/23/2016			02/23/2016 15:58	Sima Feizi	1773688, 1773689, 1773690, 1773691, 1773692
EPA 300.0 Rev. 2.1	02/23/2016			02/25/2016	Ping Hua	1773688, 1773689, 1773690, 1773691, 1773692
EPA 350.1 Rev. 2.0	02/23/2016			03/02/2016	Diana M. Turner	1773693, 1773694, 1773695, 1773696, 1773697
EPA 351.2 Rev. 2.0	02/23/2016	03/07/2016	Sofia Elnemr	03/08/2016	Rochelle Y Jackson	1773693, 1773694, 1773695, 1773696, 1773697
EPA 353.2 Rev. 2.0	02/23/2016			03/01/2016	Peter D. Kaus	1773693, 1773694, 1773695, 1773696, 1773697
EPA 365.1 Rev. 2.0	02/23/2016	02/29/2016	Christopher Armour	02/29/2016	Lipi Saha	1773694, 1773695
	02/23/2016	02/29/2016	Christopher Armour	03/01/2016	Lipi Saha	1773693
	02/23/2016	03/01/2016	Lipi Saha	03/02/2016	Lipi Saha	1773696, 1773697
EPA 365.1 Rev. 2.0 dissolved	02/23/2016			02/23/2016 15:03	Bryan A. Werth	1773702
	02/23/2016			02/23/2016 15:16	Bryan A. Werth	1773698
	02/23/2016			02/23/2016 15:17	Bryan A. Werth	1773699
	02/23/2016			02/23/2016 15:18	Bryan A. Werth	1773700
	02/23/2016			02/23/2016 15:19	Bryan A. Werth	1773701
SM 2120 B	02/23/2016			02/23/2016 13:15	Rochelle Y Jackson	1773688
	02/23/2016			02/23/2016 13:17	Rochelle Y Jackson	1773689
	02/23/2016			02/23/2016 13:18	Rochelle Y Jackson	1773690
	02/23/2016			02/23/2016 13:19	Rochelle Y Jackson	1773691
	02/23/2016			02/23/2016 13:20	Rochelle Y Jackson	1773692
SM 2320 B-97	02/23/2016			03/03/2016	Dale L. Simmons	1773688, 1773689, 1773690, 1773691, 1773692
SM 2540 C-97	02/23/2016			02/26/2016	Yijie Li	1773688, 1773689, 1773690, 1773691, 1773692
SM 2540 D-97	02/23/2016			02/26/2016	Yijie Li	1773688, 1773689, 1773690, 1773691, 1773692
SM 4500 F-C-97	02/23/2016			02/24/2016	Dale L. Simmons	1773688, 1773689, 1773690
	02/23/2016			02/26/2016	Dale L. Simmons	1773691, 1773692
SM 5310 B-00	02/23/2016			02/25/2016	Sofia Elnemr	1773693, 1773694, 1773695, 1773696
	02/23/2016			02/26/2016	Sofia Elnemr	1773697