

Chemical Analysis Report

SW-DIST-2016-08-10-01

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

Event Description: **RUN 9**
Request ID: **RQ-2016-08-08-25**
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
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 26-AUG-2016 14:16



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: PASADENA LAKE

Collection Date/Time: 08/09/2016 10:25

Field ID: G5SW0119

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1822972	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P309512	
	EPA 300.0 Rev. 2.1	Chloride	51		mg Cl/L	P309940	
		Sulfate	7.8		mg SO4/L	P309943	
	SM 2120 B	Color (true)	53		PCU	P309524	
	SM 2320 B-97	Total Alkalinity	44		mg CaCO3/L	P309624	
	SM 2540 C-97	TDS	176		mg/L	P310095	
	SM 2540 D-97	TSS	20		mg/L	P309999	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P309627	
1822977	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P309535	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.5		mg N/L	P309790	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.035		mg N/L	P309754	
	EPA 365.1 Rev. 2.0	Total-P	0.23		mg P/L	P309802	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P310048	
1822982	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.053		mg P/L	P309519	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: PINEALLAS PARK DITCH #5

Collection Date/Time: 08/09/2016 11:00

Field ID: G5SW0118

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1822973	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P309512	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P309940	
		Sulfate	12		mg SO4/L	P309943	
	SM 2120 B	Color (true)	40	A	PCU	P309524	
	SM 2320 B-97	Total Alkalinity	89	A	mg CaCO3/L	P309624	
	SM 2540 C-97	TDS	171		mg/L	P310095	
	SM 2540 D-97	TSS	4	I	mg/L	P309999	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P309627	
1822978	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P309535	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P309790	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P309755	
	EPA 365.1 Rev. 2.0	Total-P	0.061		mg P/L	P309802	
	SM 5310 B-00	Organic Carbon	6.2		mg C/L	P310048	
1822983	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.031		mg P/L	P309519	

Ref. Method and Comment:

SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 305 umhos/cm.

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: PASADENA LAKE DUPLICATE

Collection Date/Time: 08/09/2016 10:30

Field ID: DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1822974	EPA 180.1 Rev. 2.0	Turbidity	15	A	NTU	P309513	

Field ID: DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1822974	EPA 300.0 Rev. 2.1	Chloride	52		mg Cl/L	P309940	
		Sulfate	7.8		mg SO4/L	P309943	
	SM 2120 B	Color (true)	54		PCU	P309524	
	SM 2320 B-97	Total Alkalinity	44		mg CaCO3/L	P309624	
	SM 2540 C-97	TDS	169		mg/L	P310095	
	SM 2540 D-97	TSS	19		mg/L	P309999	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P309627	
1822979	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P309535	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.4		mg N/L	P309790	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P309755	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P309802	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P310048	
1822984	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.052		mg P/L	P309519	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: TAYLOR LAKE

Collection Date/Time: 08/09/2016 13:40

Field ID: G5SW0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1822975	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P309513	
	EPA 300.0 Rev. 2.1	Chloride	44		mg Cl/L	P309940	
		Sulfate	11		mg SO4/L	P309943	
	SM 2120 B	Color (true)	63		PCU	P309525	
	SM 2320 B-97	Total Alkalinity	65		mg CaCO3/L	P309624	
	SM 2540 C-97	TDS	183	A	mg/L	P310095	
	SM 2540 D-97	TSS	2	I	mg/L	P309999	
1822980	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P309627	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.10		mg N/L	P309535	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P309790	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P309755	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P309802	
1822985	SM 5310 B-00	Organic Carbon	13		mg C/L	P310048	
		O-Phosphate-P	0.013		mg P/L	P309519	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BLANK

Collection Date/Time: 08/09/2016 13:50

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1822976	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P309513	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P309940	
		Sulfate	0.20	U	mg SO4/L	P309943	

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1822976	SM 2120 B	Color (true)	2.5	U	PCU	P309525	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P309624	
	SM 2540 C-97	TDS	15	U	mg/L	P310093	
	SM 2540 D-97	TSS	2	U	mg/L	P309997	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P309627	
1822981	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P309535	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P309790	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P309755	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P309802	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P310048	
1822986	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309519	

Ref. Method and Comment:
 SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
 EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P309512

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P309513

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P309940

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P309943

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P309535

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P309790

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: P309754

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309755

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309802

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309519

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

Reference Method: SM 2120 B
Batch ID: P309524

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P309525

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P309624

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

Reference Method: SM 2540 C-97
Batch ID: P310093

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P310095

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P309997

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P309999

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P309627

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P310048

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: P309940

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309943

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309535

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309790

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
-----------	---------	---------	-----------	----------------

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P309754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P309755

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P309802

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P309519

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

Reference Method: SM 2320 B-97
 Batch ID: P309624

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
 Batch ID: P309627

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P310048

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P309940

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822928	Chloride	96.2		P	90 - 110
1822955	Chloride	96.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822928	Sulfate	93.8		P	90 - 110
1822955	Sulfate	93.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309535

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822835	Ammonia-N	106	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822948	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822978	NO2NO3-N	103	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822949	Total-P	92.9	96.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309519

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822983	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P309627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822973	Fluoride	99.8	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P310048

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822933	Organic Carbon	101	102	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P309512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822928	Turbidity	1.19	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P309513

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822974	Turbidity	3.41	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822928	Chloride	0.0429	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822928	Sulfate	0.733	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309535

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822835	Ammonia-N	0.424	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822977	Kjeldahl Nitrogen	6.86	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822948	NO2NO3-N	0.328	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822978	NO2NO3-N	3.01	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822949	Total-P	1.73	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309519

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822983	O-Phosphate-P	0.374	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P309524

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822973	Color (true)	0.270	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P309525

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822998	Color (true)	0.839	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P309624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822973	Total Alkalinity	0.245	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P310093

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822753	TDS	4.19	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P310095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822975	TDS	6.56	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P309627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822973	Fluoride	0.463	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P310048

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822933	Organic Carbon	1.05	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 180.1 Rev. 2.0
Run ID: A71054
Included Lab Sample IDs: 1822972, 1822973, 1822974, 1822975, 1822976

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71057
Included Lab Sample IDs: 1822982, 1822983, 1822984, 1822985, 1822986

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.3	P/P	90 - 110
O-Phosphate-P	100	101	P/P	90 - 110
O-Phosphate-P	99.4	101	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71058
Included Lab Sample IDs: 1822972, 1822973, 1822974, 1822975, 1822976

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.8	98.0	P/P	90 - 115
Color (true)	98.0	97.3	P/P	90 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A71060
Included Lab Sample IDs: 1822977, 1822978, 1822979, 1822980, 1822981

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

Reference Method: SM 2320 B-97
Run ID: A71090
Included Lab Sample IDs: 1822972, 1822973, 1822974, 1822975, 1822976

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A71090

Included Lab Sample IDs: 1822972, 1822973, 1822974, 1822975, 1822976

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71125

Included Lab Sample IDs: 1822977, 1822978, 1822979, 1822980, 1822981

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	101	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71177

Included Lab Sample IDs: 1822972, 1822973, 1822974, 1822975, 1822976

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	99.8	P/P	90 - 110
Sulfate	96.5	95.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71179

Included Lab Sample IDs: 1822977, 1822978, 1822979

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.9	98.9	P/P	90 - 110
Total-P	99.7	97.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71192

Included Lab Sample IDs: 1822977, 1822978, 1822979, 1822980, 1822981

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	107	P/P	90 - 110
Kjeldahl Nitrogen	99.3	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71219

Included Lab Sample IDs: 1822980, 1822981

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

Reference Method: SM 5310 B-00

Run ID: A71236

Included Lab Sample IDs: 1822977, 1822978, 1822979, 1822980, 1822981

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.1	97.2	P/P	90 - 110
Organic Carbon	97.2	98.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

* 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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.19	
	Turbidity					3.41	
EPA 300.0 Rev. 2.1	Chloride	97.7	96.2	96.8		0.0429	
	Sulfate	94.3	93.8	93.8		0.733	
EPA 350.1 Rev. 2.0	Ammonia-N	101	106	106			0.424
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102					6.86
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	107	102	103			0.328
	NO ₂ NO ₃ -N	104	103	98.0			3.01
EPA 365.1 Rev. 2.0	Total-P	99.7	92.9	96.3			1.73
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	106	102	103			0.374
SM 2120 B	Color (true)					0.270	
	Color (true)					0.839	
SM 2320 B-97	Total Alkalinity	103				0.245	
SM 2540 C-97	TDS					4.19	
	TDS					6.56	
SM 4500 F-C-97	Fluoride	99.3	99.8	100			0.463
SM 5310 B-00	Organic Carbon	97.5	101	102			1.05

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1822972, 1822973, 1822974, 1822975, 1822976
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1822972, 1822973, 1822974, 1822975, 1822976
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1822972, 1822973, 1822974, 1822975, 1822976
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1822977, 1822978, 1822979, 1822980, 1822981
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1822977, 1822978, 1822979, 1822980, 1822981
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1822977, 1822978, 1822979, 1822980, 1822981
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1822977, 1822978, 1822979, 1822980, 1822981
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1822982, 1822983, 1822984, 1822985, 1822986
SM 2120 B / E31780	True Color measured at 450 nm	1822972, 1822973, 1822974, 1822975, 1822976
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1822972, 1822973, 1822974, 1822975, 1822976
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1822972, 1822973, 1822974, 1822975, 1822976
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1822972, 1822973, 1822974, 1822975, 1822976
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1822972, 1822973, 1822974, 1822975, 1822976

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1822977, 1822978, 1822979, 1822980, 1822981

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	08/10/2016			08/10/2016 14:56	Sima Feizi	1822972, 1822973, 1822974, 1822975, 1822976
EPA 300.0 Rev. 2.1	08/10/2016			08/18/2016	Ping Hua	1822972, 1822973, 1822974, 1822975, 1822976
EPA 350.1 Rev. 2.0	08/10/2016			08/10/2016	Julie Michelle Frank	1822977, 1822978, 1822979, 1822980, 1822981
EPA 351.2 Rev. 2.0	08/10/2016	08/16/2016	Sofia Elnemr	08/17/2016	Christopher Armour	1822977, 1822978, 1822979, 1822980, 1822981
EPA 353.2 Rev. 2.0	08/10/2016			08/15/2016	Beverly Y. Sanders	1822977, 1822978, 1822979, 1822980, 1822981
EPA 365.1 Rev. 2.0	08/10/2016	08/16/2016	Vijayalakshmi Reddy	08/17/2016	Lipi Saha	1822977, 1822978, 1822979
	08/10/2016	08/16/2016	Vijayalakshmi Reddy	08/19/2016	Lipi Saha	1822980, 1822981
EPA 365.1 Rev. 2.0 dissolved	08/10/2016			08/10/2016 15:41	Julia Storbeck	1822983
	08/10/2016			08/10/2016 16:13	Julia Storbeck	1822986
	08/10/2016			08/10/2016 16:20	Julia Storbeck	1822982
	08/10/2016			08/10/2016 16:21	Julia Storbeck	1822984
	08/10/2016			08/10/2016 16:56	Julia Storbeck	1822985
SM 2120 B	08/10/2016			08/10/2016 17:34	Rochelle Y Jackson	1822972
	08/10/2016			08/10/2016 17:35	Rochelle Y Jackson	1822973
	08/10/2016			08/10/2016 17:36	Rochelle Y Jackson	1822974
	08/10/2016			08/10/2016 17:39	Rochelle Y Jackson	1822975
	08/10/2016			08/10/2016 17:40	Rochelle Y Jackson	1822976
SM 2320 B-97	08/10/2016			08/12/2016	Dale L. Simmons	1822972, 1822973, 1822974, 1822975, 1822976
SM 2540 C-97	08/10/2016			08/11/2016	Yijie Li	1822972, 1822973, 1822974, 1822975, 1822976
SM 2540 D-97	08/10/2016			08/11/2016	Yijie Li	1822972, 1822973, 1822974, 1822975, 1822976
SM 4500 F-C-97	08/10/2016			08/12/2016	Dale L. Simmons	1822972, 1822973, 1822974, 1822975, 1822976
SM 5310 B-00	08/10/2016			08/19/2016	Sofia Elnemr	1822977, 1822978, 1822979, 1822980, 1822981