Chemical Analysis Report

SE-DIST-2016-09-16-01

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

Event Description: **SMP-5 mile creek Run**
Request ID: **RQ-2016-09-12-73**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

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: 13-OCT-2016 10:03

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: Five Mile Creek @ Edwards Rd. **Collection Date/Time: 09/15/2016 14:15**

Field ID: 28010022 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1832175	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P311349	
	EPA 300.0 Rev. 2.1	Chloride	130		mg Cl/L	P311767	
		Sulfate	48		mg SO4/L	P311770	
	SM 2120 B	Color (true)	110		PCU	P311366	
	SM 2320 B-97	Total Alkalinity	154		mg CaCO3/L	P311736	
	SM 2540 C-97	TDS	438		mg/L	P311820	
	SM 2540 D-97	TSS	5	I	mg/L	P311786	
	SM 4500 F-C-97	Fluoride	0.28		mg F/L	P311740	MS
1832178	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P311515	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.90		mg N/L	P311973	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.096		mg N/L	P311672	
	EPA 365.1 Rev. 2.0	Total-P	0.23		mg P/L	P311907	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P311530	
1832181	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.17		mg P/L	P311353	

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

Sample Location: Five Mile Creek @ Kirby Loop Rd. **Collection Date/Time: 09/15/2016 14:30**

Field ID: 28010133 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1832176	EPA 180.1 Rev. 2.0	Turbidity	6.3		NTU	P311349	
	EPA 300.0 Rev. 2.1	Chloride	130		mg Cl/L	P311767	
		Sulfate	50		mg SO4/L	P311770	
	SM 2120 B	Color (true)	120		PCU	P311366	
	SM 2320 B-97	Total Alkalinity	160		mg CaCO3/L	P311736	
	SM 2540 C-97	TDS	453		mg/L	P311820	
	SM 2540 D-97	TSS	4	I	mg/L	P311786	
	SM 4500 F-C-97	Fluoride	0.29		mg F/L	P311740	MS
1832179	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P311515	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P311973	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.090		mg N/L	P312230	
	EPA 365.1 Rev. 2.0	Total-P	0.25		mg P/L	P311907	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P311530	
1832182	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P311353	

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

Sample Location: Five Mile Creek @ SR-70 **Collection Date/Time: 09/15/2016 14:50**

Field ID: 28010001 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1832177	EPA 180.1 Rev. 2.0	Turbidity	5.9	A	NTU	P311350	
	EPA 300.0 Rev. 2.1	Chloride	140		mg Cl/L	P311767	
		Sulfate	52		mg SO4/L	P311770	

Field ID: 28010001 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1832177	SM 2120 B	Color (true)	120		PCU	P311366	
	SM 2320 B-97	Total Alkalinity	164		mg CaCO3/L	P311736	
	SM 2540 C-97	TDS	520	A	mg/L	P311821	
	SM 2540 D-97	TSS	6	I	mg/L	P311787	
	SM 4500 F-C-97	Fluoride	0.30		mg F/L	P311740	MS
1832180	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P311515	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.91		mg N/L	P311726	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.097		mg N/L	P312230	
	EPA 365.1 Rev. 2.0	Total-P	0.27		mg P/L	P311907	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P311530	
1832183	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.20		mg P/L	P311353	

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: P311349

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311350

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311767

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311770

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311515

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311726

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311973

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311672

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312230

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311907

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311353

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

Reference Method: SM 2120 B
Batch ID: P311366

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P311736

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

Reference Method: SM 2540 C-97
Batch ID: P311820

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P311821

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P311786

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P311787

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P311740

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P311530

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: P311767

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311770

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311515

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311726

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311973

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311973

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311672

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312230

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311907

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311353

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

Reference Method: SM 2320 B-97
Batch ID: P311736

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

Reference Method: SM 4500 F-C-97
Batch ID: P311740

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P311530

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311767

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311767

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832801	Chloride	98.7		P	90 - 110
1832827	Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311770

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832801	Sulfate	91.3		P	90 - 110
1832827	Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311515

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832125	Ammonia-N	95.6	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832127	Kjeldahl Nitrogen	89.0	89.3	F/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311672

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832974	NO2NO3-N	106	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312230

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832179	NO2NO3-N	96.8	95.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832178	Total-P	96.5	94.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311353

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832136	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P311740

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832112	Fluoride	105	107	P/F	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P311530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832115	Organic Carbon	105		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311349

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832089	Turbidity	4.26	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832177	Turbidity	2.04	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832801	Chloride	0.622	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832801	Sulfate	2.54	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832125	Ammonia-N	1.57	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832196	Kjeldahl Nitrogen	4.86	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311973

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832127	Kjeldahl Nitrogen	0.312	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311672

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832974	NO2NO3-N	1.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312230

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832179	NO2NO3-N	0.707	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311907

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832178	Total-P	1.33	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311353

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832136	O-Phosphate-P	0.432	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P311366

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832281	Color (true)	8.25	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P311736

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832112	Total Alkalinity	0.347	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P311820

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832108	TDS	0.840	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P311821

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832177	TDS	5.00	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P311740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832112	Fluoride	1.97	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P311530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832115	Organic Carbon	0.134	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: A171685
Included Lab Sample IDs: 1832175, 1832176, 1832177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71686
Included Lab Sample IDs: 1832181, 1832182, 1832183

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.6	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71687
Included Lab Sample IDs: 1832175, 1832176, 1832177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.2	96.8	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A71731
Included Lab Sample IDs: 1832178, 1832179, 1832180

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	98.9	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A71737
Included Lab Sample IDs: 1832178, 1832179, 1832180

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71777
Included Lab Sample IDs: 1832178

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71789
Included Lab Sample IDs: 1832175, 1832176, 1832177

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.7	99.3	P/P	90 - 110
Sulfate	96.7	99.2	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A71798
Included Lab Sample IDs: 1832175, 1832176, 1832177

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

Reference Method: SM 4500 F-C-97
Run ID: A71798
Included Lab Sample IDs: 1832175, 1832176, 1832177

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A71850
Included Lab Sample IDs: 1832180

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.0	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71935
Included Lab Sample IDs: 1832178, 1832179, 1832180

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.4	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71950
Included Lab Sample IDs: 1832179, 1832180

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	99.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A71967
Included Lab Sample IDs: 1832178, 1832179

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.0	95.8	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					4.26	
	Turbidity					2.04	
EPA 300.0 Rev. 2.1	Chloride	99.2	98.7	99.7		0.622	
	Sulfate	97.7	91.3	96.5		2.54	
EPA 350.1 Rev. 2.0	Ammonia-N	99.6	95.6	97.1			1.57
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5					4.86
	Kjeldahl Nitrogen	104	89.0	89.3			0.312
EPA 353.2 Rev. 2.0	NO2NO3-N	108	106	108			1.41
	NO2NO3-N	102	96.8	95.8			0.707
EPA 365.1 Rev. 2.0	Total-P	94.2	96.5	94.4			1.33
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	101	102			0.432
SM 2120 B	Color (true)					8.25	
SM 2320 B-97	Total Alkalinity	103				0.347	
SM 2540 C-97	TDS					0.840	
	TDS					5.00	
SM 4500 F-C-97	Fluoride	98.8	105	107			1.97
SM 5310 B-00	Organic Carbon	100	105				0.134

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1832175, 1832176, 1832177
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1832175, 1832176, 1832177
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1832175, 1832176, 1832177
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1832178, 1832179, 1832180
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1832178, 1832179, 1832180
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1832178, 1832179, 1832180
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1832178, 1832179, 1832180
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1832181, 1832182, 1832183
SM 2120 B / E31780	True Color measured at 450 nm	1832175, 1832176, 1832177
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1832175, 1832176, 1832177
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1832175, 1832176, 1832177

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1832175, 1832176, 1832177
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1832175, 1832176, 1832177
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1832178, 1832179, 1832180

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	09/16/2016			09/16/2016 16:25	Sima Feizi	1832175, 1832176, 1832177
EPA 300.0 Rev. 2.1	09/16/2016			09/24/2016	Ping Hua	1832175, 1832176, 1832177
EPA 350.1 Rev. 2.0	09/16/2016			09/19/2016	Joseph Suarez	1832178, 1832179, 1832180
EPA 351.2 Rev. 2.0	09/16/2016	09/23/2016	Adrian Shelby	09/27/2016	Christopher Armour	1832180
	09/16/2016	09/28/2016	Adrian Shelby	09/30/2016	Virginia P. Brown	1832178, 1832179
EPA 353.2 Rev. 2.0	09/16/2016			09/22/2016	Peter D. Kaus	1832178
	09/16/2016			09/30/2016	Beverly Y. Sanders	1832179, 1832180
EPA 365.1 Rev. 2.0	09/16/2016	09/27/2016	Vijayalakshmi Reddy	09/28/2016	Lipi Saha	1832178, 1832179, 1832180
EPA 365.1 Rev. 2.0 dissolved	09/16/2016			09/16/2016 15:40	Julia Storbeck	1832181, 1832182
	09/16/2016			09/16/2016 15:41	Julia Storbeck	1832183
SM 2120 B	09/16/2016			09/16/2016 18:29	Julie Michelle Frank	1832175
	09/16/2016			09/16/2016 18:30	Julie Michelle Frank	1832176
	09/16/2016			09/16/2016 18:32	Julie Michelle Frank	1832177
SM 2320 B-97	09/16/2016			09/23/2016	Dale L. Simmons	1832175, 1832176, 1832177
SM 2540 C-97	09/16/2016			09/19/2016	Yijie Li	1832175, 1832176, 1832177
SM 2540 D-97	09/16/2016			09/19/2016	Yijie Li	1832175, 1832176, 1832177
SM 4500 F-C-97	09/16/2016			09/23/2016	Dale L. Simmons	1832175, 1832176, 1832177
SM 5310 B-00	09/16/2016			09/20/2016	Sofia Elnemr	1832178, 1832179, 1832180