

Chemical Analysis Report

SE-DIST-2016-06-30-02

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

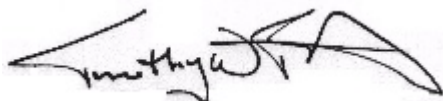
Event Description: **SMP-WCA1 pickup**
Request ID: **RQ-2016-06-27-19**
Customer: **SE-DIST**
Project ID: **SMP**

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

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Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 21-JUL-2016 10:34

A handwritten signature in black ink, appearing to read 'Timothy W. Fitzpatrick', with a stylized flourish at the end.

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 groups are included in this report: Metals and 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: WCA1 L39 Canal

Collection Date/Time: 06/29/2016 11:55

Field ID: G5SE0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1812598	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P307193	
	EPA 300.0 Rev. 2.1	Chloride	76		mg Cl/L	P308022	
		Sulfate	28		mg SO4/L	P308029	
	SM 2120 B	Color (true)	100	A	PCU	P307164	
	SM 2320 B-97	Total Alkalinity	116		mg CaCO3/L	P307617	
	SM 2540 C-97	TDS	331		mg/L	P307745	
	SM 2540 D-97	TSS	2	I	mg/L	P307716	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P307621	
1812600	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P307479	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P307265	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P307386	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P307324	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P307806	
1812602	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307160	
1812624	EPA 200.7 Rev. 4.4	Calcium	40.0		mg/L	P307149	
		Iron	30	U	ug/L	P307149	
		Magnesium	12.1		mg/L	P307149	
		Potassium	4.9		mg/L	P307149	
		Sodium	52.2		mg/L	P307149	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P307149	
		Arsenic	1.02		ug/L	P307149	
		Cadmium	0.020	U	ug/L	P307149	
		Chromium	0.084	I	ug/L	P307149	
		Copper	0.13	I	ug/L	P307149	
		Lead	0.054	I	ug/L	P307149	
		Nickel	0.12	I	ug/L	P307149	
		Silver	0.0050	U	ug/L	P307149	

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: WCA1 L-7 NE of S6 Structure

Collection Date/Time: 06/29/2016 12:05

Field ID: G5SE0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1812599	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P307193	
	EPA 300.0 Rev. 2.1	Chloride	76		mg Cl/L	P308022	
		Sulfate	28		mg SO4/L	P308029	
	SM 2120 B	Color (true)	100		PCU	P307164	
	SM 2320 B-97	Total Alkalinity	112		mg CaCO3/L	P307617	
	SM 2540 C-97	TDS	328	A	mg/L	P307746	
	SM 2540 D-97	TSS	2	I	mg/L	P307717	
	SM 4500 F-C-97	Fluoride	0.24		mg F/L	P307621	
1812601	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P307423	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P307265	MS

Field ID: G5SE0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1812601	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P307386	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P307324	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P307806	
1812603	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P307160	
1812625	EPA 200.7 Rev. 4.4	Calcium	38.8		mg/L	P307149	
		Iron	30	U	ug/L	P307149	
		Magnesium	12.1		mg/L	P307149	
		Potassium	4.9		mg/L	P307149	
		Sodium	52.3		mg/L	P307149	
		Zinc	5.0	U	ug/L	P307149	
	EPA 200.8 Rev. 5.4	Arsenic	0.99		ug/L	P307149	
		Cadmium	0.020	U	ug/L	P307149	
		Chromium	0.13	I	ug/L	P307149	
		Copper	0.59		ug/L	P307149	
		Lead	0.10	I	ug/L	P307149	
		Nickel	0.39		ug/L	P307149	
		Silver	0.0050	U	ug/L	P307149	

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: P307193

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P307149

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P307149

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308022

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308029

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307423

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307479

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307265

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307386

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307324

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307160

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

Reference Method: SM 2120 B
Batch ID: P307164

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P307617

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

Reference Method: SM 2540 C-97
Batch ID: P307745

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P307746

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P307716

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P307717

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P307621

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P307806

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P307149

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	109		P	85 - 115
Magnesium	112		P	85 - 115
Potassium	101		P	85 - 115
Sodium	98.8		P	85 - 115
Zinc	101		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P307149

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	100		P	85 - 115
Cadmium	98.9		P	85 - 115
Chromium	99.2		P	85 - 115
Copper	97.8		P	85 - 115
Lead	98.0		P	85 - 115
Nickel	99.6		P	85 - 115
Silver	96.6		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308022

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308029

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307423

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307479

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307265

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307386

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: P307324

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.8		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307160

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

Reference Method: SM 2320 B-97
Batch ID: P307617

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

Reference Method: SM 4500 F-C-97
Batch ID: P307621

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P307806

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P307149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812091	Calcium	106		P	80 - 120
1812091	Iron	107	113	P/P	80 - 120
1812091	Magnesium	108	115	P/P	80 - 120
1812091	Potassium	95.7	100	P/P	80 - 120
1812091	Sodium	101		P	80 - 120
1812091	Zinc	104	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P307149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812091	Arsenic	103	102	P/P	80 - 120
1812091	Cadmium	102	99.3	P/P	80 - 120
1812091	Chromium	102	100	P/P	80 - 120
1812091	Copper	99.9	100	P/P	80 - 120
1812091	Lead	100	99.5	P/P	80 - 120
1812091	Nickel	100	98.4	P/P	80 - 120
1812091	Silver	98.2	97.7	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308022

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812687	Chloride	99.2		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308022

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812690	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812687	Sulfate	98.5		P	90 - 110
1812690	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307423

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812601	Ammonia-N	100	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812696	Ammonia-N	97.9	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812563	Kjeldahl Nitrogen	88.2	95.5	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307386

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812557	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307324

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812561	Total-P	97.7	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812571	O-Phosphate-P	94.7	96.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P307621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812688	Fluoride	98.2	98.8	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P307806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1812470	Organic Carbon	98.0	99.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812628	Turbidity	3.09	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P307149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812091	Calcium	4.32	Spike	P	0 - 20
1812091	Iron	4.38	Spike	P	0 - 20
1812091	Magnesium	3.87	Spike	P	0 - 20
1812091	Potassium	3.09	Spike	P	0 - 20
1812091	Sodium	4.01	Spike	P	0 - 20
1812091	Zinc	2.63	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P307149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812091	Arsenic	1.28	Spike	P	0 - 20
1812091	Cadmium	2.98	Spike	P	0 - 20
1812091	Chromium	1.51	Spike	P	0 - 20
1812091	Copper	0.212	Spike	P	0 - 20
1812091	Lead	0.686	Spike	P	0 - 20
1812091	Nickel	1.89	Spike	P	0 - 20
1812091	Silver	0.509	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308022

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812687	Chloride	0.0347	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812687	Sulfate	0.0823	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307423

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812601	Ammonia-N	1.31	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812696	Ammonia-N	1.45	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812563	Kjeldahl Nitrogen	4.18	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812557	NO2NO3-N	1.45	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812561	Total-P	7.17	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812571	O-Phosphate-P	1.29	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P307164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812598	Color (true)	0.947	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P307617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812688	Total Alkalinity	0.729	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P307745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812333	TDS	0.213	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P307746

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812599	TDS	0.305	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P307621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812688	Fluoride	0.467	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P307806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1812470	Organic Carbon	1.11	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A70326
Included Lab Sample IDs: 1812602, 1812603

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	99.1	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A70328
Included Lab Sample IDs: 1812598, 1812599

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.9	93.0	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70349
Included Lab Sample IDs: 1812598, 1812599

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A70396

Included Lab Sample IDs: 1812624, 1812625

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Iron	103	105	P/P	90 - 110
Magnesium	101	103	P/P	90 - 110
Potassium	98.5	98.9	P/P	90 - 110
Sodium	98.1	97.8	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70411

Included Lab Sample IDs: 1812600, 1812601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70419

Included Lab Sample IDs: 1812601

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70434

Included Lab Sample IDs: 1812600, 1812601

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70436

Included Lab Sample IDs: 1812600

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A70469

Included Lab Sample IDs: 1812600, 1812601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.1	97.1	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A70474

Included Lab Sample IDs: 1812598, 1812599

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A70474

Included Lab Sample IDs: 1812598, 1812599

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A70477

Included Lab Sample IDs: 1812624, 1812625

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.9	98.9	P/P	90 - 110
Cadmium	97.9	97.2	P/P	90 - 110
Chromium	99.3	98.8	P/P	90 - 110
Copper	98.0	98.6	P/P	90 - 110
Lead	95.1	93.9	P/P	90 - 110
Nickel	98.4	98.4	P/P	90 - 110
Silver	96.2	95.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A70521

Included Lab Sample IDs: 1812600, 1812601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70540

Included Lab Sample IDs: 1812598, 1812599

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.1	99.0	P/P	90 - 110
Sulfate	94.0	98.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A70553

Included Lab Sample IDs: 1812625

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	96.7	96.6	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				3.09	
EPA 200.7 Rev. 4.4	Calcium	103	106			4.32
	Iron	109	107	113		4.38
	Magnesium	112	108	115		3.87

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	SMP
EPA 200.7 Rev. 4.4	Potassium	101	95.7	100		3.09
	Sodium	98.8	101			4.01
	Zinc	101	104	106		2.63
EPA 200.8 Rev. 5.4	Arsenic	100	103	102		1.28
	Cadmium	98.9	102	99.3		2.98
	Chromium	99.2	102	100		1.51
	Copper	97.8	99.9	100		0.212
	Lead	98.0	100	99.5		0.686
	Nickel	99.6	100	98.4		1.89
	Silver	96.6	98.2	97.7		0.509
EPA 300.0 Rev. 2.1	Chloride	100	99.2	101	0.0347	
	Sulfate	99.9	98.5	101	0.0823	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	100	102		1.31
	Ammonia-N	99.5	97.9	99.7		1.45
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.2	88.2	95.5		4.18
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102	104		1.45
EPA 365.1 Rev. 2.0	Total-P	98.8	97.7	107		7.17
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	94.7	96.0		1.29
SM 2120 B	Color (true)				0.947	
SM 2320 B-97	Total Alkalinity	103			0.729	
SM 2540 C-97	TDS				0.213	
	TDS				0.305	
SM 4500 F-C-97	Fluoride	99.9	98.2	98.8		0.467
SM 5310 B-00	Organic Carbon	104	98.0	99.6		1.11

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1812598, 1812599
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1812624, 1812625
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1812624, 1812625
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1812598, 1812599
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1812598, 1812599
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1812600, 1812601
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1812600, 1812601
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1812600, 1812601
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1812600, 1812601
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1812602, 1812603
SM 2120 B / E31780	True Color measured at 450 nm	1812598, 1812599
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1812598, 1812599
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1812598, 1812599
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1812598, 1812599
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1812598, 1812599
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1812600, 1812601

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	06/30/2016			06/30/2016 16:24	Blanca Fach	1812598, 1812599
EPA 200.7 Rev. 4.4	06/30/2016	06/30/2016	Elliott D. Healy	07/05/2016	Joshua Ayres	1812624, 1812625
EPA 200.8 Rev. 5.4	06/30/2016	06/30/2016	Elliott D. Healy	07/08/2016	Charles J. Peterson	1812624, 1812625
	06/30/2016	06/30/2016	Elliott D. Healy	07/13/2016	Charles J. Peterson	1812625
EPA 300.0 Rev. 2.1	06/30/2016			07/14/2016	Ping Hua	1812598, 1812599
EPA 350.1 Rev. 2.0	06/30/2016			07/06/2016	Diana M. Turner	1812601
	06/30/2016			07/07/2016	Diana M. Turner	1812600
EPA 351.2 Rev. 2.0	06/30/2016	07/05/2016	Sofia Elnemr	07/07/2016	Christopher Armour	1812600, 1812601
EPA 353.2 Rev. 2.0	06/30/2016			07/06/2016	Beverly Y. Sanders	1812600, 1812601
EPA 365.1 Rev. 2.0	06/30/2016	07/05/2016	Vijayalakshmi Reddy	07/07/2016	Lipi Saha	1812600, 1812601
EPA 365.1 Rev. 2.0 dissolved	06/30/2016			06/30/2016 14:52	Julia Storbeck	1812602
	06/30/2016			06/30/2016 14:53	Julia Storbeck	1812603
SM 2120 B	06/30/2016			06/30/2016 15:38	Rochelle Y Jackson	1812598
	06/30/2016			06/30/2016 15:39	Rochelle Y Jackson	1812599
SM 2320 B-97	06/30/2016			07/08/2016	Dale L. Simmons	1812598, 1812599
SM 2540 C-97	06/30/2016			07/05/2016	Sima Feizi	1812598, 1812599
SM 2540 D-97	06/30/2016			07/05/2016	Sima Feizi	1812598, 1812599
SM 4500 F-C-97	06/30/2016			07/08/2016	Dale L. Simmons	1812598, 1812599
SM 5310 B-00	06/30/2016			07/12/2016	Sofia Elnemr	1812600, 1812601