

Chemical Analysis Report

SO-DIST-2016-08-24-01

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

Event Description: **SMP: Florida Keys**
Request ID: **RQ-2016-08-22-09**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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: Timothy Fitzpatrick, Program Administrator

Date Certified: 20-SEP-2016 11:31

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: 8073 # 1 South of Ft.Zach

Collection Date/Time: 08/23/2016 10:20

Field ID: G5SD0062

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826224	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P310289	
	SM 2320 B-97	Total Alkalinity	114		mg CaCO3/L	P310364	
	SM 2540 D-97	TSS	4	I	mg/L	P310786	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P310366	
1826234	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P310458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P310394	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.039		mg N/L	P310415	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P310693	
	SM 5310 B-00	Organic Carbon	1.5	I	mg C/L	P310557	
1826244	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310274	
1826282	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P310573	
	EPA 200.8 Rev. 5.4	Arsenic	1.80		ug/L	P310911	
		Cadmium	0.060	U	ug/L	P310911	
		Chromium	0.15	U	ug/L	P310911	
		Copper	0.59	I	ug/L	P310911	
		Lead	0.25	U	ug/L	P310911	
		Nickel	0.21	I	ug/L	P310911	
		Silver	0.015	U	ug/L	P310911	
		Zinc	3.0	U	ug/L	P310911	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: 8073 # 2

Collection Date/Time: 08/23/2016 11:00

Field ID: G5SD0063

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826225	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P310289	
	SM 2320 B-97	Total Alkalinity	114		mg CaCO3/L	P310364	
	SM 2540 D-97	TSS	4	I	mg/L	P310786	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P310366	
1826235	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P310458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P310394	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P310415	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P310693	
	SM 5310 B-00	Organic Carbon	1.3	I	mg C/L	P310557	
1826245	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310274	
1826283	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P310573	
	EPA 200.8 Rev. 5.4	Arsenic	1.79		ug/L	P310911	
		Cadmium	0.060	U	ug/L	P310911	
		Chromium	0.15	U	ug/L	P310911	
		Copper	0.30	U	ug/L	P310911	
		Lead	0.25	U	ug/L	P310911	
		Nickel	0.24	I	ug/L	P310911	

Field ID: G5SD0063

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826283	EPA 200.8 Rev. 5.4	Silver	0.015	U	ug/L	P310911	
		Zinc	3.0	U	ug/L	P310911	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: 8073 # 3 ENRG6

Collection Date/Time: 08/23/2016 10:40

Field ID: G5SD0064

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826226	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P310289	
	SM 2320 B-97	Total Alkalinity	114		mg CaCO3/L	P310364	
	SM 2540 D-97	TSS	3	I	mg/L	P310786	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P310366	
1826236	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P310458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P310395	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P310415	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P310693	
	SM 5310 B-00	Organic Carbon	1.2	I	mg C/L	P310557	
1826246	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310274	
1826284	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P310573	
	EPA 200.8 Rev. 5.4	Arsenic	1.89		ug/L	P310911	
		Cadmium	0.060	U	ug/L	P310911	
		Chromium	0.15	U	ug/L	P310911	
		Copper	0.30	U	ug/L	P310911	
		Lead	0.25	U	ug/L	P310911	
		Nickel	0.17	I	ug/L	P310911	
		Silver	0.015	U	ug/L	P310911	
		Zinc	3.0	U	ug/L	P310911	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: 8073 # 4 ENRG2

Collection Date/Time: 08/23/2016 12:10

Field ID: G5SD0065

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826227	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P310289	
	SM 2320 B-97	Total Alkalinity	116		mg CaCO3/L	P310364	
	SM 2540 D-97	TSS	3	U	mg/L	P310786	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P310366	
1826237	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P310458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P310395	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P310415	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P310693	
	SM 5310 B-00	Organic Carbon	1.4	I	mg C/L	P310557	

Field ID: G5SD0065

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826247	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310274	
1826285	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P310573	
	EPA 200.8 Rev. 5.4	Arsenic	1.83		ug/L	P310911	
		Cadmium	0.060	U	ug/L	P310911	
		Chromium	0.15	U	ug/L	P310911	
		Copper	0.30	U	ug/L	P310911	
		Lead	0.25	U	ug/L	P310911	
		Nickel	0.18	I	ug/L	P310911	
		Silver	0.015	U	ug/L	P310911	
		Zinc	3.0	U	ug/L	P310911	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: 8073 # 5 ENRG1

Collection Date/Time: 08/23/2016 11:30

Field ID: G5SD0066

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826228	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P310289	
	SM 2320 B-97	Total Alkalinity	111		mg CaCO3/L	P310364	
	SM 2540 D-97	TSS	5	I	mg/L	P310786	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P310366	
1826238	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P310458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P310395	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P310415	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P310336	
	SM 5310 B-00	Organic Carbon	2.0	I	mg C/L	P310557	
1826248	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310274	
1826286	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P310573	
	EPA 200.8 Rev. 5.4	Arsenic	2.19		ug/L	P310911	
		Cadmium	0.060	U	ug/L	P310911	
		Chromium	0.15	U	ug/L	P310911	
		Copper	1.1	I	ug/L	P310911	
		Lead	0.25	U	ug/L	P310911	
		Nickel	0.19	I	ug/L	P310911	
		Silver	0.015	U	ug/L	P310911	
		Zinc	3.0	U	ug/L	P310911	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: 8079 # ENRG3 South of Stock Island

Collection Date/Time: 08/23/2016 10:00

Field ID: G5SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826229	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P310289	

Field ID: G5SD0067

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826229	SM 2320 B-97	Total Alkalinity	114		mg CaCO3/L	P310364	
	SM 2540 D-97	TSS	4	I	mg/L	P310786	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P310366	
1826239	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P310458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P310395	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P310416	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P310336	
	SM 5310 B-00	Organic Carbon	1.4	I	mg C/L	P310557	
1826249	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310274	
1826287	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P310573	
	EPA 200.8 Rev. 5.4	Arsenic	0.95		ug/L	P310911	
		Cadmium	0.060	U	ug/L	P310911	
		Chromium	0.52	I	ug/L	P310911	
		Copper	20.4		ug/L	P310911	
		Lead	0.38	I	ug/L	P310911	
		Nickel	3.42		ug/L	P310911	
		Silver	0.101		ug/L	P310911	
		Zinc	8.9	I	ug/L	P310911	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

EPA 200.8 Rev. 5.4: The copper result was confirmed on 09/09/2016.

Sample Location: 8079-ENRG6 Out by of reef

Collection Date/Time: 08/23/2016 09:45

Field ID: G5SD0068

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826230	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P310289	
	SM 2320 B-97	Total Alkalinity	117		mg CaCO3/L	P310364	
	SM 2540 D-97	TSS	3	I	mg/L	P310786	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P310366	
1826240	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P310458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P310395	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P310416	
	EPA 365.1 Rev. 2.0	Total-P	0.004	U	mg P/L	P310336	
	SM 5310 B-00	Organic Carbon	1.3	I	mg C/L	P310557	
1826250	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310274	
1826288	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P310573	
	EPA 200.8 Rev. 5.4	Arsenic	1.82		ug/L	P310911	
		Cadmium	0.060	U	ug/L	P310911	
		Chromium	0.15	U	ug/L	P310911	
		Copper	0.35	I	ug/L	P310911	
		Lead	0.25	U	ug/L	P310911	
		Nickel	0.16	I	ug/L	P310911	
		Silver	0.015	U	ug/L	P310911	
		Zinc	3.0	U	ug/L	P310911	

Field ID: G5SD0068

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
-----------	-------------	-----------	--------	------	-------	----------	----------

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: 8080-ENRG6 Out by of reef

Collection Date/Time: 08/23/2016 08:50

Field ID: G5SD0069

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
-----------	-------------	-----------	--------	------	-------	----------	----------

1826231	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P310289	
	SM 2320 B-97	Total Alkalinity	114		mg CaCO3/L	P310364	
	SM 2540 D-97	TSS	3	I	mg/L	P310786	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P310366	
1826241	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P310458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22	I	mg N/L	P310395	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P310416	
	EPA 365.1 Rev. 2.0	Total-P	0.007	I	mg P/L	P310336	
	SM 5310 B-00	Organic Carbon	1.5	I	mg C/L	P310557	
1826251	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310274	
1826289	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P310573	
	EPA 200.8 Rev. 5.4	Arsenic	1.80		ug/L	P310911	
		Cadmium	0.060	U	ug/L	P310911	
		Chromium	0.15	U	ug/L	P310911	
		Copper	0.30	U	ug/L	P310911	
		Lead	0.25	U	ug/L	P310911	
		Nickel	0.16	I	ug/L	P310911	
		Silver	0.015	U	ug/L	P310911	
		Zinc	3.0	U	ug/L	P310911	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: 8080-ENRG3 Nearshore

Collection Date/Time: 08/23/2016 08:30

Field ID: G5SD0070

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
-----------	-------------	-----------	--------	------	-------	----------	----------

1826232	EPA 180.1 Rev. 2.0	Turbidity	0.95	A	NTU	P310289	
	SM 2320 B-97	Total Alkalinity	114		mg CaCO3/L	P310364	
	SM 2540 D-97	TSS	3	I	mg/L	P310787	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P310366	
1826242	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P310458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P310395	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.012		mg N/L	P310416	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P310336	
	SM 5310 B-00	Organic Carbon	2.2		mg C/L	P310557	
1826252	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310274	
1826290	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P310573	

Field ID: G5SD0070

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826290	EPA 200.8 Rev. 5.4	Arsenic	1.87		ug/L	P310911	
		Cadmium	0.060	U	ug/L	P310911	
		Chromium	0.15	U	ug/L	P310911	
		Copper	0.30	U	ug/L	P310911	
		Lead	0.25	U	ug/L	P310911	
		Nickel	0.15	U	ug/L	P310911	
		Silver	0.015	U	ug/L	P310911	
		Zinc	3.0	U	ug/L	P310911	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: Field Blank

Collection Date/Time: 08/23/2016 16:25

Field ID: G5SD-Blank2

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826233	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P310289	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P310442	
	SM 2540 D-97	TSS	2	U	mg/L	P310784	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P310446	
1826243	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P310458	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P310397	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P310597	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P310338	
	SM 5310 B-00	Organic Carbon	0.55	I	mg C/L	P310630	
1826253	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310274	
1826291	EPA 200.7 Rev. 4.4	Iron	30	U	ug/L	P310344	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P310344	
		Cadmium	0.020	U	ug/L	P310841	
		Chromium	0.050	U	ug/L	P310344	
		Copper	0.50	U	ug/L	P310841	
		Lead	0.050	U	ug/L	P310841	
		Nickel	0.25	U	ug/L	P310841	
		Silver	0.0050	U	ug/L	P310344	
		Zinc	1.0	U	ug/L	P310841	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

SM 5310 B-00: The result was confirmed on 09/08/2016.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P310289

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P310344

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P310573

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310344

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Chromium	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310841

Component	Result	Code	Units
Cadmium	0.020	U	ug/L
Copper	0.50	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.25	U	ug/L
Zinc	1.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310911

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
Zinc	1.0	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310458

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310394

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: P310395

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310397

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310415

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310416

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310597

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310336

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310338

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310693

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310274

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P310364

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

Reference Method: SM 2320 B-97
Batch ID: P310442

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

Reference Method: SM 2540 D-97
Batch ID: P310784

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310786

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310787

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P310366

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P310446

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P310557

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

Reference Method: SM 5310 B-00
Batch ID: P310630

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: P310344

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P310573

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310344

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Chromium	95.5		P	85 - 115
Silver	98.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310841

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cadmium	92.9		P	85 - 115
Copper	92.9		P	85 - 115
Lead	94.8		P	85 - 115
Nickel	90.2		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	100		P	85 - 115
Copper	98.4		P	85 - 115
Lead	101		P	85 - 115
Nickel	98.2		P	85 - 115
Silver	99.8		P	85 - 115
Zinc	99.6		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310458

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310394

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310395

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310397

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310415

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310416

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310597

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: P310336

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310338

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310693

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310274

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P310364

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

Reference Method: SM 2320 B-97
Batch ID: P310442

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

Reference Method: SM 4500 F-C-97
Batch ID: P310366

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P310446

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P310557

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

Reference Method: SM 5310 B-00
Batch ID: P310630

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: P310344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826814	Iron	108	108	P/P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P310573

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825800	Iron	96.4		P	70 - 130
1826290	Iron	91.8	92.3	P/P	70 - 130

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826814	Arsenic	103	102	P/P	80 - 120
1826814	Chromium	100	98.9	P/P	80 - 120
1826814	Silver	101	100	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1828827	Cadmium	96.1	96.7	P/P	80 - 120
1828827	Copper	99.5	96.0	P/P	80 - 120
1828827	Lead	97.3	98.4	P/P	80 - 120
1828827	Nickel	96.4	83.7	P/P	80 - 120
1828827	Zinc	94.8	108	P/P	80 - 120
1829134	Cadmium	98.6		P	80 - 120
1829134	Copper	86.1		P	80 - 120
1829134	Lead	101		P	80 - 120
1829134	Nickel	81.8		P	80 - 120
1829134	Zinc	97.0		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829142	Arsenic	105	104	P/P	70 - 130
1829142	Cadmium	96.2	95.9	P/P	70 - 130
1829142	Chromium	86.5	84.7	P/P	70 - 130
1829142	Copper	94.2	91.9	P/P	70 - 130
1829142	Lead	104	102	P/P	70 - 130
1829142	Nickel	89.9	91.5	P/P	70 - 130
1829142	Silver	92.7	92.5	P/P	70 - 130
1829142	Zinc	94.0	93.8	P/P	70 - 130
1829183	Arsenic	104		P	70 - 130
1829183	Cadmium	90.7		P	70 - 130
1829183	Chromium	81.8		P	70 - 130
1829183	Copper	92.6		P	70 - 130
1829183	Lead	105		P	70 - 130
1829183	Nickel	93.2		P	70 - 130
1829183	Silver	92.4		P	70 - 130
1829183	Zinc	91.0		P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310458

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826234	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825652	Kjeldahl Nitrogen	96.9	94.1	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826589	Kjeldahl Nitrogen	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310397

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826136	Kjeldahl Nitrogen	96.1	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310415

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825123	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826587	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310597

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826318	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826239	Total-P	94.8	94.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310338

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826216	Total-P	101	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310693

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826234	Total-P	93.4	91.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310274

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826244	O-Phosphate-P	99.8	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P310366

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825648	Fluoride	93.9	93.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P310446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826501	Fluoride	96.6	97.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P310557

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1824750	Organic Carbon	93.5	95.8	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P310630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825738	Organic Carbon	109		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P310344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826814	Iron	0.231	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P310573

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826290	Iron	0.470	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826814	Arsenic	1.15	Spike	P	0 - 20
1826814	Chromium	1.33	Spike	P	0 - 20
1826814	Silver	0.708	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
--------------------------	-----------	-----------	-------------------	-----------	----------------

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1828827	Cadmium	0.692	Spike	P	0 - 20
1828827	Copper	3.56	Spike	P	0 - 20
1828827	Lead	1.10	Spike	P	0 - 20
1828827	Nickel	14.1	Spike	P	0 - 20
1828827	Zinc	12.2	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P310911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829142	Arsenic	1.05	Spike	P	0 - 20
1829142	Cadmium	0.325	Spike	P	0 - 20
1829142	Chromium	1.99	Spike	P	0 - 20
1829142	Copper	2.34	Spike	P	0 - 20
1829142	Lead	1.17	Spike	P	0 - 20
1829142	Nickel	1.65	Spike	P	0 - 20
1829142	Silver	0.220	Spike	P	0 - 20
1829142	Zinc	0.299	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310458

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826234	Ammonia-N	0.178	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825652	Kjeldahl Nitrogen	2.76	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826589	Kjeldahl Nitrogen	0.791	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826136	Kjeldahl Nitrogen	2.90	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825123	NO2NO3-N	0.482	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826587	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310597

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826318	NO2NO3-N	1.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826239	Total-P	0.0264	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310338

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826216	Total-P	1.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310693

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826234	Total-P	1.59	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310274

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826244	O-Phosphate-P	1.29	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P310364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825648	Total Alkalinity	0.629	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P310442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826501	Total Alkalinity	0.403	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P310366

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825648	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P310446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826501	Fluoride	0.979	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P310557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1824750	Organic Carbon	2.22	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P310630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825738	Organic Carbon	0.209	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: A71305

Included Lab Sample IDs: 1826244, 1826245, 1826246, 1826247, 1826248, 1826249, 1826250, 1826251, 1826252, 1826253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	101	99.9	P/P	90 - 110
O-Phosphate-P	99.9	101	P/P	90 - 110
O-Phosphate-P	99.9	99.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A71313

Included Lab Sample IDs: 1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230, 1826231, 1826232, 1826233

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

Reference Method: SM 2320 B-97

Run ID: A71330

Included Lab Sample IDs: 1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230, 1826231, 1826232

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

Reference Method: SM 4500 F-C-97

Run ID: A71330

Included Lab Sample IDs: 1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230, 1826231, 1826232

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	98.1	P/P	90 - 110
Fluoride	98.1	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71331

Included Lab Sample IDs: 1826238

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: A71341

Included Lab Sample IDs: 1826239, 1826240, 1826241, 1826242, 1826243

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.2	97.0	P/P	90 - 110
Total-P	96.8	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71345

Included Lab Sample IDs: 1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242

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

Reference Method: SM 2320 B-97

Run ID: A71361

Included Lab Sample IDs: 1826233

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: A71361

Included Lab Sample IDs: 1826233

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71365

Included Lab Sample IDs: 1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242, 1826243

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	98.7	P/P	90 - 110
Ammonia-N	98.7	98.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71370

Included Lab Sample IDs: 1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242, 1826243

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	101	P/P	90 - 110
Kjeldahl Nitrogen	104	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A71387

Included Lab Sample IDs: 1826291

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A71393

Included Lab Sample IDs: 1826291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	102	101	P/P	90 - 110
Chromium	94.0	96.8	P/P	90 - 110
Silver	98.2	97.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71398

Included Lab Sample IDs: 1826243

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

Reference Method: SM 5310 B-00

Run ID: A71405

Included Lab Sample IDs: 1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	90.8	P/P	90 - 110
Organic Carbon	90.8	93.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A71430
Included Lab Sample IDs: 1826243

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	105	106	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A71474
Included Lab Sample IDs: 1826282, 1826283, 1826284, 1826285, 1826286, 1826287, 1826288, 1826289, 1826290

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	100	97.2	P/P	90 - 110
Iron	97.2	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71489
Included Lab Sample IDs: 1826234, 1826235, 1826236, 1826237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	97.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A71536
Included Lab Sample IDs: 1826291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	96.7	95.2	P/P	90 - 110
Zinc	96.3	96.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A71542
Included Lab Sample IDs: 1826282, 1826283, 1826284, 1826285, 1826286, 1826287, 1826288, 1826289, 1826290

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	101	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Cadmium	98.8	99.9	P/P	90 - 110
Cadmium	99.2	98.8	P/P	90 - 110
Chromium	95.6	95.5	P/P	90 - 110
Chromium	98.5	95.6	P/P	90 - 110
Copper	100	99.1	P/P	90 - 110
Copper	101	100	P/P	90 - 110
Lead	99.2	99.6	P/P	90 - 110
Silver	98.9	99.1	P/P	90 - 110
Silver	99.5	98.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A71562
Included Lab Sample IDs: 1826282, 1826283, 1826284, 1826285, 1826286, 1826288, 1826289, 1826290, 1826291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	95.5	96.4	P/P	90 - 110
Lead	96.0	95.8	P/P	90 - 110
Lead	96.4	97.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A71635

Included Lab Sample IDs: 1826291

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	99.6	98.3	P/P	90 - 110
Nickel	99.9	97.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A71665

Included Lab Sample IDs: 1826282, 1826283, 1826284, 1826285, 1826286, 1826287, 1826288, 1826289, 1826290

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	96.1	96.7	P/P	90 - 110
Nickel	99.0	96.1	P/P	90 - 110
Zinc	98.2	99.2	P/P	90 - 110
Zinc	99.9	98.2	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Iron	108	108	108			0.231
	Iron	102	96.4	91.8	92.3		0.470
EPA 200.8 Rev. 5.4	Arsenic	101	103	102			1.15
	Arsenic	102	105	104	104		1.05
	Cadmium	92.9	96.1	96.7	98.6		0.692
	Cadmium	101	96.2	95.9	90.7		0.325
	Chromium	95.5	100	98.9			1.33
	Chromium	100	86.5	84.7	81.8		1.99
	Copper	92.9	99.5	96.0	86.1		3.56
	Copper	98.4	94.2	91.9	92.6		2.34
	Lead	94.8	97.3	98.4	101		1.10
	Lead	101	104	102	105		1.17
	Nickel	90.2	96.4	83.7	81.8		14.1
	Nickel	98.2	89.9	91.5	93.2		1.65
	Silver	98.5	101	100			0.708
	Silver	99.8	92.7	92.5	92.4		0.220
	Zinc	102	94.8	108	97.0		12.2
	Zinc	99.6	94.0	93.8	91.0		0.299
EPA 350.1 Rev. 2.0	Ammonia-N	102	103	103			0.178
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	96.9	94.1			2.76
	Kjeldahl Nitrogen	97.1	102	102			0.791
	Kjeldahl Nitrogen	101	96.1	99.8			2.90
EPA 353.2 Rev. 2.0	NO2NO3-N	102	104	104			0.482
	NO2NO3-N	101	101	101			0.0
	NO2NO3-N	104	104	105			1.44
EPA 365.1 Rev. 2.0	Total-P	99.5	94.8	94.7			0.0264
	Total-P	102	101	98.6			1.16
	Total-P	105	93.4	91.9			1.59

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.8	101		1.29
SM 2320 B-97	Total Alkalinity	103			0.629	
	Total Alkalinity	103			0.403	
SM 4500 F-C-97	Fluoride	96.6	93.9	93.9		0.0
	Fluoride	97.9	96.6	97.6		0.979
SM 5310 B-00	Organic Carbon	102	93.5	95.8		2.22
	Organic Carbon	104	109			0.209

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230, 1826231, 1826232, 1826233
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1826282, 1826283, 1826284, 1826285, 1826286, 1826287, 1826288, 1826289, 1826290, 1826291
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1826282, 1826283, 1826284, 1826285, 1826286, 1826287, 1826288, 1826289, 1826290, 1826291
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242, 1826243
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242, 1826243
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242, 1826243
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242, 1826243
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1826244, 1826245, 1826246, 1826247, 1826248, 1826249, 1826250, 1826251, 1826252, 1826253
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230, 1826231, 1826232, 1826233
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230, 1826231, 1826232, 1826233
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230, 1826231, 1826232, 1826233
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242, 1826243

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	08/24/2016			08/24/2016 15:45	Sima Feizi	1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230, 1826231, 1826232, 1826233
EPA 200.7 Rev. 4.4	08/24/2016	08/25/2016	Elliott D. Healy	08/26/2016	Joshua Ayres	1826291
	08/24/2016	08/30/2016	Elliott D. Healy	09/07/2016	Joshua Ayres	1826282, 1826283, 1826284, 1826285, 1826286, 1826287, 1826288, 1826289, 1826290
EPA 200.8 Rev. 5.4	08/24/2016	08/25/2016	Elliott D. Healy	08/29/2016	Charles J. Peterson	1826291
	08/24/2016	09/08/2016	Elliott D. Healy	09/09/2016	Charles J. Peterson	1826291
	08/24/2016	09/08/2016	Elliott D. Healy	09/12/2016	Charles J. Peterson	1826291
	08/24/2016	09/08/2016	Elliott D. Healy	09/14/2016	Robert K Palmer	1826291
	08/24/2016	09/09/2016	Elliott D. Healy	09/11/2016	Charles J. Peterson	1826282, 1826283, 1826284, 1826285, 1826286, 1826287, 1826288, 1826289, 1826290
	08/24/2016	09/09/2016	Elliott D. Healy	09/12/2016	Charles J. Peterson	1826282
	08/24/2016	09/09/2016	Elliott D. Healy	09/13/2016	Charles J. Peterson	1826283, 1826284, 1826285, 1826286, 1826288, 1826289, 1826290
	08/24/2016	09/09/2016	Elliott D. Healy	09/15/2016	Charles J. Peterson	1826282, 1826283, 1826284, 1826285, 1826286, 1826287, 1826288, 1826289, 1826290
EPA 350.1 Rev. 2.0	08/24/2016			08/26/2016	Joseph Suarez	1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242, 1826243
EPA 351.2 Rev. 2.0	08/24/2016	08/26/2016	Adrian Shelby	08/29/2016	Virginia P. Brown	1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242, 1826243
EPA 353.2 Rev. 2.0	08/24/2016			08/26/2016	Beverly Y. Sanders	1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242
	08/24/2016			08/30/2016	Beverly Y. Sanders	1826243
EPA 365.1 Rev. 2.0	08/24/2016	08/25/2016	Vijayalakshmi Reddy	08/25/2016	Lipi Saha	1826238
	08/24/2016	08/25/2016	Vijayalakshmi Reddy	08/26/2016	Lipi Saha	1826239, 1826240, 1826241, 1826242, 1826243
	08/24/2016	09/07/2016	Vijayalakshmi Reddy	09/08/2016	Lipi Saha	1826234, 1826235, 1826236, 1826237
EPA 365.1 Rev. 2.0 dissolved	08/24/2016			08/24/2016 16:05	Julia Storbeck	1826244
	08/24/2016			08/24/2016 16:16	Julia Storbeck	1826253
	08/24/2016			08/24/2016 16:48	Julia Storbeck	1826245
	08/24/2016			08/24/2016 16:49	Julia Storbeck	1826246
	08/24/2016			08/24/2016 16:54	Julia Storbeck	1826247
	08/24/2016			08/24/2016 16:55	Julia Storbeck	1826248
	08/24/2016			08/24/2016 16:56	Julia Storbeck	1826249
	08/24/2016			08/24/2016 16:57	Julia Storbeck	1826250
	08/24/2016			08/24/2016 16:58	Julia Storbeck	1826251, 1826252

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-97	08/24/2016			08/25/2016	Dale L. Simmons	1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230
	08/24/2016			08/26/2016	Dale L. Simmons	1826231, 1826232
	08/24/2016			08/27/2016	Dale L. Simmons	1826233
SM 2540 D-97	08/24/2016			08/29/2016	Yijie Li	1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230, 1826231, 1826232, 1826233
SM 4500 F-C-97	08/24/2016			08/25/2016	Dale L. Simmons	1826224, 1826225, 1826226, 1826227, 1826228, 1826229, 1826230, 1826231, 1826232
SM 5310 B-00	08/24/2016			08/27/2016	Dale L. Simmons	1826233
	08/24/2016			08/30/2016	Sofia Elnemr	1826234, 1826235, 1826236, 1826237, 1826238, 1826239, 1826240, 1826241, 1826242, 1826243