Chemical Analysis Report

CEN-DIST-2016-11-16-03

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

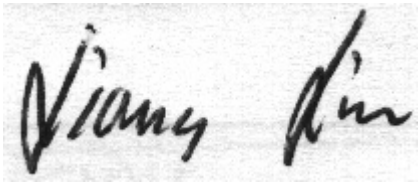
Event Description: **Strickland D/Turnbull B/Spruce C/Rose Bx2**
Request ID: **RQ-2016-11-14-57**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 13-DEC-2016 10:22



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: ROSE BAY @ US 1 **Collection Date/Time: 11/15/2016 10:59**

Field ID: G5CE0038 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1850506	EPA 180.1 Rev. 2.0	Turbidity	3.8	A	NTU	P315323	
	SM 2320 B-97	Total Alkalinity	127		mg CaCO3/L	P315425	
	SM 2540 D-97	TSS	12		mg/L	P315636	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P315428	
1850509	EPA 350.1 Rev. 2.0	Ammonia-N	0.054		mg N/L	P315681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.55		mg N/L	P315970	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.014		mg N/L	P315631	
	EPA 365.1 Rev. 2.0	Total-P	0.056		mg P/L	P315826	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P315542	
1850512	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.036		mg P/L	P315299	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: ROSE BAY @ 125M NE OF BOAT RAMP **Collection Date/Time: 11/15/2016 11:15**

Field ID: G5CE0073 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1850507	EPA 180.1 Rev. 2.0	Turbidity	4.1		NTU	P315323	
	SM 2320 B-97	Total Alkalinity	127		mg CaCO3/L	P315425	
	SM 2540 D-97	TSS	4	I	mg/L	P315636	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P315428	
1850510	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P315681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P315970	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P315631	
	EPA 365.1 Rev. 2.0	Total-P	0.054		mg P/L	P315826	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P315542	
1850513	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.034		mg P/L	P315299	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: TURNBULL BAY @ 2 MILES NW OF TURNBULL BAY RD **Collection Date/Time: 11/15/2016 11:50**

Field ID: G5CE0075 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1850508	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P315323	
	SM 2320 B-97	Total Alkalinity	123		mg CaCO3/L	P315425	
	SM 2540 D-97	TSS	4	I	mg/L	P315637	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P315428	
1850511	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P315681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P315970	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P315631	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P315826	
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P315542	

Field ID: G5CE0075 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1850514	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.026		mg P/L	P315299	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: STRICKLAND BAY @ 875M EAST (DOWNSTREAM) OF RR CROSSING **Collection Date/Time: 11/15/2016 12:01**

Field ID: G5CE0074 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1850515	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P315323	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P315425	
	SM 2540 D-97	TSS	6	I	mg/L	P315637	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P315428	
1850516	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P315681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P315970	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P315631	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P315826	
	SM 5310 B-00	Organic Carbon	4.2		mg C/L	P315542	
1850517	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P315299	
1850522	EPA 200.7 Rev. 4.4	Iron	99	I	ug/L	P315644	
	EPA 200.8 Rev. 5.4	Arsenic	1.95		ug/L	P315644	
		Cadmium	0.060	U	ug/L	P315644	
		Chromium	0.33	I	ug/L	P315644	
		Copper	1.5	U	ug/L	P316456	
		Lead	0.22	I	ug/L	P315644	
		Nickel	0.30	I	ug/L	P315644	
		Silver	0.015	U	ug/L	P315644	
		Zinc	3.0	U	ug/L	P315644	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 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: P315323

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P315644

Component	Result	Code	Units
Iron	30	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P315644

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	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 200.8 Rev. 5.4
Batch ID: P316456

Component	Result	Code	Units
Copper	0.50	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315681

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315970

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315631

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315826

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315299

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

Reference Method: SM 2320 B-97
Batch ID: P315425

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P315636

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P315637

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P315428

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P315542

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: P315644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	105		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P315644

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	98.6		P	85 - 115
Cadmium	99.8		P	85 - 115
Chromium	104		P	85 - 115
Lead	100		P	85 - 115
Nickel	95.4		P	85 - 115
Silver	99.5		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316456

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	97.9		P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315681

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315681

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315970

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315631

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: P315826

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315299

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

Reference Method: SM 2320 B-97
Batch ID: P315425

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P315428

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P315542

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P315644

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P315644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1849923	Iron	103	103	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P315644

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1849923	Arsenic	107	106	P/P	70 - 130
1849923	Cadmium	100	99.3	P/P	70 - 130
1849923	Chromium	93.4	92.2	P/P	70 - 130
1849923	Lead	104	105	P/P	70 - 130
1849923	Nickel	97.1	96.6	P/P	70 - 130
1849923	Silver	95.5	96.6	P/P	70 - 130
1849923	Zinc	96.0	95.7	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1849922	Copper	83.2		P	70 - 130
1850586	Copper	89.5	92.1	P/P	70 - 130

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315970

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850385	Kjeldahl Nitrogen	94.2	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315631

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850509	NO2NO3-N	105	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315826

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850493	Total-P	96.5	93.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315299

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850352	O-Phosphate-P	98.3	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P315428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1849899	Fluoride	97.8	99.2	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P315542

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1850377	Organic Carbon	95.4	96.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P315323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850506	Turbidity	1.57	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P315644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1849923	Iron	0.375	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P315644

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1849923	Arsenic	0.770	Spike	P	0 - 20
1849923	Cadmium	0.987	Spike	P	0 - 20
1849923	Chromium	1.26	Spike	P	0 - 20
1849923	Lead	0.497	Spike	P	0 - 20
1849923	Nickel	0.587	Spike	P	0 - 20
1849923	Silver	1.24	Spike	P	0 - 20
1849923	Zinc	0.292	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P316456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850586	Copper	2.82	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850510	Ammonia-N	0.524	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315970

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

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315970

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850385	Kjeldahl Nitrogen	3.62	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P315631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850509	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P315826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850493	Total-P	3.00	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850352	O-Phosphate-P	0.0917	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P315425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1849899	Total Alkalinity	0.102	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P315428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1849899	Fluoride	1.04	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P315542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1850377	Organic Carbon	1.03	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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A72846
Included Lab Sample IDs: 1850512, 1850513, 1850514, 1850517

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A72856
Included Lab Sample IDs: 1850506, 1850507, 1850508, 1850515

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

Reference Method: SM 2320 B-97
Run ID: A72887
Included Lab Sample IDs: 1850506, 1850507, 1850508, 1850515

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: A72887
Included Lab Sample IDs: 1850506, 1850507, 1850508, 1850515

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	100	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A72935
Included Lab Sample IDs: 1850509, 1850510, 1850511, 1850516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	95.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72968
Included Lab Sample IDs: 1850509, 1850510, 1850511, 1850516

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72986
Included Lab Sample IDs: 1850509, 1850510, 1850511, 1850516

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73006
Included Lab Sample IDs: 1850522

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.5	99.9	P/P	90 - 110
Cadmium	97.0	96.1	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73006
Included Lab Sample IDs: 1850522

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	97.4	93.2	P/P	90 - 110
Lead	97.3	96.1	P/P	90 - 110
Nickel	96.3	99.1	P/P	90 - 110
Silver	98.7	98.2	P/P	90 - 110
Zinc	96.8	99.1	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A73031
Included Lab Sample IDs: 1850522

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73087
Included Lab Sample IDs: 1850509, 1850510, 1850511, 1850516

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73135
Included Lab Sample IDs: 1850509, 1850510, 1850511, 1850516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.3	94.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73273
Included Lab Sample IDs: 1850522

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	101	97.9	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						1.57	
EPA 200.7 Rev. 4.4	Iron	105	103	103				0.375
EPA 200.8 Rev. 5.4	Arsenic	98.6	107	106				0.770
	Cadmium	99.8	100	99.3				0.987
	Chromium	104	93.4	92.2				1.26
	Copper	97.9	89.5	92.1	83.2			2.82
	Lead	100	104	105				0.497

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 200.8 Rev. 5.4	Nickel	95.4	97.1	96.6			0.587
	Silver	99.5	95.5	96.6			1.24
	Zinc	101	96.0	95.7			0.292
EPA 350.1 Rev. 2.0	Ammonia-N	104					0.524
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	94.2	98.1			3.62
EPA 353.2 Rev. 2.0	NO2NO3-N	104	105	105			0.0
EPA 365.1 Rev. 2.0	Total-P	101	96.5	93.4			3.00
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	98.3	98.2			0.0917
SM 2320 B-97	Total Alkalinity	101				0.102	
SM 4500 F-C-97	Fluoride	95.6	97.8	99.2			1.04
SM 5310 B-00	Organic Carbon	95.2	95.4	96.5			1.03

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1850506, 1850507, 1850508, 1850515
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1850522
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1850522
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1850509, 1850510, 1850511, 1850516
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1850509, 1850510, 1850511, 1850516
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1850509, 1850510, 1850511, 1850516
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1850509, 1850510, 1850511, 1850516
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1850512, 1850513, 1850514, 1850517
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1850506, 1850507, 1850508, 1850515
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1850506, 1850507, 1850508, 1850515
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1850506, 1850507, 1850508, 1850515
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1850509, 1850510, 1850511, 1850516

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	11/16/2016			11/16/2016 16:20	Sima Feizi	1850506, 1850507, 1850508, 1850515
EPA 200.7 Rev. 4.4	11/16/2016	11/22/2016	Elliott D. Healy	11/28/2016	Joshua Ayres	1850522
EPA 200.8 Rev. 5.4	11/16/2016	11/22/2016	Elliott D. Healy	11/24/2016	Charles J. Peterson	1850522
	11/16/2016	12/08/2016	Elliott D. Healy	12/09/2016	Robert K Palmer	1850522
EPA 350.1 Rev. 2.0	11/16/2016			11/22/2016	Sofia Elnemr	1850509, 1850510, 1850511, 1850516
EPA 351.2 Rev. 2.0	11/16/2016	12/01/2016	Adrian Shelby	12/02/2016	Joseph Suarez	1850509, 1850510, 1850511, 1850516
EPA 353.2 Rev. 2.0	11/16/2016			11/22/2016	Beverly Y. Sanders	1850509, 1850510, 1850511, 1850516
EPA 365.1 Rev. 2.0	11/16/2016	11/29/2016	Christopher Armour	11/30/2016	Lipi Saha	1850509, 1850510, 1850511, 1850516
EPA 365.1 Rev. 2.0 dissolved	11/16/2016			11/16/2016 16:03	Julia Storbeck	1850512
	11/16/2016			11/16/2016 16:04	Julia Storbeck	1850513
	11/16/2016			11/16/2016 16:05	Julia Storbeck	1850514
	11/16/2016			11/16/2016 16:06	Julia Storbeck	1850517
SM 2320 B-97	11/16/2016			11/18/2016	Dale L. Simmons	1850506, 1850507, 1850508, 1850515
SM 2540 D-97	11/16/2016			11/18/2016	Yijie Li	1850506, 1850507, 1850508, 1850515
SM 4500 F-C-97	11/16/2016			11/18/2016	Dale L. Simmons	1850506, 1850507, 1850508, 1850515
SM 5310 B-00	11/16/2016			11/21/2016	Julie Michelle Frank	1850509, 1850510, 1850511, 1850516