Chemical Analysis Report

SO-DIST-2017-02-08-01

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-2017-01-09-05**
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
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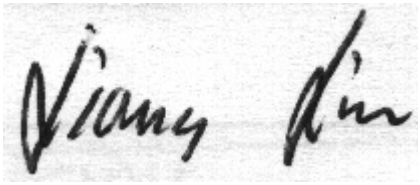
Certified by: Liang Lin, Environmental Administrator

Date Certified: 08-MAR-2017 10:52



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: Indian Key Fill at SW End **Collection Date/Time: 02/07/2017 15:50**

Field ID: G5SD020717-1 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1870676	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P319535	
	SM 2320 B-97	Total Alkalinity	130		mg CaCO3/L	P319869	
	SM 2540 D-97	TSS	8	I	mg/L	P319892	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P319874	
1870679	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P319694	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P319645	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P320026	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P319963	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P319726	
1870682	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P319534	
1870703	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P319744	
	EPA 200.8 Rev. 5.4	Arsenic	2.23		ug/L	P319744	
		Cadmium	0.080	U	ug/L	P319744	
		Chromium	1.6	U	ug/L	P319744	
		Copper	0.80	U	ug/L	P319744	
		Lead	0.50	U	ug/L	P319744	
		Nickel	0.80	U	ug/L	P319744	
		Silver	0.040	U	ug/L	P319744	
		Zinc	8.1	I	ug/L	P319744	

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: The result was confirmed on 02/17/2017.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 02/08/2017.

Sample Location: Grassy Key @ Curry Hammock SP Creek **Collection Date/Time: 02/07/2017 16:58**

Field ID: G5SD020717-3 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1870677	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P319535	
	SM 2320 B-97	Total Alkalinity	139		mg CaCO3/L	P319869	
	SM 2540 D-97	TSS	7	I	mg/L	P319893	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P319874	
1870680	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P319694	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P319645	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P320026	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P319755	MS
	SM 5310 B-00	Organic Carbon	4.2		mg C/L	P319726	
1870683	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319534	
1870704	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P319744	
	EPA 200.8 Rev. 5.4	Arsenic	2.37		ug/L	P319744	
		Cadmium	0.080	U	ug/L	P319744	
		Chromium	1.6	U	ug/L	P319744	
		Copper	0.80	U	ug/L	P319744	
		Lead	0.50	U	ug/L	P319744	

Field ID: G5SD020717-3 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1870704	EPA 200.8 Rev. 5.4	Nickel	0.80	U	ug/L	P319744	
		Silver	0.040	U	ug/L	P319744	
		Zinc	4.0	U	ug/L	P319744	

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

Sample Location: Indian Key Fill at SW End DUP **Collection Date/Time: 02/07/2017 16:00**

Field ID: G5SD020717-10 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1870678	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P319535	
	SM 2320 B-97	Total Alkalinity	131		mg CaCO3/L	P319869	
	SM 2540 D-97	TSS	9	I	mg/L	P319893	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P319874	
1870681	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P319694	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P319645	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P320026	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P320072	MS
	SM 5310 B-00	Organic Carbon	3.3		mg C/L	P319726	
1870684	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319534	
1870705	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P319744	
	EPA 200.8 Rev. 5.4	Arsenic	2.35		ug/L	P319744	
		Cadmium	0.080	U	ug/L	P319744	
		Chromium	1.6	U	ug/L	P319744	
		Copper	0.80	U	ug/L	P319744	
		Lead	0.50	U	ug/L	P319744	
		Nickel	0.80	U	ug/L	P319744	
		Silver	0.040	U	ug/L	P319744	
		Zinc	4.0	I	ug/L	P319744	

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: The result was confirmed on 02/17/2017.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 02/08/2017.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P319535

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P319744

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: P319744

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L
Zinc	1.0	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319694

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319645

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320026

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319755

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319963

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320072

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319534

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: P319869

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

Reference Method: SM 2540 D-97
Batch ID: P319892

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P319893

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P319874

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P319726

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: P319744

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319744

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	103		P	85 - 115
Cadmium	99.0		P	85 - 115
Chromium	99.2		P	85 - 115
Copper	99.6		P	85 - 115
Lead	100		P	85 - 115
Nickel	100		P	85 - 115
Silver	99.9		P	85 - 115
Zinc	102		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319694

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319645

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: P320026

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319755

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319963

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320072

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319534

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

Reference Method: SM 2320 B-97
Batch ID: P319869

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

Reference Method: SM 4500 F-C-97
Batch ID: P319874

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P319726

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P319744

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870810	Iron	103	104	P/P	80 - 120
1871453	Iron	102		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319744

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870810	Arsenic	117	118	P/P	70 - 130
1870810	Cadmium	101	104	P/P	70 - 130
1870810	Chromium	92.6	93.5	P/P	70 - 130
1870810	Copper	97.1	98.7	P/P	70 - 130
1870810	Lead	110	112	P/P	70 - 130
1870810	Nickel	102	103	P/P	70 - 130
1870810	Silver	97.5	99.3	P/P	70 - 130
1870810	Zinc	98.6	100	P/P	70 - 130
1871453	Arsenic	113		P	70 - 130
1871453	Cadmium	98.8		P	70 - 130
1871453	Chromium	87.2		P	70 - 130
1871453	Copper	95.5		P	70 - 130
1871453	Lead	117		P	70 - 130
1871453	Nickel	101		P	70 - 130
1871453	Silver	94.9		P	70 - 130
1871453	Zinc	97.9		P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319694

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870679	Ammonia-N	102	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319645

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870599	Kjeldahl Nitrogen	96.4	91.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870680	NO2NO3-N	102	104	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870679	Total-P	85.6	87.6	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319963

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1872626	Total-P	95.4	93.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320072

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1873019	Total-P	88.6	89.4	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319534

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870683	O-Phosphate-P	98.9	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P319874

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870554	Fluoride	93.0	94.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P319726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871065	Organic Carbon	96.2	96.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P319535

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870714	Turbidity	4.69	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P319744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870810	Iron	0.896	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870810	Arsenic	1.28	Spike	P	0 - 20
1870810	Cadmium	2.57	Spike	P	0 - 20
1870810	Chromium	1.00	Spike	P	0 - 20
1870810	Copper	1.59	Spike	P	0 - 20
1870810	Lead	1.89	Spike	P	0 - 20
1870810	Nickel	1.16	Spike	P	0 - 20
1870810	Silver	1.84	Spike	P	0 - 20
1870810	Zinc	1.67	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319694

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870679	Ammonia-N	1.99	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870599	Kjeldahl Nitrogen	4.12	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870680	NO2NO3-N	1.42	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870679	Total-P	2.36	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319963

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1872626	Total-P	1.96	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P320072

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1873019	Total-P	0.831	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319534

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870683	O-Phosphate-P	0.404	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P319869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870554	Total Alkalinity	0.615	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P319874

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870554	Fluoride	0.987	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P319726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871065	Organic Carbon	0.560	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: A74352
Included Lab Sample IDs: 1870682, 1870683, 1870684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	100	P/P	90 - 110
O-Phosphate-P	99.0	97.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A74353
Included Lab Sample IDs: 1870676, 1870677, 1870678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	96.0	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A74413
Included Lab Sample IDs: 1870679, 1870680, 1870681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	99.9	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A74413
Included Lab Sample IDs: 1870679, 1870680, 1870681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	101	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A74423
Included Lab Sample IDs: 1870679, 1870680, 1870681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.9	101	P/P	90 - 110
Organic Carbon	99.9	96.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A74442
Included Lab Sample IDs: 1870679, 1870680, 1870681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A74479
Included Lab Sample IDs: 1870676, 1870677, 1870678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A74479
Included Lab Sample IDs: 1870676, 1870677, 1870678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	94.2	P/P	90 - 110
Fluoride	94.2	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A74487
Included Lab Sample IDs: 1870680

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A74541
Included Lab Sample IDs: 1870703, 1870704, 1870705

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A74547
Included Lab Sample IDs: 1870679, 1870680, 1870681

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A74547
Included Lab Sample IDs: 1870679, 1870680, 1870681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A74582
Included Lab Sample IDs: 1870679

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A74613
Included Lab Sample IDs: 1870681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	96.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A74785
Included Lab Sample IDs: 1870703, 1870704, 1870705

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	106	108	P/P	90 - 110
Cadmium	103	105	P/P	90 - 110
Chromium	104	102	P/P	90 - 110
Copper	105	103	P/P	90 - 110
Nickel	106	104	P/P	90 - 110
Silver	105	105	P/P	90 - 110
Zinc	106	105	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A74915
Included Lab Sample IDs: 1870703, 1870704, 1870705

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	109	109	P/P	90 - 110

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

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						4.69	
EPA 200.7 Rev. 4.4	Iron	105	103	104	102			0.896
EPA 200.8 Rev. 5.4	Arsenic	103	117	118	113			1.28
	Cadmium	99.0	101	104	98.8			2.57
	Chromium	99.2	92.6	93.5	87.2			1.00

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 200.8 Rev. 5.4	Copper	99.6	97.1	98.7	95.5			1.59
	Lead	100	110	112	117			1.89
	Nickel	100	102	103	101			1.16
	Silver	99.9	97.5	99.3	94.9			1.84
	Zinc	102	98.6	100	97.9			1.67
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	102	98.8				1.99
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	96.4	91.8				4.12
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	104				1.42
EPA 365.1 Rev. 2.0	Total-P	95.1	85.6	87.6				2.36
	Total-P	96.2	95.4	93.5				1.96
	Total-P	97.5	88.6	89.4				0.831
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.9	99.3				0.404
SM 2320 B-97	Total Alkalinity	103					0.615	
SM 4500 F-C-97	Fluoride	98.6	93.0	94.2				0.987
SM 5310 B-00	Organic Carbon	99.6	96.2	96.8				0.560

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1870676, 1870677, 1870678
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1870703, 1870704, 1870705
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1870703, 1870704, 1870705
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1870679, 1870680, 1870681
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1870679, 1870680, 1870681
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1870679, 1870680, 1870681
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1870679, 1870680, 1870681
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1870682, 1870683, 1870684
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1870676, 1870677, 1870678
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1870676, 1870677, 1870678
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1870676, 1870677, 1870678
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1870679, 1870680, 1870681

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	02/08/2017			02/08/2017 16:31	Julie Michelle Frank	1870676, 1870677, 1870678
EPA 200.7 Rev. 4.4	02/08/2017	02/13/2017	Elliott D. Healy	02/16/2017	Joshua Ayres	1870703, 1870704, 1870705
EPA 200.8 Rev. 5.4	02/08/2017	02/13/2017	Elliott D. Healy	02/28/2017	Betina Topolski	1870703, 1870704, 1870705
	02/08/2017	02/13/2017	Elliott D. Healy	03/06/2017	Betina Topolski	1870703, 1870704, 1870705
EPA 350.1 Rev. 2.0	02/08/2017			02/10/2017	Sofia Elnemr	1870679, 1870680, 1870681
EPA 351.2 Rev. 2.0	02/08/2017	02/10/2017	Adrian Shelby	02/13/2017	Joseph Suarez	1870679, 1870680, 1870681
EPA 353.2 Rev. 2.0	02/08/2017			02/17/2017	Beverly Y. Sanders	1870679, 1870680, 1870681
EPA 365.1 Rev. 2.0	02/08/2017	02/13/2017	Vijayalakshmi Reddy	02/15/2017	Lipi Saha	1870680
	02/08/2017	02/16/2017	Adrian Shelby	02/20/2017	Lipi Saha	1870679
	02/08/2017	02/17/2017	Vijayalakshmi Reddy	02/21/2017	Lipi Saha	1870681
EPA 365.1 Rev. 2.0 dissolved	02/08/2017			02/08/2017 16:00	Julie Michelle Frank	1870683
	02/08/2017			02/08/2017 16:27	Julie Michelle Frank	1870682
	02/08/2017			02/08/2017 16:28	Julie Michelle Frank	1870684
SM 2320 B-97	02/08/2017			02/15/2017	Dale L. Simmons	1870676, 1870677, 1870678
SM 2540 D-97	02/08/2017			02/10/2017	Sima Feizi	1870676, 1870677, 1870678
SM 4500 F-C-97	02/08/2017			02/14/2017	Dale L. Simmons	1870676
	02/08/2017			02/15/2017	Dale L. Simmons	1870677, 1870678
SM 5310 B-00	02/08/2017			02/10/2017	Julie Michelle Frank	1870679, 1870680, 1870681