Chemical Analysis Report

SE-DIST-2017-03-10-01

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

Event Description: **SMP-IRL Run**
Request ID: **RQ-2017-03-06-25**
Customer: **SE-DIST**
Project ID: **SMP**

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

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 05-APR-2017 13:22

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: IRL @ ROYAL PALM POINTE **Collection Date/Time: 03/09/2017 10:10**

Field ID: G5SE0051 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879332	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P321398	
	SM 2320 B-97	Total Alkalinity	145		mg CaCO3/L	P321700	
	SM 2540 D-97	TSS	5	I	mg/L	P321823	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P321705	
1879335	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P321468	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P321850	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P322039	
	EPA 365.1 Rev. 2.0	Total-P	0.063		mg P/L	P321490	
	SM 5310 B-00	Organic Carbon	5.1		mg C/L	P321418	
1879338	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P321401	
1879344	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P321624	
	EPA 200.8 Rev. 5.4	Arsenic	1.8	I	ug/L	P321624	
		Cadmium	0.15	U	ug/L	P321624	
		Chromium	0.90	U	ug/L	P321624	
		Copper	2.4	I	ug/L	P321624	
		Lead	0.60	U	ug/L	P321624	
		Nickel	0.75	U	ug/L	P321624	
		Silver	0.075	U	ug/L	P321624	
		Zinc	15	U	ug/L	P321624	

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: IRL @ ROYAL PALM POINTE **Collection Date/Time: 03/09/2017 10:15**

Field ID: G5SE0051_DUPE Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879333	EPA 180.1 Rev. 2.0	Turbidity	3.2	A	NTU	P321399	
	SM 2320 B-97	Total Alkalinity	145		mg CaCO3/L	P321700	
	SM 2540 D-97	TSS	6	I	mg/L	P321823	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P321705	
1879336	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P321468	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P321850	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P322039	
	EPA 365.1 Rev. 2.0	Total-P	0.066		mg P/L	P321490	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P321418	
1879339	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P321401	
1879345	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P321624	
	EPA 200.8 Rev. 5.4	Arsenic	1.7	I	ug/L	P321624	
		Cadmium	0.15	U	ug/L	P321624	
		Chromium	0.90	U	ug/L	P321624	
		Copper	2.5	I	ug/L	P321624	
		Lead	0.60	U	ug/L	P321624	
		Nickel	0.75	U	ug/L	P321624	
		Silver	0.075	U	ug/L	P321624	

Field ID: G5SE0051_DUPE Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879345	EPA 200.8 Rev. 5.4	Zinc	15	U	ug/L	P321624	

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: MELODY LANE PIER **Collection Date/Time: 03/09/2017 11:05**

Field ID: G2SE0028 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879334	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P321399	
	SM 2320 B-97	Total Alkalinity	129		mg CaCO3/L	P321700	
	SM 2540 D-97	TSS	7	I	mg/L	P321823	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P321705	
1879337	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P321468	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24	I	mg N/L	P321649	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P321734	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P321490	
	SM 5310 B-00	Organic Carbon	1.7	I	mg C/L	P321418	
1879340	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P321401	
1879346	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P321624	
	EPA 200.8 Rev. 5.4	Arsenic	1.7	I	ug/L	P321624	
		Cadmium	0.20	U	ug/L	P321624	
		Chromium	1.2	U	ug/L	P321624	
		Copper	2.0	U	ug/L	P321624	
		Lead	0.80	U	ug/L	P321624	
		Nickel	1.0	U	ug/L	P321624	
		Silver	0.10	U	ug/L	P321624	
		Zinc	20	U	ug/L	P321624	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321398

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321399

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321624

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: P321624

Component	Result	Code	Units
Arsenic	0.25	U	ug/L
Cadmium	0.050	U	ug/L
Chromium	0.30	U	ug/L
Copper	0.50	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.25	U	ug/L
Silver	0.025	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321468

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321649

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321850

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321734

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322039

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321490

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321401

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: P321700

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

Reference Method: SM 2540 D-97
Batch ID: P321823

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P321705

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P321418

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: P321624

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321624

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	91.2		P	85 - 115
Cadmium	89.9		P	85 - 115
Chromium	92.5		P	85 - 115
Copper	90.3		P	85 - 115
Lead	94.4		P	85 - 115
Nickel	101		P	85 - 115
Silver	92.1		P	85 - 115
Zinc	92.2		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321468

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.7		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321649

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321850

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321734

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322039

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: P321490

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.1		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P321700

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P321705

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P321418

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.7		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879345	Iron	101	100	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879345	Arsenic	96.7	99.1	P/P	70 - 130
1879345	Cadmium	94.1	97.8	P/P	70 - 130
1879345	Chromium	98.7	102	P/P	70 - 130
1879345	Copper	87.3	86.5	P/P	70 - 130
1879345	Lead	107	106	P/P	70 - 130
1879345	Nickel	86.6	92.5	P/P	70 - 130
1879345	Silver	89.6	87.3	P/P	70 - 130
1879345	Zinc	87.7	89.5	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879229	Ammonia-N	103	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321649

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879335	Kjeldahl Nitrogen	91.3	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321850

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880477	Kjeldahl Nitrogen	103	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321734

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879127	NO2NO3-N	96.1	97.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322039

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1880112	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879229	Total-P	107	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879230	O-Phosphate-P	93.8	95.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P321705

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1878953	Fluoride	94.3	95.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P321418

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1878727	Organic Carbon	94.3	94.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879317	Turbidity	2.44	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321399

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879333	Turbidity	8.00	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879345	Iron	0.555	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879345	Arsenic	2.36	Spike	P	0 - 20
1879345	Cadmium	3.86	Spike	P	0 - 20
1879345	Chromium	3.07	Spike	P	0 - 20
1879345	Copper	0.879	Spike	P	0 - 20
1879345	Lead	0.206	Spike	P	0 - 20
1879345	Nickel	6.58	Spike	P	0 - 20
1879345	Silver	2.64	Spike	P	0 - 20
1879345	Zinc	2.00	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879229	Ammonia-N	1.29	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879335	Kjeldahl Nitrogen	4.85	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321850

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880477	Kjeldahl Nitrogen	4.09	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321734

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879127	NO2NO3-N	0.995	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880112	NO2NO3-N	1.47	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879229	Total-P	4.95	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879230	O-Phosphate-P	2.21	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P321700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1878953	Total Alkalinity	2.96	Sample	P	0 - 4.8

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P321705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1878953	Fluoride	0.979	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P321418

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1878727	Organic Carbon	0.544	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A75034
Included Lab Sample IDs: 1879332, 1879333, 1879334

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A75035
Included Lab Sample IDs: 1879338, 1879339, 1879340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.7	P/P	90 - 110
O-Phosphate-P	99.7	96.1	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A75042
Included Lab Sample IDs: 1879335, 1879336, 1879337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.1	96.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A75062
Included Lab Sample IDs: 1879335, 1879336, 1879337

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A75152
Included Lab Sample IDs: 1879332, 1879333, 1879334

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	106	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A75152
Included Lab Sample IDs: 1879332, 1879333, 1879334

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A75166
Included Lab Sample IDs: 1879337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A75169
Included Lab Sample IDs: 1879335, 1879336, 1879337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.0	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A75187
Included Lab Sample IDs: 1879337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	104	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A75256
Included Lab Sample IDs: 1879344, 1879345, 1879346

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A75289
Included Lab Sample IDs: 1879335, 1879336

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A75295
Included Lab Sample IDs: 1879335, 1879336

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A75414
Included Lab Sample IDs: 1879344, 1879345, 1879346

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	96.4	100	P/P	90 - 110
Cadmium	95.1	99.4	P/P	90 - 110
Chromium	96.7	98.4	P/P	90 - 110
Copper	96.5	98.5	P/P	90 - 110
Lead	96.0	99.3	P/P	90 - 110
Silver	95.4	98.9	P/P	90 - 110
Zinc	96.4	99.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A75417
Included Lab Sample IDs: 1879344, 1879345, 1879346

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	93.9	97.4	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					2.44	
	Turbidity					8.00	
EPA 200.7 Rev. 4.4	Iron	104	101	100			0.555
EPA 200.8 Rev. 5.4	Arsenic	91.2	96.7	99.1			2.36
	Cadmium	89.9	94.1	97.8			3.86
	Chromium	92.5	98.7	102			3.07
	Copper	90.3	87.3	86.5			0.879
	Lead	94.4	107	106			0.206
	Nickel	101	86.6	92.5			6.58
	Silver	92.1	89.6	87.3			2.64
	Zinc	92.2	87.7	89.5			2.00
EPA 350.1 Rev. 2.0	Ammonia-N	95.7	103	105			1.29
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	91.3	97.1			4.85
	Kjeldahl Nitrogen	105	103	98.0			4.09
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.1	97.1			0.995
	NO2NO3-N	102	102	103			1.47
EPA 365.1 Rev. 2.0	Total-P	104	107	101			4.95
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	93.8	95.9			2.21
SM 2320 B-97	Total Alkalinity	104				2.96	
SM 4500 F-C-97	Fluoride	99.7	94.3	95.8			0.979
SM 5310 B-00	Organic Carbon	96.7	94.3	94.9			0.544

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1879332, 1879333, 1879334
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1879344, 1879345, 1879346
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1879344, 1879345, 1879346
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1879335, 1879336, 1879337
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1879335, 1879336, 1879337
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1879335, 1879336, 1879337
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1879335, 1879336, 1879337
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1879338, 1879339, 1879340
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1879332, 1879333, 1879334
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1879332, 1879333, 1879334
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1879332, 1879333, 1879334
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1879335, 1879336, 1879337

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	03/10/2017			03/10/2017 12:58	Sima Feizi	1879332
	03/10/2017			03/10/2017 13:37	Sima Feizi	1879333, 1879334
EPA 200.7 Rev. 4.4	03/10/2017	03/15/2017	Elliott D. Healy	03/21/2017	Martin Acosta	1879344, 1879345, 1879346
EPA 200.8 Rev. 5.4	03/10/2017	03/15/2017	Elliott D. Healy	03/28/2017	Robert K Palmer	1879344, 1879345, 1879346
EPA 350.1 Rev. 2.0	03/10/2017			03/13/2017	Julie Michelle Frank	1879335, 1879336, 1879337
EPA 351.2 Rev. 2.0	03/10/2017	03/16/2017	Adrian Shelby	03/17/2017	Joseph Suarez	1879337
	03/10/2017	03/21/2017	Adrian Shelby	03/23/2017	Joseph Suarez	1879335, 1879336
EPA 353.2 Rev. 2.0	03/10/2017			03/17/2017	Beverly Y. Sanders	1879337
	03/10/2017			03/23/2017	Beverly Y. Sanders	1879335, 1879336
EPA 365.1 Rev. 2.0	03/10/2017	03/14/2017	Adrian Shelby	03/17/2017	Lipi Saha	1879335, 1879336, 1879337
EPA 365.1 Rev. 2.0 dissolved	03/10/2017			03/10/2017 18:01	Virginia P. Brown	1879338
	03/10/2017			03/10/2017 18:02	Virginia P. Brown	1879339
	03/10/2017			03/10/2017 18:07	Virginia P. Brown	1879340
SM 2320 B-97	03/10/2017			03/16/2017	Dale L. Simmons	1879332, 1879333, 1879334
SM 2540 D-97	03/10/2017			03/10/2017	Yijie Li	1879332, 1879333, 1879334
SM 4500 F-C-97	03/10/2017			03/15/2017	Dale L. Simmons	1879332, 1879333, 1879334
SM 5310 B-00	03/10/2017			03/11/2017	Julie Michelle Frank	1879335, 1879336, 1879337