

Chemical Analysis Report

SE-DIST-2018-12-05-01

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

Event Description: **SMP- Upper Keys**

Request ID: **RQ-2018-10-15-43**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

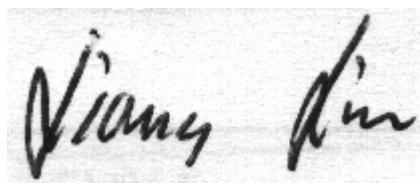
FL Dept. of Environmental Protection
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2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

For additional information please contact

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 26-DEC-2018 14:53

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: Route 1 key

Collection Date/Time: 12/04/2018 09:15

Field ID: G4SE0004

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2046445	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P355670	
	SM 2320 B-97	Total Alkalinity	165		mg CaCO3/L	P356045	
	SM 2540 D-97	TSS	4	I	mg/L	P356017	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P356046	
2046446	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P355902	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P355884	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P355741	
	EPA 365.1 Rev. 2.0	Total-P	0.007	I	mg P/L	P355877	
	SM 5310 B-00	Organic Carbon	7.7		mg C/L	P355958	
2046447	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355675	
2046466	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P356053	
		Zinc	20	U	ug/L	P356053	
	EPA 200.8 Rev. 5.4	Chromium	1.6	U	ug/L	P356053	

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: Atlantic Ocean (WBID 8089 ENRG7)

Collection Date/Time: 12/04/2018 10:30

Field ID: G4SE0104

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2046433	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P355669	
	SM 2320 B-97	Total Alkalinity	127		mg CaCO3/L	P356045	
	SM 2540 D-97	TSS	6	I	mg/L	P356016	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P356046	
2046437	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P355902	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P355818	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P355741	
	EPA 365.1 Rev. 2.0	Total-P	0.007	I	mg P/L	P355877	
	SM 5310 B-00	Organic Carbon	1.8	I	mg C/L	P355857	
2046441	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355675	

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: Atlantic Ocean (WBID 8089 ENRG6) Red 4

Collection Date/Time: 12/04/2018 11:00

Field ID: G4SE0105

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2046434	EPA 180.1 Rev. 2.0	Turbidity	0.45		NTU	P355669	
	SM 2320 B-97	Total Alkalinity	123		mg CaCO3/L	P356045	
	SM 2540 D-97	TSS	3	U	mg/L	P356016	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P356046	
2046438	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P355902	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P355818	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P355741	
	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P355877	
	SM 5310 B-00	Organic Carbon	1.3	I	mg C/L	P355857	
2046442	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355675	

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: Atlantic Ocean (WBID 8088 ENRG6) South Red 2 **Collection Date/Time: 12/04/2018 12:30**

Field ID: G4SE0102

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2046435	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P355670	
	SM 2320 B-97	Total Alkalinity	122		mg CaCO3/L	P356045	
	SM 2540 D-97	TSS	3	U	mg/L	P356017	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P356046	
2046439	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P355903	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24	I	mg N/L	P355884	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P355741	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P355877	
	SM 5310 B-00	Organic Carbon	1.3	I	mg C/L	P355857	
2046443	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355675	

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: Atlantic Ocean (WBID 8088 ENRG7)

Collection Date/Time: 12/04/2018 13:00

Field ID: G4SE0103

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2046436	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P355670	
	SM 2320 B-97	Total Alkalinity	128		mg CaCO3/L	P356045	
	SM 2540 D-97	TSS	4	IA	mg/L	P356017	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P356046	
2046440	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P355903	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P355884	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P355741	
	EPA 365.1 Rev. 2.0	Total-P	0.006	I	mg P/L	P355877	
	SM 5310 B-00	Organic Carbon	2.2		mg C/L	P355857	
2046444	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355675	

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: P355669

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355670

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P356053

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P356053

Component	Result	Code	Units
Chromium	0.40	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355902

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355903

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355818

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355884

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355741

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355877

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355675

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

Reference Method: SM 2320 B-97
Batch ID: P356045

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

Reference Method: SM 2540 D-97
Batch ID: P356016

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P356017

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P356046

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P355857

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

Reference Method: SM 5310 B-00
Batch ID: P355958

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: P356053

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	97.3		P	85 - 115
Zinc	91.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P356053

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	103		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355902

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355903

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355884

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355741

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: P355877

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355675

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: P356045

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P356046

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355857

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P355958

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P356053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046770	Iron	102	103	P/P	70 - 130
2046770	Zinc	95.8	101	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P356053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046770	Chromium	93.4	92.8	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046370	Ammonia-N	102	99.7	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046439	Ammonia-N	106	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355818

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046396	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355884

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046439	Kjeldahl Nitrogen	95.8	92.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046373	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355877

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046446	Total-P	96.7	94.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355675

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046447	O-Phosphate-P	93.6	93.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P356046

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046861	Fluoride	100	98.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P355857

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046336	Organic Carbon	101	99.2	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P355958

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2046446	Organic Carbon	98.5	98.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046291	Turbidity	4.18	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355670

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046510	Turbidity	0.820	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P356053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046770	Iron	0.720	Spike	P	0 - 20
2046770	Zinc	4.77	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P356053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046770	Chromium	0.595	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046370	Ammonia-N	1.20	Spike	P	0 - 15

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046439	Ammonia-N	1.24	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046396	Kjeldahl Nitrogen	0.456	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355884

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046439	Kjeldahl Nitrogen	2.71	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046373	NO2NO3-N	0.215	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355877

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046446	Total-P	2.62	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046447	O-Phosphate-P	0.107	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P356045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046861	Total Alkalinity	0.202	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P356046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046861	Fluoride	1.40	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P355857

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046336	Organic Carbon	1.84	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P355958

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046446	Organic Carbon	0.212	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: A88173

Included Lab Sample IDs: 2046433, 2046434, 2046435, 2046436, 2046445

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A88174

Included Lab Sample IDs: 2046441, 2046442, 2046443, 2046444, 2046447

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	98.3	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88207

Included Lab Sample IDs: 2046437, 2046438, 2046439, 2046440, 2046446

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

Reference Method: SM 5310 B-00

Run ID: A88239

Included Lab Sample IDs: 2046437, 2046438, 2046439, 2046440

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88258

Included Lab Sample IDs: 2046437, 2046438, 2046439, 2046440, 2046446

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

Reference Method: SM 5310 B-00

Run ID: A88280

Included Lab Sample IDs: 2046446

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.2	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88297

Included Lab Sample IDs: 2046439, 2046440, 2046446

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.8	98.3	P/P	90 - 110
Kjeldahl Nitrogen	97.9	94.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A88305

Included Lab Sample IDs: 2046433, 2046434, 2046435, 2046436, 2046445

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88305

Included Lab Sample IDs: 2046433, 2046434, 2046435, 2046436, 2046445

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88307

Included Lab Sample IDs: 2046437, 2046438, 2046439, 2046440, 2046446

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88312

Included Lab Sample IDs: 2046437, 2046438

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.8	99.3	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A88373

Included Lab Sample IDs: 2046466

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	98.8	97.8	P/P	95 - 105
Zinc	98.4	101	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A88421

Included Lab Sample IDs: 2046466

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

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

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					4.18	
	Turbidity					0.820	
EPA 200.7 Rev. 4.4	Iron	97.3	102	103			0.720
	Zinc	91.8	95.8	101			4.77
EPA 200.8 Rev. 5.4	Chromium	103	93.4	92.8			0.595
EPA 350.1 Rev. 2.0	Ammonia-N	102	102	99.7			1.20
	Ammonia-N	101	106	105			1.24
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.4	101	101			0.456
	Kjeldahl Nitrogen	96.2	95.8	92.9			2.71
EPA 353.2 Rev. 2.0	NO2NO3-N	102	100				0.215
EPA 365.1 Rev. 2.0	Total-P	102	96.7	94.2			2.62
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	93.6	93.5			0.107
SM 2320 B-97	Total Alkalinity	100				0.202	
SM 4500 F-C-97	Fluoride	99.9	100	98.3			1.40
SM 5310 B-00	Organic Carbon	98.6	101	99.2			1.84
	Organic Carbon	98.0	98.5	98.7			0.212

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2046433, 2046434, 2046435, 2046436, 2046445
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2046466
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2046466
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2046437, 2046438, 2046439, 2046440, 2046446
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2046437, 2046438, 2046439, 2046440, 2046446
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2046437, 2046438, 2046439, 2046440, 2046446
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2046437, 2046438, 2046439, 2046440, 2046446
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2046441, 2046442, 2046443, 2046444, 2046447
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2046433, 2046434, 2046435, 2046436, 2046445
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2046433, 2046434, 2046435, 2046436, 2046445
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2046433, 2046434, 2046435, 2046436, 2046445
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2046437, 2046438, 2046439, 2046440, 2046446

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	12/05/2018			12/05/2018 16:10	Megan Treadwell	2046433, 2046434, 2046435, 2046436, 2046445
EPA 200.7 Rev. 4.4	12/05/2018	12/12/2018 16:20	Elliott D. Healy	12/14/2018 17:39	Martin Acosta	2046466
EPA 200.8 Rev. 5.4	12/05/2018	12/12/2018 16:20	Elliott D. Healy	12/19/2018 14:32	Allison Taylor	2046466
EPA 350.1 Rev. 2.0	12/05/2018			12/07/2018 11:49	Ping Hua	2046437
	12/05/2018			12/07/2018 11:51	Ping Hua	2046438
	12/05/2018			12/07/2018 11:52	Ping Hua	2046446
	12/05/2018			12/07/2018 11:57	Ping Hua	2046439
	12/05/2018			12/07/2018 12:01	Ping Hua	2046440
EPA 351.2 Rev. 2.0	12/05/2018	12/07/2018 11:35	Jhamieka S. Greenwood	12/10/2018 16:35	Chelsea Hernandez	2046437
	12/05/2018	12/07/2018 11:35	Jhamieka S. Greenwood	12/10/2018 16:37	Chelsea Hernandez	2046438
	12/05/2018	12/10/2018 16:30	Adrian Shelby	12/11/2018 14:49	Joseph Suarez	2046439
	12/05/2018	12/10/2018 16:30	Adrian Shelby	12/11/2018 14:57	Joseph Suarez	2046440
	12/05/2018	12/10/2018 16:30	Adrian Shelby	12/11/2018 14:59	Joseph Suarez	2046446
EPA 353.2 Rev. 2.0	12/05/2018			12/06/2018 14:22	Lauren Bottorf	2046437
	12/05/2018			12/06/2018 14:24	Lauren Bottorf	2046438
	12/05/2018			12/06/2018 14:25	Lauren Bottorf	2046439
	12/05/2018			12/06/2018 14:26	Lauren Bottorf	2046440
	12/05/2018			12/06/2018 14:27	Lauren Bottorf	2046446
EPA 365.1 Rev. 2.0	12/05/2018	12/10/2018 12:50	Sima Feizi	12/12/2018 12:27	Beverly Y. Sanders	2046437
	12/05/2018	12/10/2018 12:50	Sima Feizi	12/12/2018 12:28	Beverly Y. Sanders	2046438
	12/05/2018	12/10/2018 12:50	Sima Feizi	12/12/2018 12:29	Beverly Y. Sanders	2046439
	12/05/2018	12/10/2018 12:50	Sima Feizi	12/12/2018 12:30	Beverly Y. Sanders	2046440
	12/05/2018	12/10/2018 12:50	Sima Feizi	12/12/2018 12:37	Beverly Y. Sanders	2046446
EPA 365.1 Rev. 2.0 dissolved	12/05/2018			12/05/2018 16:41	Jhamieka S. Greenwood	2046447
	12/05/2018			12/05/2018 17:01	Jhamieka S. Greenwood	2046441
	12/05/2018			12/05/2018 17:02	Jhamieka S. Greenwood	2046442
	12/05/2018			12/05/2018 17:03	Jhamieka S. Greenwood	2046443
	12/05/2018			12/05/2018 17:04	Jhamieka S. Greenwood	2046444
SM 2320 B-97	12/05/2018			12/12/2018 06:23	Lauren Bottorf	2046433
	12/05/2018			12/12/2018 06:33	Lauren Bottorf	2046434
	12/05/2018			12/12/2018 06:43	Lauren Bottorf	2046435
	12/05/2018			12/12/2018 06:53	Lauren Bottorf	2046436
	12/05/2018			12/12/2018 07:02	Lauren Bottorf	2046445
SM 2540 D-97	12/05/2018			12/06/2018 14:08	Yijie Li	2046433, 2046434, 2046435, 2046436, 2046445
SM 4500 F-C-97	12/05/2018			12/12/2018 03:55	Lauren Bottorf	2046433
	12/05/2018			12/12/2018 03:59	Lauren Bottorf	2046434
	12/05/2018			12/12/2018 04:03	Lauren Bottorf	2046435
	12/05/2018			12/12/2018 04:06	Lauren Bottorf	2046436

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	12/05/2018			12/12/2018 04:10	Lauren Bottorf	2046445
SM 5310 B-00	12/05/2018			12/08/2018 05:47	Megan Treadwell	2046437
	12/05/2018			12/08/2018 06:00	Megan Treadwell	2046438
	12/05/2018			12/08/2018 06:12	Megan Treadwell	2046439
	12/05/2018			12/08/2018 06:24	Megan Treadwell	2046440
	12/05/2018			12/11/2018 06:09	Megan Treadwell	2046446