

Chemical Analysis Report

SO-DIST-2017-05-11-01

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-2017-05-01-16**
Customer: **SO-DIST**
Project ID: **SMP**

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

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Certified by: Colin Wright, Program Administrator

Date Certified: 08-JUN-2017 16:13

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored rectangular 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: 8073 #1 SOUTH OF FT.ZACH

Collection Date/Time: 05/10/2017 11:50

Field ID: G5SD051017-1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1898423	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P325128	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P325591	
	SM 2540 D-97	TSS	4	I	mg/L	P325534	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P325882	
1898430	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P325118	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P325392	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325271	
	EPA 365.1 Rev. 2.0	Total-P	0.007	I	mg P/L	P325249	
	SM 5310 B-00	Organic Carbon	1.4	I	mg C/L	P326081	
1898437	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325170	
1898451	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P325389	
	EPA 200.8 Rev. 5.4	Arsenic	1.2	U	ug/L	P325389	
		Cadmium	0.25	U	ug/L	P325389	
		Chromium	1.5	U	ug/L	P325389	
		Copper	2.5	U	ug/L	P325389	
		Lead	1.0	U	ug/L	P325389	
		Nickel	1.0	U	ug/L	P325389	
		Silver	0.050	U	ug/L	P325389	
		Zinc	25	U	ug/L	P325389	

Sample Location: 8073 #2 ENRG4 W OF KEYWEST

Collection Date/Time: 05/10/2017 12:45

Field ID: G5SD051017-2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1898424	EPA 180.1 Rev. 2.0	Turbidity	0.55		NTU	P325128	
	SM 2320 B-97	Total Alkalinity	116		mg CaCO3/L	P325592	
	SM 2540 D-97	TSS	3	I	mg/L	P325534	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P325882	
1898431	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P325118	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P325392	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P325271	
	EPA 365.1 Rev. 2.0	Total-P	0.01	I	mg P/L	P325249	
	SM 5310 B-00	Organic Carbon	1.8	I	mg C/L	P326081	
1898438	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325170	
1898452	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P325389	
	EPA 200.8 Rev. 5.4	Arsenic	1.2	U	ug/L	P325389	
		Cadmium	0.25	U	ug/L	P325389	
		Chromium	1.5	U	ug/L	P325389	
		Copper	2.5	U	ug/L	P325389	
		Lead	1.0	U	ug/L	P325389	
		Nickel	1.0	U	ug/L	P325389	
		Silver	0.050	U	ug/L	P325389	
		Zinc	25	U	ug/L	P325389	

Sample Location: 8073 #4 ENRG2 BAYSIDE

Collection Date/Time: 05/10/2017 10:15

Field ID: G5SD051017-4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1898425	EPA 180.1 Rev. 2.0	Turbidity	0.35		NTU	P325129	
	SM 2320 B-97	Total Alkalinity	125		mg CaCO3/L	P325591	
	SM 2540 D-97	TSS	5	I	mg/L	P325534	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P325882	
1898432	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P325118	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	U	mg N/L	P325392	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.096		mg N/L	P325271	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P325249	
	SM 5310 B-00	Organic Carbon	1.6	I	mg C/L	P326081	
1898439	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325172	
1898453	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P325389	
	EPA 200.8 Rev. 5.4	Arsenic	1.2	U	ug/L	P325389	
		Cadmium	0.25	U	ug/L	P325389	
		Chromium	1.5	U	ug/L	P325389	
		Copper	2.5	U	ug/L	P325389	
		Lead	1.0	U	ug/L	P325389	
		Nickel	1.0	U	ug/L	P325389	
		Silver	0.050	U	ug/L	P325389	
		Zinc	25	U	ug/L	P325389	

Sample Location: 8080-ENRG3 NEARSHORE

Collection Date/Time: 05/10/2017 15:20

Field ID: G5SD051017-9

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1898426	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P325129	
	SM 2320 B-97	Total Alkalinity	116		mg CaCO3/L	P325592	
	SM 2540 D-97	TSS	3	I	mg/L	P325535	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P325882	
1898433	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P325118	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P325392	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325272	
	EPA 365.1 Rev. 2.0	Total-P	0.008	I	mg P/L	P325249	
	SM 5310 B-00	Organic Carbon	2.3		mg C/L	P326081	
1898440	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325172	
1898454	EPA 200.7 Rev. 4.4	Iron	90	U	ug/L	P325389	
	EPA 200.8 Rev. 5.4	Arsenic	1.2	U	ug/L	P325389	
		Cadmium	0.25	U	ug/L	P325389	
		Chromium	1.5	U	ug/L	P325389	
		Copper	2.5	U	ug/L	P325389	
		Lead	1.0	U	ug/L	P325389	
		Nickel	1.0	U	ug/L	P325389	
		Silver	0.050	U	ug/L	P325389	
		Zinc	25	U	ug/L	P325389	

Field ID: G5SD051017-9

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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: FIELD BLANK

Collection Date/Time: 05/10/2017 13:00

Field ID: G5SD051017-0

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1898427	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P325129	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P325592	
	SM 2540 D-97	TSS	2	U	mg/L	P325533	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325595	RPD
1898434	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P325118	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P325393	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325354	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P325251	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P325516	
1898441	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P325172	
1898455	EPA 200.7 Rev. 4.4	Iron	30	U	ug/L	P325443	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P325892	
		Cadmium	0.020	U	ug/L	P325892	
		Chromium	0.40	U	ug/L	P325892	
		Copper	0.20	U	ug/L	P325892	
		Lead	0.050	U	ug/L	P325892	
		Nickel	2.01		ug/L	P325892	
		Silver	0.010	U	ug/L	P325892	
		Zinc	1.0	U	ug/L	P325892	

Ref. Method and Comment:
 SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
 EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 5/25/2017.
 EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 05/11/2017.
 EPA 200.8 Rev. 5.4: The nickel result was confirmed in the undigested sample on 05/30/2017.

Sample Location: 8073 #5 ENRG1

Collection Date/Time: 05/10/2017 10:45

Field ID: G5SD051017-5

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1898428	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P325129	
	SM 2320 B-97	Total Alkalinity	115		mg CaCO3/L	P325591	
	SM 2540 D-97	TSS	5	I	mg/L	P325534	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P325882	
1898435	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P325118	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33	I	mg N/L	P325395	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325272	
	EPA 365.1 Rev. 2.0	Total-P	0.009	I	mg P/L	P325249	
	SM 5310 B-00	Organic Carbon	1.9	I	mg C/L	P326081	
1898442	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325172	
1898456	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P325389	

Field ID: G5SD051017-5

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1898456	EPA 200.8 Rev. 5.4	Arsenic	1.2	U	ug/L	P325389	
		Cadmium	0.25	U	ug/L	P325389	
		Chromium	1.5	U	ug/L	P325389	
		Copper	2.5	U	ug/L	P325389	
		Lead	1.0	U	ug/L	P325389	
		Nickel	2.2	I	ug/L	P325389	
		Silver	0.050	U	ug/L	P325389	
		Zinc	25	U	ug/L	P325389	

Sample Location: 8079-ENRG3 SOUTH OF STOCK ISLAND

Collection Date/Time: 05/10/2017 12:20

Field ID: G5SD051017-6

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1898429	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P325129	
	SM 2320 B-97	Total Alkalinity	122		mg CaCO3/L	P325592	
	SM 2540 D-97	TSS	8	IA	mg/L	P325535	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P325882	
1898436	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P325118	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23	I	mg N/L	P325395	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325272	
	EPA 365.1 Rev. 2.0	Total-P	0.007	I	mg P/L	P325249	
	SM 5310 B-00	Organic Carbon	1.3	I	mg C/L	P326081	
1898443	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017	AQ	mg P/L	P325529	
1898457	EPA 200.7 Rev. 4.4	Iron	120	U	ug/L	P325389	
	EPA 200.8 Rev. 5.4	Arsenic	1.2	U	ug/L	P325389	
		Cadmium	0.25	U	ug/L	P325389	
		Chromium	1.5	U	ug/L	P325389	
		Copper	2.5	U	ug/L	P325389	
		Lead	1.0	U	ug/L	P325389	
		Nickel	1.0	U	ug/L	P325389	
		Silver	0.050	U	ug/L	P325389	
		Zinc	25	U	ug/L	P325389	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 05/22/2017.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample was reanalyzed out of holding time due to analytical difficulties. The result was confirmed on 05/18/2017.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P325128

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P325129

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P325389

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P325443

Component	Result	Code	Units
Iron	30	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325389

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	0.20	U	ug/L
Silver	0.010	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325892

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: P325118

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325392

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325393

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325395

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325271

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325272

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325354

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325249

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325251

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325170

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325172

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325529

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

Reference Method: SM 2320 B-97
Batch ID: P325591

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

Reference Method: SM 2320 B-97
Batch ID: P325592

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

Reference Method: SM 2540 D-97
Batch ID: P325533

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P325534

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P325535

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P325595

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P325882

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P325516

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
 Batch ID: P326081

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: P325389

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

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P325443

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	109		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P325389

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	95.9		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	96.1		P	85 - 115
Copper	95.0		P	85 - 115
Lead	97.7		P	85 - 115
Nickel	100		P	85 - 115
Silver	101		P	85 - 115
Zinc	95.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P325892

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.8		P	85 - 115
Cadmium	95.6		P	85 - 115
Chromium	95.2		P	85 - 115
Copper	95.8		P	85 - 115
Lead	99.1		P	85 - 115
Nickel	97.4		P	85 - 115
Silver	98.4		P	85 - 115
Zinc	97.3		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P325118

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325392

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325393

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325395

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: P325271

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325272

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325354

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325249

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325251

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: P325170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	95.4		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325172

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325529

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

Reference Method: SM 2320 B-97
Batch ID: P325591

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

Reference Method: SM 2320 B-97
Batch ID: P325592

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

Reference Method: SM 4500 F-C-97
Batch ID: P325595

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.1		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P325882

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P325516

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	89.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P326081

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P325389

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P325389

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898453	Iron	97.4	97.2	P/P	70 - 130
1898796	Iron	96.3		P	70 - 130

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P325443

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898374	Iron	108	112	P/P	80 - 120
1898541	Iron	108		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325389

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898453	Arsenic	124	121	P/P	70 - 130
1898453	Cadmium	108	109	P/P	70 - 130
1898453	Chromium	124	122	P/P	70 - 130
1898453	Copper	110	109	P/P	70 - 130
1898453	Lead	126	127	P/P	70 - 130
1898453	Nickel	97.8	95.5	P/P	70 - 130
1898453	Silver	89.5	88.8	P/P	70 - 130
1898453	Zinc	108	106	P/P	70 - 130
1898796	Arsenic	120		P	70 - 130
1898796	Cadmium	115		P	70 - 130
1898796	Chromium	120		P	70 - 130
1898796	Copper	105		P	70 - 130
1898796	Lead	124		P	70 - 130
1898796	Nickel	94.5		P	70 - 130
1898796	Silver	89.8		P	70 - 130
1898796	Zinc	92.8		P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325892

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898077	Arsenic	103	102	P/P	80 - 120
1898077	Cadmium	100	100	P/P	80 - 120
1898077	Chromium	96.6	96.6	P/P	80 - 120
1898077	Copper	94.2	94.3	P/P	80 - 120
1898077	Lead	101	99.4	P/P	80 - 120
1898077	Nickel	96.6	96.2	P/P	80 - 120
1898077	Silver	99.4	98.6	P/P	80 - 120
1898077	Zinc	97.7	97.5	P/P	80 - 120
1898664	Arsenic	107		P	80 - 120
1898664	Cadmium	101		P	80 - 120
1898664	Chromium	94.1		P	80 - 120
1898664	Copper	95.8		P	80 - 120
1898664	Lead	103		P	80 - 120
1898664	Nickel	97.1		P	80 - 120
1898664	Silver	99.9		P	80 - 120
1898664	Zinc	97.7		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898430	Ammonia-N	108	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325392

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898433	Kjeldahl Nitrogen	94.0	93.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325393

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898395	Kjeldahl Nitrogen	95.1	94.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898610	Kjeldahl Nitrogen	96.0	98.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325271

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898126	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325272

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898433	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325354

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898419	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898350	Total-P	94.6	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325251

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898485	Total-P	98.9	97.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898352	O-Phosphate-P	99.3	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898439	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325529

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898443	O-Phosphate-P	105	107	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P325595

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898380	Fluoride	95.5	99.7	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P325882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898426	Fluoride	92.2	93.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P325516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898243	Organic Carbon	86.1	88.0	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P326081

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898069	Organic Carbon	94.1	94.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P325128

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898379	Turbidity	2.00	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P325129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898482	Turbidity	0.690	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P325389

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898453	Iron	0.149	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P325443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898374	Iron	3.60	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325389

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898453	Arsenic	2.47	Spike	P	0 - 20
1898453	Cadmium	0.708	Spike	P	0 - 20
1898453	Chromium	1.63	Spike	P	0 - 20
1898453	Copper	0.765	Spike	P	0 - 20
1898453	Lead	0.634	Spike	P	0 - 20
1898453	Nickel	2.32	Spike	P	0 - 20
1898453	Silver	0.872	Spike	P	0 - 20
1898453	Zinc	1.74	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P325892

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898077	Arsenic	0.846	Spike	P	0 - 20
1898077	Cadmium	0.0788	Spike	P	0 - 20
1898077	Chromium	0.00758	Spike	P	0 - 20
1898077	Copper	0.115	Spike	P	0 - 20
1898077	Lead	1.11	Spike	P	0 - 20
1898077	Nickel	0.434	Spike	P	0 - 20
1898077	Silver	0.860	Spike	P	0 - 20
1898077	Zinc	0.208	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P325118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898430	Ammonia-N	0.671	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325392

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898433	Kjeldahl Nitrogen	0.114	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325393

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898395	Kjeldahl Nitrogen	0.200	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898610	Kjeldahl Nitrogen	1.42	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898126	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898433	NO2NO3-N	0.480	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898419	NO2NO3-N	0.442	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898350	Total-P	0.501	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898485	Total-P	0.886	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898352	O-Phosphate-P	0.502	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898439	O-Phosphate-P	1.87	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325529

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898443	O-Phosphate-P	1.37	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P325591

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898378	Total Alkalinity	3.21	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P325592

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898380	Total Alkalinity	0.354	Sample	P	0 - 4.8

Reference Method: SM 2540 D-97
Batch ID: P325534

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898344	TSS	2.15	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P325595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898380	Fluoride	3.58	Spike	F	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P325882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898426	Fluoride	0.483	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P325516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898243	Organic Carbon	1.33	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P326081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898069	Organic Carbon	0.148	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 350.1 Rev. 2.0
Run ID: A76358
Included Lab Sample IDs: 1898430, 1898431, 1898432, 1898433, 1898434, 1898435, 1898436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	103	P/P	90 - 110
Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A76360
Included Lab Sample IDs: 1898423, 1898424, 1898425, 1898426, 1898427, 1898428, 1898429

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105
Turbidity	102	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A76368
Included Lab Sample IDs: 1898437, 1898438, 1898439, 1898440, 1898441, 1898442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.1	96.8	P/P	90 - 110
O-Phosphate-P	98.1	97.8	P/P	90 - 110
O-Phosphate-P	99.4	97.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A76414
Included Lab Sample IDs: 1898430, 1898431, 1898432, 1898433, 1898435, 1898436

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A76449

Included Lab Sample IDs: 1898434

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A76456

Included Lab Sample IDs: 1898430, 1898431, 1898432, 1898433, 1898434, 1898435, 1898436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.0	P/P	90 - 110
Total-P	99.5	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76520

Included Lab Sample IDs: 1898433

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	99.7	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A76527

Included Lab Sample IDs: 1898434

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.4	94.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76529

Included Lab Sample IDs: 1898430, 1898431, 1898432

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A76534

Included Lab Sample IDs: 1898443

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76544

Included Lab Sample IDs: 1898434

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	109	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76549

Included Lab Sample IDs: 1898435, 1898436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	108	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A76561

Included Lab Sample IDs: 1898423, 1898424, 1898425, 1898426, 1898427, 1898428, 1898429

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	105	P/P	90 - 110
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	105	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76561

Included Lab Sample IDs: 1898427

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A76576

Included Lab Sample IDs: 1898455

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

Reference Method: SM 4500 F-C-97

Run ID: A76685

Included Lab Sample IDs: 1898423, 1898424, 1898425, 1898426, 1898428, 1898429

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.1	101	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A76689

Included Lab Sample IDs: 1898451, 1898452, 1898453, 1898454, 1898456, 1898457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	94.1	98.9	P/P	90 - 110
Arsenic	98.9	93.6	P/P	90 - 110
Cadmium	96.0	99.5	P/P	90 - 110
Cadmium	99.5	96.1	P/P	90 - 110
Chromium	94.3	97.9	P/P	90 - 110
Chromium	97.9	91.4	P/P	90 - 110
Copper	92.6	96.4	P/P	90 - 110
Copper	96.4	90.8	P/P	90 - 110
Lead	96.2	99.8	P/P	90 - 110
Lead	99.8	95.9	P/P	90 - 110
Zinc	92.6	96.5	P/P	90 - 110
Zinc	96.5	91.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A76728

Included Lab Sample IDs: 1898451, 1898452, 1898453, 1898454, 1898456, 1898457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	99.2	99.9	P/P	90 - 110
Nickel	99.9	96.9	P/P	90 - 110
Silver	103	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A76728

Included Lab Sample IDs: 1898451, 1898452, 1898453, 1898454, 1898456, 1898457

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A76756

Included Lab Sample IDs: 1898455

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	100	P/P	90 - 110
Cadmium	97.2	96.1	P/P	90 - 110
Chromium	98.1	97.4	P/P	90 - 110
Copper	99.4	99.2	P/P	90 - 110
Lead	100	99.6	P/P	90 - 110
Nickel	99.3	99.4	P/P	90 - 110
Silver	104	104	P/P	90 - 110
Zinc	100	99.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A76794

Included Lab Sample IDs: 1898430, 1898431, 1898432, 1898433, 1898435, 1898436

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	98.2	P/P	90 - 110
Organic Carbon	98.1	97.4	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A76844

Included Lab Sample IDs: 1898451, 1898452, 1898453, 1898454, 1898456, 1898457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	100	99.8	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 SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						2.00	
	Turbidity						0.690	
EPA 200.7 Rev. 4.4	Iron	102	97.4	97.2	96.3			0.149
	Iron	109	108	112	108			3.60
EPA 200.8 Rev. 5.4	Arsenic	95.9	124	121	120			2.47
	Arsenic	99.8	103	102	107			0.846
	Cadmium	101	108	109	115			0.708
	Cadmium	95.6	100	100	101			0.0788
	Chromium	96.1	124	122	120			1.63
	Chromium	95.2	96.6	96.6	94.1			0.0075

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	
			LCS	SMP	MS		
EPA 200.8 Rev. 5.4	Copper	95.0	110	109	105		0.765
	Copper	95.8	94.2	94.3	95.8		0.115
	Lead	97.7	126	127	124		0.634
	Lead	99.1	101	99.4	103		1.11
	Nickel	100	97.8	95.5	94.5		2.32
	Nickel	97.4	96.6	96.2	97.1		0.434
	Silver	101	89.5	88.8	89.8		0.872
	Silver	98.4	99.4	98.6	99.9		0.860
	Zinc	95.9	108	106	92.8		1.74
	Zinc	97.3	97.7	97.5	97.7		0.208
EPA 350.1 Rev. 2.0	Ammonia-N	105	108	107			0.671
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.9	94.0	93.9			0.114
	Kjeldahl Nitrogen	102	95.1	94.8			0.200
	Kjeldahl Nitrogen	101	96.0	98.1			1.42
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	104			0.0
	NO2NO3-N	104	104	104			0.480
	NO2NO3-N	100	102	101			0.442
EPA 365.1 Rev. 2.0	Total-P	102	94.6	95.1			0.501
	Total-P	101	98.9	97.3			0.886
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.4	99.3	99.8			0.502
	O-Phosphate-P	95.7	101	102			1.87
	O-Phosphate-P	101	105	107			1.37
SM 2320 B-97	Total Alkalinity	104				3.21	
	Total Alkalinity	104				0.354	
SM 2540 D-97	TSS					2.15	
SM 4500 F-C-97	Fluoride	99.1	95.5	99.7			3.58
	Fluoride	96.3	92.2	93.0			0.483
SM 5310 B-00	Organic Carbon	89.8	86.1	88.0			1.33
	Organic Carbon	93.8	94.1	94.0			0.148

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1898423, 1898424, 1898425, 1898426, 1898427, 1898428, 1898429
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1898451, 1898452, 1898453, 1898454, 1898455, 1898456, 1898457
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1898451, 1898452, 1898453, 1898454, 1898455, 1898456, 1898457
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1898430, 1898431, 1898432, 1898433, 1898434, 1898435, 1898436
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1898430, 1898431, 1898432, 1898433, 1898434, 1898435, 1898436
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1898430, 1898431, 1898432, 1898433, 1898434, 1898435, 1898436
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1898430, 1898431, 1898432, 1898433, 1898434, 1898435, 1898436
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1898437, 1898438, 1898439, 1898440, 1898441, 1898442, 1898443
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1898423, 1898424, 1898425, 1898426, 1898427, 1898428, 1898429
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1898423, 1898424, 1898425, 1898426, 1898427, 1898428, 1898429
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1898423, 1898424, 1898425, 1898426, 1898427, 1898428, 1898429

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1898430, 1898431, 1898432, 1898433, 1898434, 1898435, 1898436

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	05/11/2017			05/11/2017 15:50	Sima Feizi	1898423, 1898424, 1898425, 1898426, 1898427, 1898428, 1898429
EPA 200.7 Rev. 4.4	05/11/2017	05/16/2017	Elliott D. Healy	06/02/2017	Betina Topolski	1898451, 1898452, 1898453, 1898454, 1898456, 1898457
EPA 200.8 Rev. 5.4	05/11/2017	05/17/2017	Elliott D. Healy	05/20/2017	Martin Acosta	1898455
	05/11/2017	05/16/2017	Elliott D. Healy	05/25/2017	Robert K Palmer	1898451, 1898452, 1898453, 1898454, 1898456, 1898457
	05/11/2017	05/16/2017	Elliott D. Healy	05/29/2017	Robert K Palmer	1898451, 1898452, 1898453, 1898454, 1898456, 1898457
EPA 350.1 Rev. 2.0	05/11/2017	05/26/2017	Elliott D. Healy	05/30/2017	Robert K Palmer	1898455
	05/11/2017			05/11/2017	Julie Michelle Frank	1898430, 1898431, 1898432, 1898433, 1898434, 1898435, 1898436
EPA 351.2 Rev. 2.0	05/11/2017	05/17/2017	Adrian Shelby	05/18/2017	Joseph Suarez	1898430, 1898431, 1898432, 1898433
	05/11/2017	05/17/2017	Adrian Shelby	05/19/2017	Joseph Suarez	1898434, 1898435, 1898436
EPA 353.2 Rev. 2.0	05/11/2017			05/15/2017	Beverly Y. Sanders	1898430, 1898431, 1898432, 1898433, 1898435, 1898436
	05/11/2017			05/16/2017	Beverly Y. Sanders	1898434
EPA 365.1 Rev. 2.0	05/11/2017	05/15/2017	Vijayalakshmi Reddy	05/16/2017	Lipi Saha	1898430, 1898431, 1898432, 1898433, 1898434, 1898435, 1898436
EPA 365.1 Rev. 2.0 dissolved	05/11/2017			05/11/2017 14:56	Anthony C. Onicha	1898439
	05/11/2017			05/11/2017 15:22	Anthony C. Onicha	1898437
	05/11/2017			05/11/2017 15:23	Anthony C. Onicha	1898438
	05/11/2017			05/11/2017 15:35	Anthony C. Onicha	1898440
	05/11/2017			05/11/2017 15:36	Anthony C. Onicha	1898441
	05/11/2017			05/11/2017 15:37	Anthony C. Onicha	1898442
	05/11/2017			05/18/2017 13:24	Anthony C. Onicha	1898443
SM 2320 B-97	05/11/2017			05/20/2017	Dale L. Simmons	1898423, 1898424, 1898425, 1898426, 1898427, 1898428, 1898429
SM 2540 D-97	05/11/2017			05/15/2017	Sima Feizi	1898423, 1898424, 1898425, 1898426, 1898427, 1898428, 1898429
SM 4500 F-C-97	05/11/2017			05/20/2017	Dale L. Simmons	1898427
	05/11/2017			05/26/2017	Dale L. Simmons	1898423, 1898424, 1898425, 1898426, 1898428, 1898429
SM 5310 B-00	05/11/2017			05/16/2017	Christopher Armour	1898434
	05/11/2017			06/01/2017	Julie Michelle Frank	1898430, 1898431, 1898432, 1898433, 1898435, 1898436