

Chemical Analysis Report

SE-DIST-2018-12-04-01

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

Event Description: **SMP- Boca E-Canals**
Request ID: **RQ-2018-12-03-17**
Customer: **SE-DIST**
Project ID: **SMP**

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Date Certified: 27-DEC-2018 14:57



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: ICW @ Palmetto Park Boca

Collection Date/Time: 12/03/2018 12:30

Field ID: G3SE0020

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045949	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P355574	
	EPA 300.0 Rev. 2.1	Sulfate	2.8E+03		mg SO4/L	P355801	
	SM 2320 B-97	Total Alkalinity	122		mg CaCO3/L	P356045	
	SM 2540 C-97	TDS	3.46E+04		mg/L	P355999	
	SM 2540 D-97	TSS	4	I	mg/L	P356014	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P356046	
2045951	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P355766	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P355809	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P355737	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P355748	
	SM 5310 B-00	Organic Carbon	1.5	I	mg C/L	P355797	
2045953	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P355555	

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: ICW @ Palmetto Park Boca

Collection Date/Time: 12/03/2018 12:45

Field ID: G3SE0020-DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045950	EPA 180.1 Rev. 2.0	Turbidity	0.85		NTU	P355574	
	EPA 300.0 Rev. 2.1	Sulfate	2.8E+03		mg SO4/L	P355801	
	SM 2320 B-97	Total Alkalinity	123		mg CaCO3/L	P356045	
	SM 2540 C-97	TDS	3.42E+04		mg/L	P355999	
	SM 2540 D-97	TSS	4	I	mg/L	P356014	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P356046	
2045952	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P355766	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25	I	mg N/L	P355809	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P355737	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P355748	
	SM 5310 B-00	Organic Carbon	1.5	I	mg C/L	P355797	
2045954	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P355555	

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: E-3 @ Palmetto Park

Collection Date/Time: 12/03/2018 13:30

Field ID: G3SE0034

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045943	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P355574	
	EPA 300.0 Rev. 2.1	Chloride	59		mg Cl/L	P355799	
		Sulfate	29		mg SO4/L	P355801	
		Color (true)	38		PCU	P355542	
	SM 2320 B-97	Total Alkalinity	200		mg CaCO3/L	P355716	
	SM 2540 C-97	TDS	354		mg/L	P355998	
	SM 2540 D-97	TSS	2	I	mg/L	P356010	
	SM 4500 F-C-97	Fluoride	0.28		mg F/L	P355719	
2045945	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P355768	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P355746	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P355662	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P355814	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P355795	
2045947	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P355553	
2045971	EPA 200.7 Rev. 4.4	Calcium	82.5		mg/L	P355673	
		Iron	30	U	ug/L	P355673	
		Magnesium	6.07		mg/L	P355673	
		Potassium	5.2		mg/L	P355673	
		Sodium	35.0		mg/L	P355673	
		Zinc	5.0	U	ug/L	P355673	
	EPA 200.8 Rev. 5.4	Arsenic	1.42		ug/L	P355673	
		Cadmium	0.020	U	ug/L	P355673	
		Chromium	0.40	U	ug/L	P355673	
		Copper	1.56		ug/L	P355673	
		Lead	0.050	U	ug/L	P355673	
		Nickel	0.28	I	ug/L	P355673	
		Silver	0.010	U	ug/L	P355673	

Ref. Method and Comment:

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: E-3 @ Glades

Collection Date/Time: 12/03/2018 13:45

Field ID: G3SE0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045944	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P355574	
	EPA 300.0 Rev. 2.1	Chloride	53		mg Cl/L	P355911	
		Sulfate	30		mg SO4/L	P355913	
		Color (true)	39		PCU	P355542	
	SM 2320 B-97	Total Alkalinity	203		mg CaCO3/L	P355716	
	SM 2540 C-97	TDS	353		mg/L	P355998	
	SM 2540 D-97	TSS	2	I	mg/L	P356010	
	SM 4500 F-C-97	Fluoride	0.27		mg F/L	P355719	
2045946	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P355768	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P355746	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.069		mg N/L	P355662	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P355814	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P355795	
2045948	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P355554	
2045972	EPA 200.7 Rev. 4.4	Calcium	83.8		mg/L	P355673	
		Iron	30	U	ug/L	P355673	
		Magnesium	5.68		mg/L	P355673	
		Potassium	5.2		mg/L	P355673	
		Sodium	33.2		mg/L	P355673	
		Zinc	5.0	U	ug/L	P355673	
	EPA 200.8 Rev. 5.4	Arsenic	1.44		ug/L	P355673	
		Cadmium	0.020	U	ug/L	P355673	
		Chromium	0.47	I	ug/L	P355673	
		Copper	1.36		ug/L	P355673	
		Lead	0.050	U	ug/L	P355673	
		Nickel	0.27	I	ug/L	P355673	
		Silver	0.010	U	ug/L	P355673	

Ref. Method and Comment:

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: E-3 @ Clint Moore Boca

Collection Date/Time: 12/03/2018 14:10

Field ID: G3SE0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045937	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P355574	
	EPA 300.0 Rev. 2.1	Chloride	51		mg Cl/L	P355799	
		Sulfate	29		mg SO4/L	P355801	
		Color (true)	50	A	PCU	P355542	
	SM 2320 B-97	Total Alkalinity	151		mg CaCO3/L	P355716	
	SM 2540 C-97	TDS	305		mg/L	P355997	
	SM 2540 D-97	TSS	4	I	mg/L	P356009	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P355719	
2045939	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P355768	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P355746	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P355662	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P355814	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P355795	
2045941	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P355553	
2045969	EPA 200.7 Rev. 4.4	Calcium	58.7		mg/L	P355673	
		Iron	30	U	ug/L	P355673	
		Magnesium	4.70		mg/L	P355673	
		Potassium	5.2		mg/L	P355673	
		Sodium	30.1		mg/L	P355673	
		Zinc	5.0	U	ug/L	P355673	
	EPA 200.8 Rev. 5.4	Arsenic	2.17		ug/L	P355673	
		Cadmium	0.020	U	ug/L	P355673	
		Chromium	0.59	I	ug/L	P355673	
		Copper	5.51		ug/L	P355673	
		Lead	0.077	I	ug/L	P355673	
		Nickel	0.35	I	ug/L	P355673	
		Silver	0.010	U	ug/L	P355673	

Ref. Method and Comment:

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: E-3 @ 806 Delray

Collection Date/Time: 12/03/2018 14:45

Field ID: G3SE0005

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2045938	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P355574	
	EPA 300.0 Rev. 2.1	Chloride	47		mg Cl/L	P355799	
		Sulfate	22		mg SO4/L	P355801	
		Color (true)	41		PCU	P355542	
	SM 2320 B-97	Total Alkalinity	136		mg CaCO3/L	P355716	
	SM 2540 C-97	TDS	276	A	mg/L	P355998	
	SM 2540 D-97	TSS	2	IA	mg/L	P356010	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P355719	
2045940	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P355768	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P355746	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P355662	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P355814	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P355795	
2045942	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P355553	
2045970	EPA 200.7 Rev. 4.4	Calcium	55.0		mg/L	P355673	
		Iron	30	U	ug/L	P355673	
		Magnesium	3.84		mg/L	P355673	
		Potassium	3.5		mg/L	P355673	
		Sodium	28.1		mg/L	P355673	
		Zinc	5.0	U	ug/L	P355673	
	EPA 200.8 Rev. 5.4	Arsenic	1.78		ug/L	P355673	
		Cadmium	0.020	U	ug/L	P355673	
		Chromium	0.57	I	ug/L	P355673	
		Copper	2.08		ug/L	P355673	
		Lead	0.050	U	ug/L	P355673	
		Nickel	0.24	I	ug/L	P355673	
		Silver	0.010	U	ug/L	P355673	

Ref. Method and Comment:

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355574

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355673

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355673

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355799

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355801

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355911

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355913

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355766

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355768

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355746

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355809

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355662

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355737

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355748

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355814

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355553

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: P355554

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355555

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

Reference Method: SM 2120 B
Batch ID: P355542

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P355716

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /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 C-97
Batch ID: P355997

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P355998

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P355999

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P356009

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P356010

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P356014

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P355719

Component	Result	Code	Units
Fluoride	0.035	U	mg F/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: P355795

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

Reference Method: SM 5310 B-00
Batch ID: P355797

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: P355673

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	80 - 120
Iron	102		P	80 - 120
Magnesium	107		P	80 - 120
Potassium	98.9		P	80 - 120
Sodium	95.1		P	85 - 115
Zinc	104		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355673

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	107		P	85 - 115
Chromium	99.5		P	85 - 115
Copper	96.3		P	85 - 115
Lead	105		P	85 - 115
Nickel	97.2		P	85 - 115
Silver	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355799

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355801

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355911

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355913

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355766

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.3		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355768

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355746

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355809

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355662

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: P355737

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: P355748

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355814

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: P355553

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355554

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355555

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

Reference Method: SM 2120 B
Batch ID: P355542

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	104		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P355716

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

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: P355719

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	91 - 105

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: P355795

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

Reference Method: SM 5310 B-00
Batch ID: P355797

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045970	Calcium	104		P	80 - 120
2045970	Iron	101		P	80 - 120
2045970	Magnesium	108		P	80 - 120
2045970	Potassium	99.5		P	80 - 120
2045970	Sodium	98.1		P	80 - 120
2045970	Zinc	100		P	80 - 120
2046513	Calcium	101		P	80 - 120
2046513	Iron	102		P	80 - 120
2046513	Magnesium	105	103	P/P	80 - 120
2046513	Sodium	95.8		P	80 - 120
2046513	Zinc	105	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045970	Arsenic	104		P	80 - 120
2045970	Cadmium	108		P	80 - 120
2045970	Chromium	100		P	80 - 120
2045970	Copper	94.8		P	80 - 120
2045970	Lead	109		P	80 - 120
2045970	Nickel	95.1		P	80 - 120
2045970	Silver	104		P	80 - 120
2046513	Arsenic	102	101	P/P	80 - 120
2046513	Cadmium	111	111	P/P	80 - 120
2046513	Chromium	102	102	P/P	80 - 120
2046513	Copper	92.9	91.9	P/P	80 - 120
2046513	Lead	108	108	P/P	80 - 120
2046513	Nickel	91.8	92.3	P/P	80 - 120
2046513	Silver	105	104	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355799

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045840	Chloride	99.6		P	90 - 110
2045843	Chloride	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355801

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045840	Sulfate	97.9		P	90 - 110
2045843	Sulfate	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045982	Chloride	95.1		P	90 - 110
2046478	Chloride	98.0		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045982	Sulfate	96.6		P	90 - 110
2046478	Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045135	Ammonia-N	100	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045939	Ammonia-N	100	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355746

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045914	Kjeldahl Nitrogen	102	94.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045951	Kjeldahl Nitrogen	93.4	91.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355662

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045940	NO2NO3-N	99.9	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045820	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045821	Total-P	93.8	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045946	Total-P	104	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045842	O-Phosphate-P	93.0	94.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355554

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045948	O-Phosphate-P	92.0	94.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355555

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045953	O-Phosphate-P	93.9	95.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P355719

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045910	Fluoride	99.2	99.8	P/P	91 - 105

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: P355795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045939	Organic Carbon	97.6	97.8	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P355797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2045951	Organic Carbon	99.4	96.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P355574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045982	Turbidity	0.920	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046513	Calcium	0.807	Spike	P	0 - 20
2046513	Iron	1.02	Spike	P	0 - 20
2046513	Magnesium	0.699	Spike	P	0 - 20
2046513	Potassium	1.03	Spike	P	0 - 20
2046513	Sodium	0.107	Spike	P	0 - 20
2046513	Zinc	0.811	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046513	Arsenic	1.01	Spike	P	0 - 20
2046513	Cadmium	0.0610	Spike	P	0 - 20
2046513	Chromium	0.677	Spike	P	0 - 20
2046513	Copper	1.02	Spike	P	0 - 20
2046513	Lead	0.632	Spike	P	0 - 20
2046513	Nickel	0.523	Spike	P	0 - 20
2046513	Silver	1.15	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355799

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045840	Chloride	1.29	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045840	Sulfate	1.29	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045982	Chloride	0.280	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045982	Sulfate	1.28	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045135	Ammonia-N	2.07	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045939	Ammonia-N	0.809	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355746

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045914	Kjeldahl Nitrogen	5.56	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P355809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045951	Kjeldahl Nitrogen	1.76	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355662

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045940	NO2NO3-N	0.943	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045820	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045821	Total-P	4.00	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P355814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045946	Total-P	0.313	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045842	O-Phosphate-P	1.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355554

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045948	O-Phosphate-P	2.28	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P355555

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045953	O-Phosphate-P	1.29	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P355542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045937	Color (true)	1.15	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P355716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045910	Total Alkalinity	0.529	Sample	P	0 - 1.6

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 2540 C-97
Batch ID: P355997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045645	TDS	4.69	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P355998

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045938	TDS	4.35	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P355999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2046291	TDS	4.67	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P355719

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045910	Fluoride	0.463	Spike	P	0 - 3.5

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: P355795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045939	Organic Carbon	0.121	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P355797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2045951	Organic Carbon	2.61	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: SM 2120 B

Run ID: A88127

Included Lab Sample IDs: 2045937, 2045938, 2045943, 2045944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	104	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A88131

Included Lab Sample IDs: 2045941, 2045942, 2045947, 2045948, 2045953, 2045954

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.5	P/P	90 - 110
O-Phosphate-P	99.5	99.8	P/P	90 - 110
O-Phosphate-P	99.8	99.1	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A88139

Included Lab Sample IDs: 2045937, 2045938, 2045943, 2045944, 2045949, 2045950

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88169

Included Lab Sample IDs: 2045939, 2045940, 2045945, 2045946

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A88194

Included Lab Sample IDs: 2045937, 2045938, 2045943, 2045944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Chloride	96.9	99.1	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110
Sulfate	102	100	P/P	90 - 110
Sulfate	97.2	99.1	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A88201

Included Lab Sample IDs: 2045937, 2045938, 2045943, 2045944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.8	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A88201

Included Lab Sample IDs: 2045937, 2045938, 2045943, 2045944

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88207

Included Lab Sample IDs: 2045951, 2045952

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88216

Included Lab Sample IDs: 2045939, 2045940, 2045945, 2045946, 2045951, 2045952

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	100	P/P	90 - 110
Ammonia-N	102	101	P/P	90 - 110
Ammonia-N	102	102	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A88225

Included Lab Sample IDs: 2045939, 2045940, 2045945, 2045946, 2045951, 2045952

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	98.4	P/P	90 - 110
Organic Carbon	98.1	97.8	P/P	90 - 110
Organic Carbon	98.7	99.2	P/P	90 - 110
Organic Carbon	98.8	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88252

Included Lab Sample IDs: 2045951, 2045952

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88255

Included Lab Sample IDs: 2045939

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A88265

Included Lab Sample IDs: 2045969, 2045970, 2045971, 2045972

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	95.8	93.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88273

Included Lab Sample IDs: 2045951, 2045952

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.2	95.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A88281

Included Lab Sample IDs: 2045969, 2045970, 2045971, 2045972

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.5	101	P/P	90 - 110
Iron	96.2	101	P/P	90 - 110
Magnesium	97.0	102	P/P	90 - 110
Potassium	94.4	99.0	P/P	90 - 110
Zinc	101	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88282

Included Lab Sample IDs: 2045940, 2045945, 2045946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	98.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A88305

Included Lab Sample IDs: 2045949, 2045950

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: 2045949, 2045950

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88320

Included Lab Sample IDs: 2045939, 2045940, 2045945, 2045946

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A88479

Included Lab Sample IDs: 2045969, 2045970, 2045971, 2045972

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.6	99.0	P/P	90 - 110
Arsenic	99.0	97.6	P/P	90 - 110
Cadmium	102	106	P/P	90 - 110
Cadmium	106	107	P/P	90 - 110
Chromium	103	104	P/P	90 - 110
Chromium	99.2	103	P/P	90 - 110
Copper	95.6	93.8	P/P	90 - 110
Copper	96.3	95.6	P/P	90 - 110
Lead	106	109	P/P	90 - 110
Lead	109	109	P/P	90 - 110
Nickel	95.3	94.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A88479

Included Lab Sample IDs: 2045969, 2045970, 2045971, 2045972

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	96.5	95.3	P/P	90 - 110
Silver	102	102	P/P	90 - 110
Silver	99.5	102	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					0.920	
EPA 200.7 Rev. 4.4	Calcium	105	104	101			0.807
	Iron	102	101	102			1.02
	Magnesium	107	108	105	103		0.699
	Potassium	98.9	99.5				1.03
	Sodium	95.1	98.1	95.8			0.107
	Zinc	104	100	105	106		0.811
EPA 200.8 Rev. 5.4	Arsenic	102	104	102	101		1.01
	Cadmium	107	108	111	111		0.0610
	Chromium	99.5	100	102	102		0.677
	Copper	96.3	94.8	92.9	91.9		1.02
	Lead	105	109	108	108		0.632
	Nickel	97.2	95.1	91.8	92.3		0.523
	Silver	102	104	105	104		1.15
EPA 300.0 Rev. 2.1	Chloride	99.1	99.6	97.9		1.29	
	Chloride	97.7	95.1	98.0		0.280	
	Sulfate	98.6	97.9	99.1		1.29	
	Sulfate	97.8	96.6	97.3		1.28	
EPA 350.1 Rev. 2.0	Ammonia-N	98.3	100	103			2.07
	Ammonia-N	99.6	100	99.1			0.809
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	102	94.2			5.56
	Kjeldahl Nitrogen	97.1	93.4	91.6			1.76
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.9	101			0.943
	NO2NO3-N	102	102	103			0.487
EPA 365.1 Rev. 2.0	Total-P	101	93.8	98.0			4.00
	Total-P	102	104	104			0.313
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	93.0	94.3			1.03
	O-Phosphate-P	103	92.0	94.3			2.28
	O-Phosphate-P	98.2	93.9	95.2			1.29
SM 2120 B	Color (true)	104				1.15	
SM 2320 B-97	Total Alkalinity	100				0.529	
	Total Alkalinity	100				0.202	
SM 2540 C-97	TDS					4.69	
	TDS					4.35	
	TDS					4.67	
SM 4500 F-C-97	Fluoride	99.8	99.2	99.8			0.463
	Fluoride	99.9	100	98.3			1.40
SM 5310 B-00	Organic Carbon	99.2	97.6	97.8			0.121
	Organic Carbon	95.5	99.4	96.8			2.61

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2045937, 2045938, 2045943, 2045944, 2045949, 2045950
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2045969, 2045970, 2045971, 2045972
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2045969, 2045970, 2045971, 2045972
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2045937, 2045938, 2045943, 2045944
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2045937, 2045938, 2045943, 2045944, 2045949, 2045950

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2045939, 2045940, 2045945, 2045946, 2045951, 2045952
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2045939, 2045940, 2045945, 2045946, 2045951, 2045952
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2045939, 2045940, 2045945, 2045946, 2045951, 2045952
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2045939, 2045940, 2045945, 2045946, 2045951, 2045952
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2045941, 2045942, 2045947, 2045948, 2045953, 2045954
SM 2120 B / E31780	True Color measured at 450 nm	2045937, 2045938, 2045943, 2045944
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2045937, 2045938, 2045943, 2045944, 2045949, 2045950
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2045937, 2045938, 2045943, 2045944, 2045949, 2045950
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2045937, 2045938, 2045943, 2045944, 2045949, 2045950
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2045937, 2045938, 2045943, 2045944, 2045949, 2045950
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2045939, 2045940, 2045945, 2045946, 2045951, 2045952

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	12/04/2018			12/04/2018 17:10	Megan Treadwell	2045937, 2045938, 2045943, 2045944, 2045949, 2045950
EPA 200.7 Rev. 4.4	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/06/2018 19:37	Martin Acosta	2045969
	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/06/2018 19:44	Martin Acosta	2045970
	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/06/2018 20:04	Martin Acosta	2045971
	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/06/2018 20:11	Martin Acosta	2045972
	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/10/2018 15:29	Martin Acosta	2045969
	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/10/2018 15:34	Martin Acosta	2045970
	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/10/2018 15:47	Martin Acosta	2045971
	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/10/2018 15:51	Martin Acosta	2045972
EPA 200.8 Rev. 5.4	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/21/2018 01:49	Allison Taylor	2045969
	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/21/2018 01:58	Allison Taylor	2045970
	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/21/2018 02:46	Allison Taylor	2045971
	12/04/2018	12/05/2018 18:00	Elliott D. Healy	12/21/2018 02:55	Allison Taylor	2045972
EPA 300.0 Rev. 2.1	12/04/2018			12/07/2018 00:17	Lipi Saha	2045937
	12/04/2018			12/07/2018 00:29	Lipi Saha	2045938
	12/04/2018			12/07/2018 00:41	Lipi Saha	2045943
	12/04/2018			12/07/2018 01:30	Lipi Saha	2045949
	12/04/2018			12/07/2018 01:42	Lipi Saha	2045950
	12/04/2018			12/07/2018 17:34	Lipi Saha	2045944
EPA 350.1 Rev. 2.0	12/04/2018			12/06/2018 10:46	Ping Hua	2045951
	12/04/2018			12/06/2018 10:48	Ping Hua	2045952
	12/04/2018			12/06/2018 11:33	Ping Hua	2045939
	12/04/2018			12/06/2018 11:47	Ping Hua	2045940
	12/04/2018			12/06/2018 11:48	Ping Hua	2045945
	12/04/2018			12/06/2018 11:50	Ping Hua	2045946
EPA 351.2 Rev. 2.0	12/04/2018	12/06/2018 11:00	Adrian Shelby	12/07/2018 15:06	Virginia P. Brown	2045939
	12/04/2018	12/06/2018 11:00	Adrian Shelby	12/07/2018 15:08	Virginia P. Brown	2045940
	12/04/2018	12/06/2018 11:00	Adrian Shelby	12/07/2018 15:09	Virginia P. Brown	2045945
	12/04/2018	12/06/2018 11:00	Adrian Shelby	12/07/2018 15:11	Virginia P. Brown	2045946
	12/04/2018	12/07/2018 11:10	Adrian Shelby	12/11/2018 12:57	Joseph Suarez	2045951
	12/04/2018	12/07/2018 11:10	Adrian Shelby	12/11/2018 13:01	Joseph Suarez	2045952
EPA 353.2 Rev. 2.0	12/04/2018			12/05/2018 12:27	Lauren Bottorf	2045939
	12/04/2018			12/05/2018 12:29	Lauren Bottorf	2045940
	12/04/2018			12/05/2018 12:30	Lauren Bottorf	2045945
	12/04/2018			12/05/2018 12:31	Lauren Bottorf	2045946
	12/04/2018			12/06/2018 12:49	Lauren Bottorf	2045951
	12/04/2018			12/06/2018 12:50	Lauren Bottorf	2045952
EPA 365.1 Rev. 2.0	12/04/2018	12/06/2018 12:30	Sima Feizi	12/07/2018 15:57	Beverly Y. Sanders	2045951
	12/04/2018	12/06/2018 12:30	Sima Feizi	12/07/2018 15:58	Beverly Y. Sanders	2045952

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0	12/04/2018	12/07/2018 13:00	Sima Feizi	12/10/2018 11:10	Beverly Y. Sanders	2045939
	12/04/2018	12/07/2018 13:00	Sima Feizi	12/11/2018 13:25	Beverly Y. Sanders	2045940
	12/04/2018	12/07/2018 13:00	Sima Feizi	12/11/2018 13:26	Beverly Y. Sanders	2045945
	12/04/2018	12/07/2018 13:00	Sima Feizi	12/11/2018 13:27	Beverly Y. Sanders	2045946
EPA 365.1 Rev. 2.0 dissolved	12/04/2018			12/04/2018 14:53	Jhamieka S. Greenwood	2045948
	12/04/2018			12/04/2018 15:02	Jhamieka S. Greenwood	2045953
	12/04/2018			12/04/2018 15:05	Jhamieka S. Greenwood	2045954
	12/04/2018			12/04/2018 15:15	Jhamieka S. Greenwood	2045941
	12/04/2018			12/04/2018 15:16	Jhamieka S. Greenwood	2045942, 2045947
SM 2120 B	12/04/2018			12/04/2018 15:04	Chelsea Hernandez	2045937, 2045938
	12/04/2018			12/04/2018 15:05	Chelsea Hernandez	2045943
	12/04/2018			12/04/2018 15:06	Chelsea Hernandez	2045944
SM 2320 B-97	12/04/2018			12/06/2018 05:57	Dale L. Simmons	2045937
	12/04/2018			12/06/2018 06:07	Dale L. Simmons	2045938
	12/04/2018			12/06/2018 06:19	Dale L. Simmons	2045943
	12/04/2018			12/06/2018 06:29	Dale L. Simmons	2045944
	12/04/2018			12/12/2018 06:03	Lauren Bottorf	2045949
	12/04/2018			12/12/2018 06:12	Lauren Bottorf	2045950
SM 2540 C-97	12/04/2018			12/06/2018 14:21	Yijie Li	2045937, 2045938, 2045943, 2045944, 2045949, 2045950
SM 2540 D-97	12/04/2018			12/06/2018 14:08	Yijie Li	2045937, 2045938, 2045943, 2045944, 2045949, 2045950
SM 4500 F-C-97	12/04/2018			12/06/2018 05:57	Dale L. Simmons	2045937
	12/04/2018			12/06/2018 06:07	Dale L. Simmons	2045938
	12/04/2018			12/06/2018 06:19	Dale L. Simmons	2045943
	12/04/2018			12/06/2018 06:29	Dale L. Simmons	2045944
	12/04/2018			12/12/2018 02:56	Lauren Bottorf	2045949
SM 5310 B-00	12/04/2018			12/12/2018 03:51	Lauren Bottorf	2045950
	12/04/2018			12/06/2018 07:06	Megan Treadwell	2045939
	12/04/2018			12/06/2018 08:20	Megan Treadwell	2045940
	12/04/2018			12/06/2018 08:32	Megan Treadwell	2045945
	12/04/2018			12/06/2018 08:44	Megan Treadwell	2045946
	12/04/2018			12/07/2018 02:49	Megan Treadwell	2045951
	12/04/2018			12/07/2018 03:50	Megan Treadwell	2045952