

Chemical Analysis Report

SO-DIST-2023-10-20-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **2023 SMP: Continuous Pickup**
Request ID: **RQ-2023-09-25-25**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 314
Fort Myers, FL 33901-3381
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 06-NOV-2023 09:55



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: PEACE RIVER GILCHRIST PARK

Collection Date/Time: 10/19/2023 08:55

Field ID: G3SD0240

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2446350	EPA 200.7 Rev. 4.4	Calcium	213		mg/L	P436809	
		Iron	190	I	ug/L	P436809	
		Magnesium	604		mg/L	P436809	
		Potassium	204		mg/L	P436809	
		Sodium	5.01E+03		mg/L	P436809	
		Strontium	3.99E+03		ug/L	P436809	
		Tin	9.0	U	ug/L	P436809	
		Titanium	2.2	U	ug/L	P436809	
		Vanadium	6.0	U	ug/L	P436809	
		Zinc	15	U	ug/L	P436809	
	EPA 200.8 Rev. 5.4	Aluminum	56	I	ug/L	P436809	
		Antimony	0.20	U	ug/L	P436809	
		Arsenic	1.90		ug/L	P436809	
		Barium	12.3		ug/L	P436809	
		Beryllium	0.040	U	ug/L	P436809	
		Boron	1.97E+03		ug/L	P436809	
		Cadmium	0.080	U	ug/L	P436809	
		Chromium	1.6	U	ug/L	P436809	
		Cobalt	0.29	I	ug/L	P436809	
		Copper	1.6	U	ug/L	P436809	
		Lead	0.80	U	ug/L	P436809	
		Manganese	12.2		ug/L	P436809	
		Molybdenum	5.9	I	ug/L	P436809	
		Nickel	2.0	U	ug/L	P436809	
		Selenium	0.80	U	ug/L	P436809	
		Silver	0.040	U	ug/L	P436809	
		Thallium	0.40	U	ug/L	P436809	
	SM 2340 B-2011	Hardness	3.02E+03		mg/L	P436809	

Ref. Method and Comment:

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium and sodium are unavailable because of high analyte concentration in the QC sample.

Sample Location: EMERALD POINTE CANAL

Collection Date/Time: 10/19/2023 09:15

Field ID: G3SD0216

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2446340	DEP SOP: NU-094-1	Color (true)	160		PCU	P436826	
	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P436830	
	EPA 300.0 Rev. 2.1	Chloride	4.6E+03		mg Cl/L	P437219	
		Sulfate	660		mg SO4/L	P437222	
	SM 2320 B-2011	Total Alkalinity	78		mg CaCO3/L	P436884	
	SM 2540 C-2015	TDS	7.58E+03		mg/L	P437262	
	SM 2540 D-2015	TSS	4	IA	mg/L	P437214	
	SM 4500-F- C-2011	Fluoride	0.54		mg F/L	P436886	
2446341	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P437033	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P436948	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P437176	
	EPA 365.1 Rev. 2.0	Total-P	0.39		mg P/L	P436965	
	SM 5310 B-2011	Organic Carbon	19		mg C/L	P437015	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: CLEVELAND CEMETARY DITCH AT RIVERSIDE RD **Collection Date/Time: 10/19/2023 09:35**

Field ID: G3SD0076

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2446338	DEP SOP: NU-094-1	Color (true)	89		PCU	P436826	
	EPA 180.1 Rev. 2.0	Turbidity	10		NTU	P436830	
	EPA 300.0 Rev. 2.1	Chloride	410		mg Cl/L	P437219	
		Sulfate	110		mg SO4/L	P437222	
	SM 2320 B-2011	Total Alkalinity	210		mg CaCO3/L	P437039	
	SM 2540 C-2015	TDS	1.15E+03		mg/L	P437261	
	SM 2540 D-2015	TSS	7	I	mg/L	P437212	
	SM 4500-F- C-2011	Fluoride	0.14		mg F/L	P437041	
2446339	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P436918	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P436866	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.040		mg N/L	P437011	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P436840	
	SM 5310 B-2011	Organic Carbon	21		mg C/L	P437014	
2446349	EPA 200.7 Rev. 4.4	Calcium	146		mg/L	P437046	
		Iron	600		ug/L	P437046	
		Magnesium	22.4		mg/L	P437046	
		Potassium	8.9		mg/L	P437046	
		Sodium	207		mg/L	P437046	
		Strontium	819		ug/L	P437046	
		Tin	3.0	U	ug/L	P437046	
		Titanium	18.4		ug/L	P437046	
		Vanadium	5.5	I	ug/L	P437046	
		Zinc	5.0	U	ug/L	P437046	
	EPA 200.8 Rev. 5.4	Aluminum	224		ug/L	P437046	
		Antimony	0.77		ug/L	P437046	
		Arsenic	5.55		ug/L	P437046	
		Barium	26.6		ug/L	P437046	
		Beryllium	0.028	I	ug/L	P437046	
		Boron	111		ug/L	P437046	
		Cadmium	0.020	U	ug/L	P437046	
		Chromium	1.3	I	ug/L	P437046	
		Cobalt	0.184		ug/L	P437046	
		Copper	0.42	I	ug/L	P437046	
		Lead	0.31	I	ug/L	P437046	
		Manganese	16.9		ug/L	P437046	
		Molybdenum	9.20		ug/L	P437046	
		Nickel	1.5	I	ug/L	P437046	
		Selenium	2.35		ug/L	P437046	
		Silver	0.010	U	ug/L	P437046	
		Thallium	0.10	U	ug/L	P437046	
		Hardness	456		mg/L	P437046	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P436826

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P436830

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P436809

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
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437046

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
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P436809

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P436809

Component	Result	Code	Units
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437046

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437219

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437222

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436918

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437033

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437033

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436866

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436948

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437011

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437176

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436840

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436965

Component	Result	Code	Units
Total-P	0.010	U	mg P/L

Reference Method: SM 2320 B-2011
Batch ID: P436884

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

Reference Method: SM 2320 B-2011
Batch ID: P437039

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P437261

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2015
Batch ID: P437262

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P437212

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P437214

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P436886

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P437041

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P437014

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

Reference Method: SM 5310 B-2011
Batch ID: P437015

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P436826

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.8		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P436830

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P436809

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	102		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	95.9		P	85 - 115
Sodium	101		P	85 - 115
Strontium	96.6		P	85 - 115
Tin	106		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	103		P	85 - 115
Zinc	104		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437046

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	111		P	85 - 115
Magnesium	112		P	85 - 115
Potassium	102		P	85 - 115
Sodium	102		P	85 - 115
Strontium	99.0		P	85 - 115
Tin	97.9		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	99.1		P	85 - 115
Zinc	96.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P436809

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	96.9		P	85 - 115
Arsenic	98.1		P	85 - 115
Barium	99.5		P	85 - 115
Beryllium	90.0		P	85 - 115
Boron	107		P	85 - 115
Cadmium	98.3		P	85 - 115
Chromium	96.6		P	85 - 115
Cobalt	94.9		P	85 - 115
Copper	97.3		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P436809

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Lead	93.4		P	85 - 115
Manganese	100		P	85 - 115
Molybdenum	96.6		P	85 - 115
Nickel	95.2		P	85 - 115
Selenium	97.0		P	85 - 115
Silver	105		P	85 - 115
Thallium	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437046

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.3		P	85 - 115
Antimony	96.3		P	85 - 115
Arsenic	95.4		P	85 - 115
Barium	98.9		P	85 - 115
Beryllium	95.5		P	85 - 115
Boron	106		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	99.6		P	85 - 115
Cobalt	92.6		P	85 - 115
Copper	91.3		P	85 - 115
Lead	91.2		P	85 - 115
Manganese	99.9		P	85 - 115
Molybdenum	95.8		P	85 - 115
Nickel	91.0		P	85 - 115
Selenium	95.4		P	85 - 115
Silver	105		P	85 - 115
Thallium	97.2		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437219

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437222

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436918

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437033

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437033

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436866

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436948

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437011

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	92.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437176

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: P436840

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: P436965

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

Reference Method: SM 2320 B-2011
Batch ID: P436884

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.9		P	92 - 105

Reference Method: SM 2320 B-2011
Batch ID: P437039

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.6		P	92 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P437261

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	107		P	85 - 115

Reference Method: SM 2540 C-2015
Batch ID: P437262

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	95.2		P	85 - 115

Reference Method: SM 2540 D-2015
Batch ID: P437212

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	92.0		P	85 - 115

Reference Method: SM 2540 D-2015
Batch ID: P437214

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	93.6		P	85 - 115

Reference Method: SM 4500-F- C-2011
Batch ID: P436886

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P437041

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P437014

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P437015

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P436809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2445338	Iron	102	100	P/P	80 - 120
2445338	Strontium	94.5	94.4	P/P	80 - 120
2445338	Tin	100	108	P/P	80 - 120
2445338	Titanium	100	98.0	P/P	80 - 120
2445338	Vanadium	107	105	P/P	80 - 120
2445338	Zinc	102	102	P/P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P437046

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446388	Calcium	103		P	80 - 120
2446388	Iron	111	110	P/P	80 - 120
2446388	Magnesium	111	109	P/P	80 - 120
2446388	Potassium	102	101	P/P	80 - 120
2446388	Sodium	101		P	80 - 120
2446388	Strontium	97.5	97.5	P/P	80 - 120
2446388	Tin	94.6	94.5	P/P	80 - 120
2446388	Titanium	101	101	P/P	80 - 120
2446388	Vanadium	99.0	98.7	P/P	80 - 120
2446388	Zinc	96.3	96.1	P/P	80 - 120
2446565	Calcium	99.7		P	80 - 120
2446565	Iron	108		P	80 - 120
2446565	Magnesium	102		P	80 - 120
2446565	Potassium	101		P	80 - 120
2446565	Sodium	104		P	80 - 120
2446565	Strontium	96.3		P	80 - 120
2446565	Tin	95.3		P	80 - 120
2446565	Titanium	99.2		P	80 - 120
2446565	Vanadium	97.9		P	80 - 120
2446565	Zinc	93.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P436809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2445338	Aluminum	102	99.5	P/P	70 - 130
2445338	Antimony	96.0	96.0	P/P	70 - 130
2445338	Arsenic	108	108	P/P	70 - 130
2445338	Barium	97.4	97.9	P/P	70 - 130
2445338	Beryllium	94.0	97.5	P/P	70 - 130
2445338	Boron	108	95.8	P/P	70 - 130
2445338	Cadmium	93.9	94.5	P/P	70 - 130
2445338	Chromium	93.5	91.5	P/P	70 - 130
2445338	Cobalt	91.6	91.2	P/P	70 - 130
2445338	Copper	104	105	P/P	70 - 130
2445338	Lead	96.3	96.1	P/P	70 - 130
2445338	Manganese	94.7	94.3	P/P	70 - 130
2445338	Molybdenum	100	104	P/P	70 - 130
2445338	Nickel	93.8	93.1	P/P	70 - 130
2445338	Selenium	97.9	100	P/P	70 - 130
2445338	Silver	95.3	95.2	P/P	70 - 130

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P436809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2445338	Thallium	102	102	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437046

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446388	Aluminum	96.4	93.9	P/P	80 - 120
2446388	Antimony	96.6	95.8	P/P	80 - 120
2446388	Arsenic	96.2	96.0	P/P	80 - 120
2446388	Barium	99.9	98.9	P/P	80 - 120
2446388	Beryllium	91.0	93.6	P/P	80 - 120
2446388	Boron	107	108	P/P	80 - 120
2446388	Cadmium	102	99.2	P/P	80 - 120
2446388	Chromium	101	99.9	P/P	80 - 120
2446388	Cobalt	92.9	92.5	P/P	80 - 120
2446388	Copper	91.9	92.1	P/P	80 - 120
2446388	Lead	92.6	92.2	P/P	80 - 120
2446388	Manganese	99.8	99.5	P/P	80 - 120
2446388	Molybdenum	97.8	97.1	P/P	80 - 120
2446388	Nickel	90.8	90.6	P/P	80 - 120
2446388	Selenium	93.4	95.9	P/P	80 - 120
2446388	Silver	105	105	P/P	80 - 120
2446388	Thallium	102	102	P/P	80 - 120
2446565	Aluminum	95.3		P	80 - 120
2446565	Antimony	98.7		P	80 - 120
2446565	Arsenic	97.7		P	80 - 120
2446565	Barium	99.8		P	80 - 120
2446565	Beryllium	94.6		P	80 - 120
2446565	Boron	110		P	80 - 120
2446565	Cadmium	103		P	80 - 120
2446565	Chromium	103		P	80 - 120
2446565	Cobalt	92.1		P	80 - 120
2446565	Copper	88.8		P	80 - 120
2446565	Lead	92.3		P	80 - 120
2446565	Manganese	101		P	80 - 120
2446565	Molybdenum	101		P	80 - 120
2446565	Nickel	89.1		P	80 - 120
2446565	Selenium	94.5		P	80 - 120
2446565	Silver	107		P	80 - 120
2446565	Thallium	100		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437219

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446361	Chloride	103		P	90 - 110
2446439	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437222

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P437222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446361	Sulfate	103		P	90 - 110
2446439	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436918

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446321	Ammonia-N	100	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446746	Ammonia-N	105	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436866

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446236	Kjeldahl Nitrogen	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436948

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446650	Kjeldahl Nitrogen	97.3	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437011

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446236	NO2NO3-N	92.0	92.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437176

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2445788	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446281	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436965

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446743	Total-P	100	100	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P436886

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2445428	Fluoride	100	101	P/P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P437041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446797	Fluoride	99.7	100	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P437014

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446089	Organic Carbon	96.5	98.8	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P437015

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2446051	Organic Carbon	94.6	96.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P436826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446280	Color (true)	0.797	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P436830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446286	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P436809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2445338	Calcium	0.898	Spike	P	0 - 20
2445338	Iron	1.41	Spike	P	0 - 20
2445338	Magnesium	0.110	Spike	P	0 - 20
2445338	Potassium	0.786	Spike	P	0 - 20
2445338	Sodium	2.54	Spike	P	0 - 20
2445338	Strontium	0.0227	Spike	P	0 - 20
2445338	Tin	7.03	Spike	P	0 - 20
2445338	Titanium	2.08	Spike	P	0 - 20
2445338	Vanadium	1.35	Spike	P	0 - 20
2445338	Zinc	0.195	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446388	Calcium	1.30	Spike	P	0 - 20
2446388	Iron	1.46	Spike	P	0 - 20
2446388	Magnesium	0.965	Spike	P	0 - 20
2446388	Potassium	1.47	Spike	P	0 - 20
2446388	Sodium	1.50	Spike	P	0 - 20
2446388	Strontium	0.0394	Spike	P	0 - 20
2446388	Tin	0.0995	Spike	P	0 - 20
2446388	Titanium	0.573	Spike	P	0 - 20
2446388	Vanadium	0.225	Spike	P	0 - 20
2446388	Zinc	0.282	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P436809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2445338	Aluminum	2.07	Spike	P	0 - 20
2445338	Antimony	0.0708	Spike	P	0 - 20
2445338	Arsenic	0.790	Spike	P	0 - 20
2445338	Barium	0.536	Spike	P	0 - 20
2445338	Beryllium	3.68	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P436809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2445338	Boron	2.51	Spike	P	0 - 20
2445338	Cadmium	0.556	Spike	P	0 - 20
2445338	Chromium	2.15	Spike	P	0 - 20
2445338	Cobalt	0.429	Spike	P	0 - 20
2445338	Copper	0.722	Spike	P	0 - 20
2445338	Lead	0.164	Spike	P	0 - 20
2445338	Manganese	0.365	Spike	P	0 - 20
2445338	Molybdenum	3.10	Spike	P	0 - 20
2445338	Nickel	0.784	Spike	P	0 - 20
2445338	Selenium	2.54	Spike	P	0 - 20
2445338	Silver	0.179	Spike	P	0 - 20
2445338	Thallium	0.0289	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P437046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446388	Aluminum	2.52	Spike	P	0 - 20
2446388	Antimony	0.841	Spike	P	0 - 20
2446388	Arsenic	0.270	Spike	P	0 - 20
2446388	Barium	0.890	Spike	P	0 - 20
2446388	Beryllium	2.74	Spike	P	0 - 20
2446388	Boron	0.771	Spike	P	0 - 20
2446388	Cadmium	3.27	Spike	P	0 - 20
2446388	Chromium	0.929	Spike	P	0 - 20
2446388	Cobalt	0.458	Spike	P	0 - 20
2446388	Copper	0.199	Spike	P	0 - 20
2446388	Lead	0.511	Spike	P	0 - 20
2446388	Manganese	0.199	Spike	P	0 - 20
2446388	Molybdenum	0.665	Spike	P	0 - 20
2446388	Nickel	0.206	Spike	P	0 - 20
2446388	Selenium	2.66	Spike	P	0 - 20
2446388	Silver	0.101	Spike	P	0 - 20
2446388	Thallium	0.462	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P437219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446361	Chloride	0.484	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P437222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446361	Sulfate	0.309	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436918

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446321	Ammonia-N	1.43	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446746	Ammonia-N	2.26	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436866

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446236	Kjeldahl Nitrogen	0.539	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436948

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446650	Kjeldahl Nitrogen	7.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446236	NO2NO3-N	0.542	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2445788	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446281	Total-P	0.249	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446743	Total-P	0.449	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P436884

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2445709	Total Alkalinity	1.07	Sample	P	0 - 3.9

Reference Method: SM 2320 B-2011
Batch ID: P437039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446797	Total Alkalinity	0.577	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P437261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446029	TDS	7.64	Sample	P	0 - 10

Reference Method: SM 2540 C-2015
Batch ID: P437262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446550	TDS	6.02	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P436886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2445428	Fluoride	0.524	Spike	P	0 - 1.9

Reference Method: SM 4500-F- C-2011
Batch ID: P437041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446797	Fluoride	0.492	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P437014

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446089	Organic Carbon	1.81	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P437015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2446051	Organic Carbon	1.44	Spike	P	0 - 20

Quality Assurance Report Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1

Run ID: A122268

Included Lab Sample IDs: 2446338, 2446340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	90 - 110
Color (true)	99.9	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A122269

Included Lab Sample IDs: 2446338, 2446340

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

Reference Method: SM 2320 B-2011

Run ID: A122296

Included Lab Sample IDs: 2446340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.5	95.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A122296

Included Lab Sample IDs: 2446340

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122297

Included Lab Sample IDs: 2446350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.6	98.7	P/P	90 - 110
Antimony	94.6	92.6	P/P	90 - 110
Arsenic	98.3	97.5	P/P	90 - 110
Barium	96.2	94.9	P/P	90 - 110
Beryllium	96.2	95.4	P/P	90 - 110
Boron	103	103	P/P	90 - 110
Cadmium	97.4	95.5	P/P	90 - 110
Cobalt	95.9	94.6	P/P	90 - 110
Copper	97.5	97.2	P/P	90 - 110
Lead	91.0	90.5	P/P	90 - 110
Manganese	95.4	96.2	P/P	90 - 110
Molybdenum	96.4	96.2	P/P	90 - 110
Nickel	97.1	96.3	P/P	90 - 110
Selenium	98.0	97.0	P/P	90 - 110
Silver	96.3	94.7	P/P	90 - 110
Thallium	96.2	96.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122310

Included Lab Sample IDs: 2446339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A122310
Included Lab Sample IDs: 2446339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A122312
Included Lab Sample IDs: 2446339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.5	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A122313
Included Lab Sample IDs: 2446339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	92.5	90.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A122325
Included Lab Sample IDs: 2446350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	99.3	98.9	P/P	90 - 110
Potassium	100	101	P/P	90 - 110
Sodium	104	106	P/P	90 - 110
Strontium	98.2	100	P/P	90 - 110
Tin	103	102	P/P	90 - 110
Titanium	102	102	P/P	90 - 110
Vanadium	103	103	P/P	90 - 110
Zinc	104	103	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A122343
Included Lab Sample IDs: 2446350

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	98.9	97.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A122345
Included Lab Sample IDs: 2446339

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.7	90.2	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A122369
Included Lab Sample IDs: 2446339, 2446341

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A122369

Included Lab Sample IDs: 2446339, 2446341

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

Reference Method: SM 2320 B-2011

Run ID: A122379

Included Lab Sample IDs: 2446338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.3	96.9	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A122379

Included Lab Sample IDs: 2446338

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A122380

Included Lab Sample IDs: 2446341

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.6	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122383

Included Lab Sample IDs: 2446341

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A122397

Included Lab Sample IDs: 2446341

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	91.6	98.3	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122425

Included Lab Sample IDs: 2446349

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	96.9	94.9	P/P	90 - 110
Arsenic	95.8	94.7	P/P	90 - 110
Barium	98.6	97.1	P/P	90 - 110
Beryllium	95.9	96.3	P/P	90 - 110
Cadmium	102	101	P/P	90 - 110
Chromium	103	104	P/P	90 - 110
Cobalt	93.7	92.3	P/P	90 - 110
Copper	92.4	90.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122425

Included Lab Sample IDs: 2446349

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	91.9	91.7	P/P	90 - 110
Manganese	102	103	P/P	90 - 110
Molybdenum	98.1	97.0	P/P	90 - 110
Nickel	93.0	91.4	P/P	90 - 110
Selenium	98.7	99.3	P/P	90 - 110
Silver	99.1	99.6	P/P	90 - 110
Thallium	98.5	99.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A122428

Included Lab Sample IDs: 2446349

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	90 - 110
Iron	101	101	P/P	90 - 110
Magnesium	102	102	P/P	90 - 110
Potassium	99.9	100	P/P	90 - 110
Sodium	99.4	99.3	P/P	90 - 110
Strontium	98.0	97.2	P/P	90 - 110
Tin	100	100	P/P	90 - 110
Titanium	100	100	P/P	90 - 110
Vanadium	99.3	99.4	P/P	90 - 110
Zinc	99.5	99.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122445

Included Lab Sample IDs: 2446349

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	96.0	97.0	P/P	90 - 110
Boron	104	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A122452

Included Lab Sample IDs: 2446341

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A122479

Included Lab Sample IDs: 2446338, 2446340

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.9	101	P/P	90 - 110
Sulfate	99.8	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 SMP	MS
DEP SOP: NU-094-1	Color (true)	99.8					0.797	
EPA 180.1 Rev. 2.0	Turbidity	104					0.0	
EPA 200.7 Rev. 4.4	Calcium	102						0.898
	Calcium	105	103	99.7				1.30
	Iron	102	102	100				1.41
	Iron	111	111	110	108			1.46
	Magnesium	102						0.110
	Magnesium	112	111	109	102			0.965
	Potassium	95.9						0.786
	Potassium	102	102	101	101			1.47
	Sodium	101						2.54
	Sodium	102	101	104				1.50
	Strontium	96.6	94.5	94.4				0.0227
	Strontium	99.0	97.5	97.5	96.3			0.0394
	Tin	106	100	108				7.03
	Tin	97.9	94.6	94.5	95.3			0.0995
	Titanium	102	100	98.0				2.08
	Titanium	101	101	101	99.2			0.573
	Vanadium	103	107	105				1.35
	Vanadium	99.1	99.0	98.7	97.9			0.225
	Zinc	104	102	102				0.195
	Zinc	96.9	96.3	96.1	93.4			0.282
EPA 200.8 Rev. 5.4	Aluminum	100	102	99.5				2.07
	Aluminum	95.3	96.4	93.9	95.3			2.52
	Antimony	96.9	96.0	96.0				0.0708
	Antimony	96.3	96.6	95.8	98.7			0.841
	Arsenic	98.1	108	108				0.790
	Arsenic	95.4	96.2	96.0	97.7			0.270
	Barium	99.5	97.4	97.9				0.536
	Barium	98.9	99.9	98.9	99.8			0.890
	Beryllium	90.0	94.0	97.5				3.68
	Beryllium	95.5	91.0	93.6	94.6			2.74
	Boron	107	108	95.8				2.51
	Boron	106	107	108	110			0.771
	Cadmium	98.3	93.9	94.5				0.556
	Cadmium	100	102	99.2	103			3.27
	Chromium	96.6	93.5	91.5				2.15
	Chromium	99.6	101	99.9	103			0.929
	Cobalt	94.9	91.6	91.2				0.429
	Cobalt	92.6	92.9	92.5	92.1			0.458
	Copper	97.3	104	105				0.722
	Copper	91.3	91.9	92.1	88.8			0.199
	Lead	93.4	96.3	96.1				0.164
	Lead	91.2	92.6	92.2	92.3			0.511
	Manganese	100	94.7	94.3				0.365
	Manganese	99.9	99.8	99.5	101			0.199
	Molybdenum	96.6	100	104				3.10
	Molybdenum	95.8	97.8	97.1	101			0.665
	Nickel	95.2	93.8	93.1				0.784
	Nickel	91.0	90.8	90.6	89.1			0.206
	Selenium	97.0	97.9	100				2.54
	Selenium	95.4	93.4	95.9	94.5			2.66
	Silver	105	95.3	95.2				0.179
	Silver	105	105	105	107			0.101

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	MS
			LCS	SMP	MS		
EPA 200.8 Rev. 5.4	Thallium	100	102	102	100		0.0289
	Thallium	97.2	102	102			0.462
EPA 300.0 Rev. 2.1	Chloride	101	103	102		0.484	
	Sulfate	102	103	102		0.309	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	100	103			1.43
	Ammonia-N	99.2	105	108			2.26
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	103	103			0.539
	Kjeldahl Nitrogen	99.0	97.3	106			7.61
EPA 353.2 Rev. 2.0	NO2NO3-N	92.0	92.0	92.5			0.542
	NO2NO3-N	100	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	102	104	104			0.249
	Total-P	99.6	100	100			0.449
SM 2320 B-2011	Total Alkalinity	96.9				1.07	
	Total Alkalinity	97.6				0.577	
SM 2540 C-2015	TDS	107				7.64	
	TDS	95.2				6.02	
SM 2540 D-2015	TSS	92.0					
	TSS	93.6					
SM 4500-F- C-2011	Fluoride	101	100	101			0.524
	Fluoride	102	99.7	100			0.492
SM 5310 B-2011	Organic Carbon	96.4	96.5	98.8			1.81
	Organic Carbon	96.9	94.6	96.7			1.44

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2446338, 2446340
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2446338, 2446340
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2446349, 2446350
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2446349, 2446350
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2446338, 2446340
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2446338, 2446340
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2446339, 2446341
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2446339, 2446341
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2446339, 2446341
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2446339, 2446341
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2446338, 2446340
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2446349, 2446350
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2446338, 2446340
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2446338, 2446340
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2446338, 2446340
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2446339, 2446341

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	10/20/2023			10/20/2023 14:14	Anna M. Plaviak	2446338
	10/20/2023			10/20/2023 14:42	Anna M. Plaviak	2446340
EPA 180.1 Rev. 2.0	10/20/2023			10/20/2023 13:14	Khloe J Berg	2446338
	10/20/2023			10/20/2023 13:15	Khloe J Berg	2446340
EPA 200.7 Rev. 4.4	10/20/2023	10/20/2023 12:55	George D Taylor	10/24/2023 15:50	Samatha Luckman	2446350
	10/20/2023	10/20/2023 12:55	George D Taylor	10/24/2023 15:58	Samatha Luckman	2446350
	10/20/2023	10/20/2023 12:55	George D Taylor	10/24/2023 16:06	Samatha Luckman	2446350
	10/20/2023	10/26/2023 14:35	George D Taylor	10/27/2023 18:20	Chase Roberts	2446349
EPA 200.8 Rev. 5.4	10/20/2023	10/26/2023 14:35	George D Taylor	10/27/2023 18:27	Chase Roberts	2446349
	10/20/2023	10/20/2023 12:55	George D Taylor	10/23/2023 22:49	Conrad Hartmann	2446350
	10/20/2023	10/20/2023 12:55	George D Taylor	10/24/2023 01:32	Conrad Hartmann	2446350
	10/20/2023	10/20/2023 12:55	George D Taylor	10/24/2023 14:37	Conrad Hartmann	2446350
	10/20/2023	10/26/2023 14:35	George D Taylor	10/28/2023 00:23	Conrad Hartmann	2446349
	10/20/2023	10/26/2023 14:35	George D Taylor	10/30/2023 19:06	Conrad Hartmann	2446349
EPA 300.0 Rev. 2.1	10/20/2023			10/31/2023 00:55	James L Waggeberby	2446338
	10/20/2023			10/31/2023 01:10	James L Waggeberby	2446340
EPA 350.1 Rev. 2.0	10/20/2023			10/24/2023 12:03	Khloe J Berg	2446339
	10/20/2023			10/26/2023 10:40	Ping Hua	2446341
EPA 351.2 Rev. 2.0	10/20/2023	10/24/2023 11:15	Ping Hua	10/25/2023 12:26	Samantha L Bates	2446339
	10/20/2023	10/25/2023 10:05	Samantha L Bates	10/26/2023 12:30	Samantha L Bates	2446341
EPA 353.2 Rev. 2.0	10/20/2023			10/23/2023 16:32	Fadila Guebre	2446339
	10/20/2023			10/30/2023 13:46	Fadila Guebre	2446341
EPA 365.1 Rev. 2.0	10/20/2023	10/23/2023 13:55	Simonne.V. Calhoun	10/24/2023 12:34	Simonne.V. Calhoun	2446339
	10/20/2023	10/25/2023 15:30	Simonne.V. Calhoun	10/26/2023 10:02	James L Waggeberby	2446341
SM 2320 B-2011	10/20/2023			10/24/2023 00:59	Adam P Silver	2446340
	10/20/2023			10/25/2023 23:58	Dale L. Simmons	2446338
SM 2340 B-2011	10/20/2023			10/24/2023 15:58	Samatha Luckman	2446350
	10/20/2023			10/27/2023 18:20	Chase Roberts	2446349
SM 2540 C-2015	10/20/2023			10/24/2023 15:22	Yijie Li	2446338, 2446340
SM 2540 D-2015	10/20/2023			10/24/2023 15:22	Yijie Li	2446338, 2446340
SM 4500-F- C-2011	10/20/2023			10/23/2023 23:21	Adam P Silver	2446340
	10/20/2023			10/25/2023 23:58	Dale L. Simmons	2446338
SM 5310 B-2011	10/20/2023			10/25/2023 20:46	Elise M. Gillis	2446339
	10/20/2023			10/26/2023 03:51	Elise M. Gillis	2446341