Chemical Analysis Report

SO-DIST-2023-02-10-01

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

Event Description: **2023 SMP : P Riv**
Request ID: **RQ-2023-01-30-53**
Customer: **SO-DIST**
Project ID: **SMP**

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FLDEP South District Office
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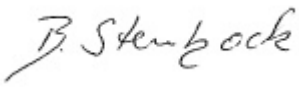
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 06-MAR-2023 15:21



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: PeaceriverGilchristPark **Collection Date/Time: 02/09/2023 14:35**

Field ID: G3SD0240 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2386760	EPA 200.7 Rev. 4.4	Calcium	300		mg/L	P425797	
		Iron	350	I	ug/L	P425797	
		Magnesium	911		mg/L	P425797	
		Strontium	6.02E+03		ug/L	P425797	
		Tin	150	U	ug/L	P425797	
		Titanium	2.4	I	ug/L	P425797	
		Vanadium	6.0	U	ug/L	P425797	
		Zinc	15	U	ug/L	P425797	
	EPA 200.8 Rev. 5.4	Aluminum	325		ug/L	P426238	
		Antimony	0.20	U	ug/L	P426238	
		Arsenic	1.80		ug/L	P426238	
		Beryllium	0.040	U	ug/L	P426238	
		Cadmium	0.080	U	ug/L	P426238	
		Chromium	4.0	U	ug/L	P425797	
		Cobalt	0.15	I	ug/L	P426238	
		Copper	1.7	I	ug/L	P426238	
		Lead	2.0	U	ug/L	P426238	
		Manganese	27.4		ug/L	P426238	
		Molybdenum	8.9		ug/L	P426238	
		Nickel	2.0	U	ug/L	P426238	
		Selenium	0.80	U	ug/L	P426238	
		Silver	0.040	U	ug/L	P426238	
		Thallium	1.0	U	ug/L	P426238	

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

Sample Location: Emerald Pointe Canal **Collection Date/Time: 02/09/2023 14:15**

Field ID: G3SD0216 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2386743	EPA 180.1 Rev. 2.0	Turbidity	1.9	A	NTU	P425673	
	SM 2320 B-2011	Total Alkalinity	100		mg CaCO3/L	P425908	
	SM 2540 D-2015	TSS	7	I A	mg/L	P426115	
	SM 4500-F- C-2011	Fluoride	0.93		mg F/L	P425910	
2386745	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P426155	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P425808	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P426010	
	EPA 365.1 Rev. 2.0	Total-P	0.23		mg P/L	P425816	
	SM 5310 B-2011	Organic Carbon	9.6		mg C/L	P425802	

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: Peacr River Above Horse Creek 2 **Collection Date/Time: 02/09/2023 09:25**

Field ID: G3SD0154 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2386747	DEP SOP: NU-094-1	Color (true)	88		PCU	P425666	
	EPA 180.1 Rev. 2.0	Turbidity	4.7		NTU	P425673	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P426518	
		Sulfate	57		mg SO4/L	P426520	
	SM 2320 B-2011	Total Alkalinity	92		mg CaCO3/L	P426049	
	SM 2540 C-2015	TDS	265		mg/L	P426311	
	SM 2540 D-2015	TSS	4	I	mg/L	P426113	
	SM 4500-F- C-2011	Fluoride	0.77		mg F/L	P426053	
2386748	EPA 350.1 Rev. 2.0	Ammonia-N	0.053		mg N/L	P425980	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P425912	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.70		mg N/L	P425942	
	EPA 365.1 Rev. 2.0	Total-P	0.86		mg P/L	P425923	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P426022	

Ref. Method and Comment:
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries and relative percent difference are unavailable because of high analyte concentration in the QC sample.

Sample Location: Peace River Estuary @ Harbour Heights **Collection Date/Time: 02/09/2023 13:20**

Field ID: G3SD0148 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2386744	EPA 180.1 Rev. 2.0	Turbidity	8.7		NTU	P425673	
	SM 2320 B-2011	Total Alkalinity	85		mg CaCO3/L	P426049	
	SM 2540 D-2015	TSS	12		mg/L	P426114	
	SM 4500-F- C-2011	Fluoride	0.70		mg F/L	P426053	
2386746	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P426155	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P425808	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.064		mg N/L	P426010	
	EPA 365.1 Rev. 2.0	Total-P	0.55		mg P/L	P425816	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P426022	

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: P425666

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P425673

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425797

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	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: P425797

Component	Result	Code	Units
Chromium	0.40	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426238

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Cadmium	0.020	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: P426518

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426520

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425980

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426155

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425808

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425912

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425942

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426010

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P425816

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P425923

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P425908

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

Reference Method: SM 2320 B-2011
Batch ID: P426049

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

Reference Method: SM 2540 C-2015
Batch ID: P426311

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P426113

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P426114

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P426115

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P425910

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 4500-F- C-2011
Batch ID: P426053

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P425802

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P426022

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: P425666

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P425673

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425797

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	106		P	85 - 115
Magnesium	103		P	85 - 115
Strontium	102		P	85 - 115
Tin	105		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	104		P	85 - 115
Zinc	107		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P425797

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426238

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.7		P	85 - 115
Antimony	97.1		P	85 - 115
Arsenic	96.8		P	85 - 115
Beryllium	90.8		P	85 - 115
Cadmium	97.0		P	85 - 115
Cobalt	99.5		P	85 - 115
Copper	95.2		P	85 - 115
Lead	96.2		P	85 - 115
Manganese	95.8		P	85 - 115
Molybdenum	97.2		P	85 - 115
Nickel	96.5		P	85 - 115
Selenium	96.0		P	85 - 115
Silver	102		P	85 - 115
Thallium	98.8		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426518

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.7		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426520

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425980

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426155

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425808

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: P425912

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425942

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426010

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: P425816

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P425923

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.9		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P425908

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P426049

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.0		P	94 - 106

Reference Method: SM 2540 C-2015
Batch ID: P426311

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

Reference Method: SM 2540 D-2015
Batch ID: P426113

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	91.9		P	85 - 106

Reference Method: SM 2540 D-2015
Batch ID: P426114

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	93.3		P	85 - 106

Reference Method: SM 2540 D-2015
Batch ID: P426115

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	101		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P425910

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	96 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P426053

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P425802

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P426022

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2385831	Iron	101	100	P/P	70 - 130
2385831	Strontium	99.7	100	P/P	70 - 130
2385831	Tin	125	126	P/P	70 - 130
2385831	Titanium	101	101	P/P	70 - 130
2385831	Vanadium	103	104	P/P	70 - 130
2385831	Zinc	99.0	97.8	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P425797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2385831	Chromium	103	106	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426238

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2387076	Aluminum	96.9	100	P/P	70 - 130
2387076	Antimony	99.0	98.5	P/P	70 - 130
2387076	Arsenic	104	105	P/P	70 - 130
2387076	Beryllium	99.4	101	P/P	70 - 130
2387076	Cadmium	95.3	94.3	P/P	70 - 130
2387076	Cobalt	106	107	P/P	70 - 130
2387076	Copper	98.5	99.6	P/P	70 - 130
2387076	Lead	97.9	96.8	P/P	70 - 130
2387076	Manganese	90.8	91.7	P/P	70 - 130
2387076	Molybdenum	105	107	P/P	70 - 130
2387076	Nickel	102	104	P/P	70 - 130
2387076	Selenium	97.7	99.1	P/P	70 - 130
2387076	Silver	95.4	95.6	P/P	70 - 130
2387076	Thallium	99.1	98.1	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426518

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2387907	Chloride	97.7		P	90 - 110
2387927	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2387907	Sulfate	101		P	90 - 110
2387927	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425980

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2386461	Ammonia-N	99.0	98.8	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2386977	Ammonia-N	99.0	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425808

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2386116	Kjeldahl Nitrogen	97.2	96.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425942

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2383819	NO2NO3-N	95.2	95.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426010

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2386745	NO2NO3-N	98.0	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P425816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2385600	Total-P	90.8	91.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P425923

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2386678	Total-P	102	104	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P425910

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2385654	Fluoride	98.5	97.8	P/P	94 - 104

Reference Method: SM 4500-F- C-2011
Batch ID: P426053

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2386771	Fluoride	100	98.9	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P425802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2385882	Organic Carbon	92.3	91.0	P/P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P426022

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2386772	Organic Carbon	92.0	93.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P425666

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386676	Color (true)	1.32	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P425673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386743	Turbidity	6.97	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P425797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2385831	Calcium	0.379	Spike	P	0 - 20
2385831	Iron	0.667	Spike	P	0 - 20
2385831	Magnesium	15.7	Spike	P	0 - 20
2385831	Strontium	0.393	Spike	P	0 - 20
2385831	Tin	1.37	Spike	P	0 - 20
2385831	Titanium	0.766	Spike	P	0 - 20
2385831	Vanadium	0.123	Spike	P	0 - 20
2385831	Zinc	1.13	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P425797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2385831	Chromium	2.60	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P426238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2387076	Aluminum	3.13	Spike	P	0 - 20
2387076	Antimony	0.445	Spike	P	0 - 20
2387076	Arsenic	0.724	Spike	P	0 - 20
2387076	Beryllium	1.52	Spike	P	0 - 20
2387076	Cadmium	1.09	Spike	P	0 - 20
2387076	Cobalt	0.681	Spike	P	0 - 20
2387076	Copper	1.11	Spike	P	0 - 20
2387076	Lead	1.14	Spike	P	0 - 20
2387076	Manganese	0.861	Spike	P	0 - 20
2387076	Molybdenum	1.71	Spike	P	0 - 20
2387076	Nickel	2.03	Spike	P	0 - 20
2387076	Selenium	1.45	Spike	P	0 - 20
2387076	Silver	0.280	Spike	P	0 - 20
2387076	Thallium	0.980	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426518

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2387907	Chloride	0.755	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P426520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2387907	Sulfate	8.28	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P425980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386461	Ammonia-N	0.190	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P426155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386977	Ammonia-N	2.08	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P425808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386116	Kjeldahl Nitrogen	0.584	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P425942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2383819	NO2NO3-N	0.283	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P426010

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386745	NO2NO3-N	5.19	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P425816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2385600	Total-P	1.12	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P425923

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386678	Total-P	1.49	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P425908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2385654	Total Alkalinity	1.09	Sample	P	0 - 3.8

Reference Method: SM 2320 B-2011
Batch ID: P426049

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386771	Total Alkalinity	0.0992	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P426311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386420	TDS	1.78	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P425910

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2385654	Fluoride	0.463	Spike	P	0 - 1.6

Reference Method: SM 4500-F- C-2011
Batch ID: P426053

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386771	Fluoride	0.974	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P425802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2385882	Organic Carbon	1.30	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P426022

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2386772	Organic Carbon	1.30	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: A117384
Included Lab Sample IDs: 2386747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	98.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A117388
Included Lab Sample IDs: 2386743, 2386744, 2386747

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

Reference Method: SM 5310 B-2011
Run ID: A117442
Included Lab Sample IDs: 2386745

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.2	97.6	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A117472
Included Lab Sample IDs: 2386743

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.6	99.1	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A117472
Included Lab Sample IDs: 2386743

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A117480
Included Lab Sample IDs: 2386748

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A117483
Included Lab Sample IDs: 2386745, 2386746

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: A117494
Included Lab Sample IDs: 2386760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	105	101	P/P	90 - 110
Iron	109	103	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A117494
Included Lab Sample IDs: 2386760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Magnesium	109	102	P/P	90 - 110
Strontium	102	106	P/P	90 - 110
Tin	104	105	P/P	90 - 110
Titanium	101	102	P/P	90 - 110
Vanadium	103	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A117495
Included Lab Sample IDs: 2386748

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.1	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A117514
Included Lab Sample IDs: 2386745, 2386746

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

Reference Method: SM 5310 B-2011
Run ID: A117520
Included Lab Sample IDs: 2386746, 2386748

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	92.3	96.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A117528
Included Lab Sample IDs: 2386745, 2386746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.3	100	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A117530
Included Lab Sample IDs: 2386744, 2386747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.5	95.2	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A117530
Included Lab Sample IDs: 2386744, 2386747

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A117535
Included Lab Sample IDs: 2386760

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A117566
Included Lab Sample IDs: 2386745, 2386746

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A117572
Included Lab Sample IDs: 2386748

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A117625
Included Lab Sample IDs: 2386748

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	97.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A117641
Included Lab Sample IDs: 2386760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	100	101	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A117672
Included Lab Sample IDs: 2386760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	95.0	93.9	P/P	90 - 110
Antimony	93.3	94.2	P/P	90 - 110
Arsenic	95.9	94.7	P/P	90 - 110
Beryllium	96.0	95.3	P/P	90 - 110
Cadmium	93.2	93.7	P/P	90 - 110
Cobalt	96.3	95.5	P/P	90 - 110
Copper	93.6	93.0	P/P	90 - 110
Lead	93.9	95.0	P/P	90 - 110
Manganese	91.8	91.9	P/P	90 - 110
Molybdenum	93.6	94.3	P/P	90 - 110
Nickel	94.9	93.7	P/P	90 - 110
Selenium	94.4	93.8	P/P	90 - 110
Silver	95.1	95.4	P/P	90 - 110
Thallium	94.2	95.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A117687
Included Lab Sample IDs: 2386747

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	96.0	96.8	P/P	90 - 110
Sulfate	99.1	100	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
DEP SOP: NU-094-1	Color (true)	101				1.32	
EPA 180.1 Rev. 2.0	Turbidity	101				6.97	
EPA 200.7 Rev. 4.4	Calcium	104					0.379
	Iron	106	101	100			0.667
	Magnesium	103					15.7
	Strontium	102	99.7	100			0.393
	Tin	105	125	126			1.37
	Titanium	103	101	101			0.766
	Vanadium	104	103	104			0.123
	Zinc	107	99.0	97.8			1.13
EPA 200.8 Rev. 5.4	Aluminum	97.7	96.9	100			3.13
	Antimony	97.1	99.0	98.5			0.445
	Arsenic	96.8	104	105			0.724
	Beryllium	90.8	99.4	101			1.52
	Cadmium	97.0	95.3	94.3			1.09
	Chromium	102	103	106			2.60
	Cobalt	99.5	106	107			0.681
	Copper	95.2	98.5	99.6			1.11
	Lead	96.2	97.9	96.8			1.14
	Manganese	95.8	90.8	91.7			0.861
	Molybdenum	97.2	105	107			1.71
	Nickel	96.5	102	104			2.03
	Selenium	96.0	97.7	99.1			1.45
	Silver	102	95.4	95.6			0.280
	Thallium	98.8	99.1	98.1			0.980
EPA 300.0 Rev. 2.1	Chloride	98.7	97.7	99.0		0.755	
	Sulfate	102	101	102		8.28	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	99.0	98.8			0.190
	Ammonia-N	95.2	99.0	102			2.08
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	97.2	96.6			0.584
	Kjeldahl Nitrogen	104					
EPA 353.2 Rev. 2.0	NO2NO3-N	102	95.2	95.8			0.283
	NO2NO3-N	102	98.0	104			5.19
EPA 365.1 Rev. 2.0	Total-P	96.0	90.8	91.8			1.12
	Total-P	99.9	102	104			1.49
SM 2320 B-2011	Total Alkalinity	99.3				1.09	
	Total Alkalinity	97.0				0.0992	
SM 2540 C-2015	TDS	95.8				1.78	
SM 2540 D-2015	TSS	91.9					
	TSS	93.3					
	TSS	101					
SM 4500-F- C-2011	Fluoride	99.0	98.5	97.8			0.463
	Fluoride	98.5	100	98.9			0.974
SM 5310 B-2011	Organic Carbon	98.0	92.3	91.0			1.30
	Organic Carbon	96.7	92.0	93.3			1.30

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2386747
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2386743, 2386744, 2386747
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2386760

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2386760
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2386747
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2386747
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2386745, 2386746, 2386748
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2386745, 2386746, 2386748
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2386745, 2386746, 2386748
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2386745, 2386746, 2386748
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2386743, 2386744, 2386747
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2386747
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2386743, 2386744, 2386747
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2386743, 2386744, 2386747
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2386745, 2386746, 2386748

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	02/10/2023			02/10/2023 14:31	Alexis Price	2386747
EPA 180.1 Rev. 2.0	02/10/2023			02/10/2023 14:18	Khloe J Berg	2386743
	02/10/2023			02/10/2023 14:19	Khloe J Berg	2386744
	02/10/2023			02/10/2023 14:20	Khloe J Berg	2386747
EPA 200.7 Rev. 4.4	02/10/2023	02/15/2023 12:50	George D Taylor	02/16/2023 20:47	McKinley C Carter	2386760
	02/10/2023	02/15/2023 12:50	George D Taylor	02/16/2023 20:55	McKinley C Carter	2386760
	02/10/2023	02/15/2023 12:50	George D Taylor	02/22/2023 12:49	McKinley C Carter	2386760
EPA 200.8 Rev. 5.4	02/10/2023	02/15/2023 12:50	George D Taylor	02/17/2023 18:45	Emily M Philpot	2386760
	02/10/2023	02/22/2023 14:00	George D Taylor	02/24/2023 18:58	Emily M Philpot	2386760
	02/10/2023	02/22/2023 14:00	George D Taylor	02/24/2023 21:18	Emily M Philpot	2386760
EPA 300.0 Rev. 2.1	02/10/2023			02/28/2023 16:05	Judith K. Clark	2386747
EPA 350.1 Rev. 2.0	02/10/2023			02/16/2023 13:59	Ping Hua	2386748
	02/10/2023			02/21/2023 10:22	Ping Hua	2386745
	02/10/2023			02/21/2023 10:23	Ping Hua	2386746
EPA 351.2 Rev. 2.0	02/10/2023	02/15/2023 11:46	Samantha L Bates	02/17/2023 15:51	Samantha L Bates	2386745
	02/10/2023	02/15/2023 11:46	Samantha L Bates	02/17/2023 15:52	Samantha L Bates	2386746
	02/10/2023	02/16/2023 11:30	Simonne.V. Calhoun	02/23/2023 11:24	Judith K. Clark	2386748
EPA 353.2 Rev. 2.0	02/10/2023			02/16/2023 10:04	Beverly Y. Sanders	2386748
	02/10/2023			02/17/2023 10:05	Beverly Y. Sanders	2386745
	02/10/2023			02/17/2023 10:11	Beverly Y. Sanders	2386746
EPA 365.1 Rev. 2.0	02/10/2023	02/15/2023 13:30	Adam P Silver	02/16/2023 09:50	James L Waggerby	2386745
	02/10/2023	02/15/2023 13:30	Adam P Silver	02/16/2023 09:51	James L Waggerby	2386746
	02/10/2023	02/16/2023 16:29	Adam P Silver	02/17/2023 09:20	James L Waggerby	2386748
SM 2320 B-2011	02/10/2023			02/15/2023 23:02	Dale L. Simmons	2386743
	02/10/2023			02/17/2023 10:30	Chandler E Cox	2386744
	02/10/2023			02/17/2023 10:44	Chandler E Cox	2386747
SM 2540 C-2015	02/10/2023			02/14/2023 15:41	Yijie Li	2386747
SM 2540 D-2015	02/10/2023			02/14/2023 15:41	Yijie Li	2386743, 2386744, 2386747
SM 4500-F- C-2011	02/10/2023			02/15/2023 20:40	Dale L. Simmons	2386743
	02/10/2023			02/17/2023 10:30	Chandler E Cox	2386744
	02/10/2023			02/17/2023 10:44	Chandler E Cox	2386747
SM 5310 B-2011	02/10/2023			02/15/2023 01:48	Elise M. Gillis	2386745
	02/10/2023			02/17/2023 00:16	Elise M. Gillis	2386746
	02/10/2023			02/17/2023 00:30	Elise M. Gillis	2386748