

Chemical Analysis Report

NW-DIST-2023-05-18-01

Florida DEP Laboratory
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Tallahassee, FL 32399-2400
DOH Accreditation E31780

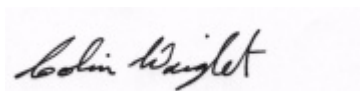
Event Description: **Rest Area Run**
Request ID: **RQ-2023-05-15-30**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government Street
Suite 208
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Certified by: Colin Wright, Program Administrator

Date Certified: 09-JUN-2023 12:27

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light pink rectangular background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited 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: REST AREA RUN BELOW BEAVER POND CREEK

Collection Date/Time: 05/17/2023 10:00

Field ID: G5NW0068

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2410646	DEP SOP: NU-094-1	Color (true)	120		PCU	P430069	
	EPA 180.1 Rev. 2.0	Turbidity	14		NTU	P430079	
	EPA 300.0 Rev. 2.1	Chloride	9.7		mg Cl/L	P430367	
		Sulfate	4.4		mg SO4/L	P430370	
	SM 2320 B-2011	Total Alkalinity	14		mg CaCO3/L	P430537	
	SM 2540 C-2015	TDS	65		mg/L	P430683	
	SM 2540 D-2015	TSS	4	I	mg/L	P430520	
	SM 4500-F- C-2011	Fluoride	0.032	I	mg F/L	P430544	RPD
	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P430410	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P430468	
2410647	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P430478	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P430722	
	SM 5310 B-2011	Organic Carbon	9.1		mg C/L	P430150	

Sample Location: BEAVER POND CREEK

Collection Date/Time: 05/17/2023 10:15

Field ID: 33010066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2410642	DEP SOP: NU-094-1	Color (true)	62		PCU	P430072	
	EPA 180.1 Rev. 2.0	Turbidity	23		NTU	P430079	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P430367	
		Sulfate	6.0		mg SO4/L	P430370	
	SM 2320 B-2011	Total Alkalinity	81		mg CaCO3/L	P430537	
	SM 2540 C-2015	TDS	159		mg/L	P430682	
	SM 2540 D-2015	TSS	8	I	mg/L	P430519	
	SM 4500-F- C-2011	Fluoride	0.081	I	mg F/L	P430544	RPD
2410644	EPA 350.1 Rev. 2.0	Ammonia-N	0.043		mg N/L	P430410	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P430468	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.064		mg N/L	P430478	
	EPA 365.1 Rev. 2.0	Total-P	0.049		mg P/L	P430722	
	SM 5310 B-2011	Organic Carbon	15		mg C/L	P430150	
2410683	EPA 200.7 Rev. 4.4	Calcium	22.8		mg/L	P430123	
		Iron	1.44E+03		ug/L	P430123	
		Magnesium	4.17		mg/L	P430123	
		Potassium	8.2		mg/L	P430123	
		Sodium	19.8		mg/L	P430123	
		Strontium	63.0		ug/L	P430123	
		Tin	3.0	U	ug/L	P430123	
	EPA 200.8 Rev. 5.4	Titanium	3.3		ug/L	P430123	
		Vanadium	2.0	U	ug/L	P430123	
		Aluminum	440		ug/L	P430123	
		Antimony	0.20		ug/L	P430123	
		Arsenic	1.07		ug/L	P430123	
		Barium	24.7		ug/L	P430123	
		Beryllium	0.019	I	ug/L	P430123	
		Boron	160		ug/L	P430123	
		Cadmium	0.020	U	ug/L	P430123	
		Chromium	0.97	I	ug/L	P430123	
		Cobalt	0.220		ug/L	P430123	
		Copper	1.08		ug/L	P430123	
		Lead	0.43		ug/L	P430123	
		Manganese	31.0		ug/L	P430123	
		Molybdenum	0.50	I	ug/L	P430123	
		Nickel	1.3	I	ug/L	P430123	
		Selenium	0.20	U	ug/L	P430123	
		Silver	0.010	U	ug/L	P430123	
		Thallium	0.10	U	ug/L	P430123	
		Zinc	7.0	U	ug/L	P430123	
	SM 2340 B-2011	Hardness	74.2		mg/L	P430123	

Ref. Method and Comment:

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

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

Sample Location: TRIBUTARY SOUTH OF PERDIDO LANDFILL

Collection Date/Time: 05/17/2023 11:15

Field ID: G5NW0050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2410643	DEP SOP: NU-094-1	Color (true)	35		PCU	P430072	
	EPA 180.1 Rev. 2.0	Turbidity	70		NTU	P430079	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P430367	
		Sulfate	24		mg SO4/L	P430370	
	SM 2320 B-2011	Total Alkalinity	37		mg CaCO3/L	P430537	
	SM 2540 C-2015	TDS	169	A	mg/L	P430683	
	SM 2540 D-2015	TSS	17	A	mg/L	P430520	
	SM 4500-F- C-2011	Fluoride	0.062	I	mg F/L	P430544	RPD
2410645	EPA 350.1 Rev. 2.0	Ammonia-N	0.43		mg N/L	P430410	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P430468	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.30		mg N/L	P430478	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P430887	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P430150	
2410684	EPA 200.7 Rev. 4.4	Calcium	15.2		mg/L	P430123	
		Iron	3.36E+03		ug/L	P430123	
		Magnesium	2.71		mg/L	P430123	
		Potassium	6.7		mg/L	P430123	
		Sodium	18.1		mg/L	P430123	
		Strontium	41.1		ug/L	P430123	
		Tin	3.0	U	ug/L	P430123	
		Titanium	11.4		ug/L	P430123	
		Vanadium	4.3	I	ug/L	P430123	
		Aluminum	1.45E+03		ug/L	P430123	
	EPA 200.8 Rev. 5.4	Antimony	0.17	I	ug/L	P430123	
		Arsenic	1.79		ug/L	P430123	
		Barium	25.2		ug/L	P430123	
		Beryllium	0.034	I	ug/L	P430123	
		Boron	99.7		ug/L	P430123	
		Cadmium	0.020	U	ug/L	P430123	
		Chromium	2.2		ug/L	P430123	
		Cobalt	0.331		ug/L	P430123	
		Copper	1.41		ug/L	P430123	
		Lead	1.20		ug/L	P430123	
		Manganese	47.2		ug/L	P430123	
		Molybdenum	0.34	I	ug/L	P430123	
		Nickel	0.94	I	ug/L	P430123	
		Selenium	0.21	I	ug/L	P430123	
		Silver	0.010	U	ug/L	P430123	
		Thallium	0.10	U	ug/L	P430123	
		Zinc	7.0	U	ug/L	P430123	
	SM 2340 B-2011	Hardness	49.2		mg/L	P430123	

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P430069

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P430072

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430079

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430123

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430123

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
Zinc	7.0	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430367

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430370

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430410

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430468

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430478

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430722

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430887

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

Reference Method: SM 2320 B-2011
Batch ID: P430537

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

Reference Method: SM 2540 C-2015
Batch ID: P430682

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P430683

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P430519

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P430520

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P430544

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P430150

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: P430069

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.7		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P430072

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.5		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430079

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	104		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	101		P	85 - 115
Sodium	96.0		P	85 - 115
Strontium	102		P	85 - 115
Tin	99.9		P	85 - 115
Titanium	100		P	85 - 115
Vanadium	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.2		P	85 - 115
Antimony	102		P	85 - 115
Arsenic	99.2		P	85 - 115
Barium	102		P	85 - 115
Beryllium	97.3		P	85 - 115
Boron	97.5		P	85 - 115
Cadmium	98.6		P	85 - 115
Chromium	93.9		P	85 - 115
Cobalt	98.2		P	85 - 115
Copper	100		P	85 - 115
Lead	99.6		P	85 - 115
Manganese	99.7		P	85 - 115
Molybdenum	98.3		P	85 - 115
Nickel	95.3		P	85 - 115
Selenium	100		P	85 - 115
Silver	101		P	85 - 115
Thallium	97.8		P	85 - 115
Zinc	96.3		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430367

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430370

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430410

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430468

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430478

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430722

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430887

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

Reference Method: SM 2320 B-2011
Batch ID: P430537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.8		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P430682

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	96.8		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P430683

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

Reference Method: SM 2540 D-2015
Batch ID: P430519

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

Reference Method: SM 2540 D-2015
Batch ID: P430520

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	103		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P430544

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

Reference Method: SM 5310 B-2011
Batch ID: P430150

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P430123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410249	Calcium	100		P	80 - 120
2410249	Iron	104	104	P/P	80 - 120
2410249	Magnesium	99.9		P	80 - 120
2410249	Potassium	100		P	80 - 120
2410249	Sodium	95.8		P	80 - 120
2410249	Strontium	99.2	99.8	P/P	80 - 120
2410249	Tin	98.5	100	P/P	80 - 120
2410249	Titanium	101	101	P/P	80 - 120
2410249	Vanadium	102	102	P/P	80 - 120
2410766	Calcium	100		P	80 - 120
2410766	Iron	102		P	80 - 120
2410766	Magnesium	100		P	80 - 120
2410766	Potassium	98.7		P	80 - 120
2410766	Sodium	96.6		P	80 - 120
2410766	Strontium	99.9		P	80 - 120
2410766	Tin	97.8		P	80 - 120
2410766	Titanium	100		P	80 - 120
2410766	Vanadium	99.5		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P430123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410249	Aluminum	95.8	97.1	P/P	80 - 120
2410249	Antimony	103	103	P/P	80 - 120
2410249	Arsenic	99.6	101	P/P	80 - 120
2410249	Barium	102	103	P/P	80 - 120
2410249	Beryllium	98.6	95.5	P/P	80 - 120
2410249	Boron	95.0	95.4	P/P	80 - 120
2410249	Cadmium	98.4	97.4	P/P	80 - 120
2410249	Chromium	92.0	93.2	P/P	80 - 120
2410249	Cobalt	95.8	96.6	P/P	80 - 120
2410249	Copper	115	95.2	P/P	80 - 120
2410249	Lead	99.9	100	P/P	80 - 120
2410249	Manganese	99.6	99.8	P/P	80 - 120
2410249	Molybdenum	98.0	98.6	P/P	80 - 120
2410249	Nickel	93.3	94.9	P/P	80 - 120
2410249	Selenium	98.4	99.0	P/P	80 - 120
2410249	Silver	99.2	99.7	P/P	80 - 120
2410249	Thallium	97.9	101	P/P	80 - 120
2410249	Zinc	96.7	98.5	P/P	80 - 120
2410766	Aluminum	96.9		P	80 - 120
2410766	Antimony	101		P	80 - 120
2410766	Arsenic	96.6		P	80 - 120
2410766	Barium	101		P	80 - 120
2410766	Beryllium	92.6		P	80 - 120
2410766	Boron	99.5		P	80 - 120
2410766	Cadmium	98.9		P	80 - 120
2410766	Chromium	93.8		P	80 - 120
2410766	Cobalt	95.9		P	80 - 120
2410766	Copper	97.5		P	80 - 120
2410766	Lead	99.9		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410766	Manganese	95.8		P	80 - 120
2410766	Molybdenum	96.2		P	80 - 120
2410766	Nickel	95.3		P	80 - 120
2410766	Selenium	96.9		P	80 - 120
2410766	Silver	100		P	80 - 120
2410766	Thallium	97.7		P	80 - 120
2410766	Zinc	97.3		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430367

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410488	Chloride	101		P	90 - 110
2410592	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430370

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410488	Sulfate	98.7		P	90 - 110
2410592	Sulfate	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430410

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410616	Ammonia-N	97.4	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410644	Kjeldahl Nitrogen	104	94.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410616	NO2NO3-N	107	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430722

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410681	Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430887

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2414567	Total-P	100	102	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P430544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2411011	Fluoride	101	98.4	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P430150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2410490	Organic Carbon	95.5	95.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P430069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410571	Color (true)	2.32	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P430072

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410577	Color (true)	8.00	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P430079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410578	Turbidity	10.3	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P430123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410249	Calcium	1.70	Spike	P	0 - 20
2410249	Iron	0.0113	Spike	P	0 - 20
2410249	Magnesium	0.211	Spike	P	0 - 20
2410249	Potassium	0.924	Spike	P	0 - 20
2410249	Sodium	0.980	Spike	P	0 - 20
2410249	Strontium	0.564	Spike	P	0 - 20
2410249	Tin	1.47	Spike	P	0 - 20
2410249	Titanium	0.831	Spike	P	0 - 20
2410249	Vanadium	0.600	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410249	Aluminum	1.22	Spike	P	0 - 20
2410249	Antimony	0.408	Spike	P	0 - 20
2410249	Arsenic	0.971	Spike	P	0 - 20
2410249	Barium	0.501	Spike	P	0 - 20
2410249	Beryllium	3.17	Spike	P	0 - 20
2410249	Boron	0.380	Spike	P	0 - 20
2410249	Cadmium	1.04	Spike	P	0 - 20
2410249	Chromium	1.28	Spike	P	0 - 20
2410249	Cobalt	0.895	Spike	P	0 - 20
2410249	Copper	18.6	Spike	P	0 - 20
2410249	Lead	0.538	Spike	P	0 - 20
2410249	Manganese	0.222	Spike	P	0 - 20
2410249	Molybdenum	0.661	Spike	P	0 - 20
2410249	Nickel	1.73	Spike	P	0 - 20
2410249	Selenium	0.638	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P430123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410249	Silver	0.416	Spike	P	0 - 20
2410249	Thallium	2.77	Spike	P	0 - 20
2410249	Zinc	1.80	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410488	Chloride	1.37	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P430370

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410488	Sulfate	1.71	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P430410

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410616	Ammonia-N	0.355	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P430468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410644	Kjeldahl Nitrogen	5.68	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P430478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410616	NO2NO3-N	0.939	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430722

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410681	Total-P	0.883	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430887

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P430887

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2414567	Total-P	1.73	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P430537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2411011	Total Alkalinity	0.702	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P430683

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410643	TDS	3.55	Sample	P	0 - 10

Reference Method: SM 2540 D-2015
Batch ID: P430520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410643	TSS	7.23	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P430544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2411011	Fluoride	1.99	Spike	F	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P430150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2410490	Organic Carbon	0.210	Spike	P	0 - 20

* 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: A119258

Included Lab Sample IDs: 2410642, 2410643, 2410646

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.4	99.9	P/P	90 - 110
Color (true)	98.7	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A119260

Included Lab Sample IDs: 2410642, 2410643, 2410646

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

Reference Method: SM 5310 B-2011

Run ID: A119300

Included Lab Sample IDs: 2410644, 2410645, 2410647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.9	98.8	P/P	90 - 110
Organic Carbon	98.2	98.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A119351

Included Lab Sample IDs: 2410642, 2410643, 2410646

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.2	99.8	P/P	90 - 110
Sulfate	96.2	97.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A119362

Included Lab Sample IDs: 2410683, 2410684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	97.0	97.3	P/P	90 - 110
Antimony	101	100	P/P	90 - 110
Arsenic	98.8	97.9	P/P	90 - 110
Barium	99.2	98.4	P/P	90 - 110
Beryllium	97.1	95.2	P/P	90 - 110
Boron	92.8	94.5	P/P	90 - 110
Cadmium	98.4	97.2	P/P	90 - 110
Chromium	94.4	95.3	P/P	90 - 110
Cobalt	96.8	97.5	P/P	90 - 110
Lead	98.2	98.2	P/P	90 - 110
Manganese	98.1	98.6	P/P	90 - 110
Molybdenum	97.0	96.0	P/P	90 - 110
Nickel	95.3	95.3	P/P	90 - 110
Selenium	99.5	98.8	P/P	90 - 110
Silver	100	98.6	P/P	90 - 110
Thallium	99.7	99.0	P/P	90 - 110
Zinc	97.0	97.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A119408

Included Lab Sample IDs: 2410644, 2410645, 2410647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.7	98.2	P/P	90 - 110
Ammonia-N	98.8	98.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A119424

Included Lab Sample IDs: 2410683, 2410684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	95.3	93.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A119437

Included Lab Sample IDs: 2410644, 2410645, 2410647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	108	110	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A119461

Included Lab Sample IDs: 2410642, 2410643, 2410646

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.5	98.2	P/P	90 - 110
Total Alkalinity	98.2	93.5	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A119461

Included Lab Sample IDs: 2410642, 2410643, 2410646

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A119474

Included Lab Sample IDs: 2410644, 2410645, 2410647

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A119475

Included Lab Sample IDs: 2410683, 2410684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	90 - 110
Iron	102	102	P/P	90 - 110
Magnesium	100	100	P/P	90 - 110
Potassium	97.9	98.5	P/P	90 - 110
Sodium	95.1	94.7	P/P	90 - 110
Strontium	100	99.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A119475

Included Lab Sample IDs: 2410683, 2410684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Tin	99.4	99.3	P/P	90 - 110
Titanium	101	101	P/P	90 - 110
Vanadium	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A119636

Included Lab Sample IDs: 2410644, 2410647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A119658

Included Lab Sample IDs: 2410645

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	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				
DEP SOP: NU-094-1	Color (true)	97.7				2.32	
	Color (true)	99.5				8.00	
EPA 180.1 Rev. 2.0	Turbidity	98.7				10.3	
EPA 200.7 Rev. 4.4	Calcium	101	100	100			1.70
	Iron	104	104	104	102		0.0113
	Magnesium	101	99.9	100			0.211
	Potassium	101	100	98.7			0.924
	Sodium	96.0	95.8	96.6			0.980
	Strontium	102	99.2	99.8	99.9		0.564
	Tin	99.9	98.5	100	97.8		1.47
	Titanium	100	101	101	100		0.831
	Vanadium	100	102	102	99.5		0.600
	Aluminum	97.2	95.8	97.1	96.9		1.22
	Antimony	102	103	103	101		0.408
	Arsenic	99.2	99.6	101	96.6		0.971
	Barium	102	102	103	101		0.501
	Beryllium	97.3	98.6	95.5	92.6		3.17
EPA 200.8 Rev. 5.4	Boron	97.5	95.0	95.4	99.5		0.380
	Cadmium	98.6	98.4	97.4	98.9		1.04
	Chromium	93.9	92.0	93.2	93.8		1.28
	Cobalt	98.2	95.8	96.6	95.9		0.895
	Copper	100	97.5	115	95.2		18.6
	Lead	99.6	99.9	100	99.9		0.538
	Manganese	99.7	99.6	99.8	95.8		0.222
	Molybdenum	98.3	98.0	98.6	96.2		0.661
	Nickel	95.3	93.3	94.9	95.3		1.73
	Selenium	100	98.4	99.0	96.9		0.638
	Silver	101	99.2	99.7	100		0.416
	Thallium	97.8	97.9	101	97.7		2.77
	Zinc	96.3	96.7	98.5	97.3		1.80
	Chloride	101	101	99.0		1.37	
	Sulfate	99.9	98.7	99.1		1.71	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	97.4	97.8			0.355
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109	104	94.8			5.68
EPA 353.2 Rev. 2.0	NO2NO3-N	108	107	106			0.939
EPA 365.1 Rev. 2.0	Total-P	99.6	104	105			0.883
	Total-P	98.0	100	102			1.73
SM 2320 B-2011	Total Alkalinity	97.8				0.702	
SM 2540 C-2015	TDS	96.8					
	TDS	103				3.55	
SM 2540 D-2015	TSS	93.3					
	TSS	103				7.23	
SM 4500-F- C-2011	Fluoride	102	101	98.4			1.99
SM 5310 B-2011	Organic Carbon	98.5	95.5	95.2			0.210

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2410642, 2410643, 2410646
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2410642, 2410643, 2410646
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2410683, 2410684

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	2410683, 2410684
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2410642, 2410643, 2410646
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2410642, 2410643, 2410646
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2410644, 2410645, 2410647
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2410644, 2410645, 2410647
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2410644, 2410645, 2410647
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2410644, 2410645, 2410647
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2410642, 2410643, 2410646
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2410683, 2410684
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2410642, 2410643, 2410646
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2410642, 2410643, 2410646
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2410642, 2410643, 2410646
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2410644, 2410645, 2410647

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	05/18/2023			05/18/2023 15:05	Alexis Price	2410646
	05/18/2023			05/18/2023 15:35	Alexis Price	2410642
	05/18/2023			05/18/2023 15:36	Alexis Price	2410643
EPA 180.1 Rev. 2.0	05/18/2023			05/18/2023 13:09	Khloe J Berg	2410642
	05/18/2023			05/18/2023 13:12	Khloe J Berg	2410646
	05/18/2023			05/18/2023 13:40	Khloe J Berg	2410643
EPA 200.7 Rev. 4.4	05/18/2023	05/19/2023 12:20	George D Taylor	05/30/2023 19:17	McKinley C Carter	2410683
	05/18/2023	05/19/2023 12:20	George D Taylor	05/30/2023 19:25	McKinley C Carter	2410684
EPA 200.8 Rev. 5.4	05/18/2023	05/19/2023 12:20	George D Taylor	05/23/2023 16:37	Conrad Hartmann	2410683
	05/18/2023	05/19/2023 12:20	George D Taylor	05/23/2023 16:46	Conrad Hartmann	2410684
	05/18/2023	05/19/2023 12:20	George D Taylor	05/25/2023 18:16	Conrad Hartmann	2410683
	05/18/2023	05/19/2023 12:20	George D Taylor	05/25/2023 18:25	Conrad Hartmann	2410684
EPA 300.0 Rev. 2.1	05/18/2023			05/25/2023 00:11	James L Waggeberby	2410642
	05/18/2023			05/25/2023 00:26	James L Waggeberby	2410643
	05/18/2023			05/25/2023 00:41	James L Waggeberby	2410646
EPA 350.1 Rev. 2.0	05/18/2023			05/25/2023 11:51	Khloe J Berg	2410644
	05/18/2023			05/25/2023 13:30	Khloe J Berg	2410645
	05/18/2023			05/25/2023 13:31	Khloe J Berg	2410647
EPA 351.2 Rev. 2.0	05/18/2023	05/26/2023 12:48	Simonne.V. Calhoun	05/30/2023 15:15	Samantha L Bates	2410644
	05/18/2023	05/26/2023 12:48	Simonne.V. Calhoun	05/30/2023 15:20	Samantha L Bates	2410645
	05/18/2023	05/26/2023 12:48	Simonne.V. Calhoun	05/30/2023 15:21	Samantha L Bates	2410647
EPA 353.2 Rev. 2.0	05/18/2023			05/26/2023 11:46	Beverly Y. Sanders	2410644
	05/18/2023			05/26/2023 11:47	Beverly Y. Sanders	2410645
	05/18/2023			05/26/2023 11:48	Beverly Y. Sanders	2410647
EPA 365.1 Rev. 2.0	05/18/2023	06/02/2023 15:05	Adam P Silver	06/07/2023 13:31	James L Waggeberby	2410644
	05/18/2023	06/02/2023 15:05	Adam P Silver	06/07/2023 13:32	James L Waggeberby	2410647
	05/18/2023	06/07/2023 15:36	Adam P Silver	06/08/2023 09:44	Simonne.V. Calhoun	2410645
SM 2320 B-2011	05/18/2023			05/26/2023 01:19	Dale L. Simmons	2410642
	05/18/2023			05/26/2023 02:09	Dale L. Simmons	2410643
	05/18/2023			05/26/2023 02:21	Dale L. Simmons	2410646
SM 2340 B-2011	05/18/2023			05/30/2023 19:17	McKinley C Carter	2410683
	05/18/2023			05/30/2023 19:25	McKinley C Carter	2410684
SM 2540 C-2015	05/18/2023			05/19/2023 16:01	Yijie Li	2410642, 2410643, 2410646
SM 2540 D-2015	05/18/2023			05/19/2023 16:01	Yijie Li	2410642, 2410643, 2410646
SM 4500-F- C-2011	05/18/2023			05/26/2023 01:19	Dale L. Simmons	2410642
	05/18/2023			05/26/2023 02:09	Dale L. Simmons	2410643
	05/18/2023			05/26/2023 02:21	Dale L. Simmons	2410646
SM 5310 B-2011	05/18/2023			05/19/2023 19:35	Elise M. Gillis	2410644
	05/18/2023			05/20/2023 00:28	Elise M. Gillis	2410645
	05/18/2023			05/20/2023 00:43	Elise M. Gillis	2410647