

Chemical Analysis Report

NE-DIST-2024-02-08-02

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

Event Description: **Ordway Lakes 2024**
Request ID: **RQ-2024-02-12-27**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
Suite 100
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Attn: Jeremy Parrish

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Certified by: Marek Topolski, Environmental Specialist III

Date Certified: 06-MAR-2024 10:49

A handwritten signature in black ink, appearing to read "Marek Topolski", with a stylized, flowing script.

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: LAKE SUGGS CTR

Collection Date/Time: 02/07/2024 11:15

Field ID: 20030922

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2467251	DEP SOP: NU-094-1	Color (true)	250		PCU	P441149	
	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P441144	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P441881	
		Sulfate	0.99		mg SO4/L	P441846	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P441619	
	SM 2540 C-2015	TDS	79	Q	mg/L	P442319	
	SM 2540 D-2015	TSS	3	I	mg/L	P441543	
	SM 4500-F- C-2011	Fluoride	0.042	I	mg F/L	P441623	MS
2467253	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P441227	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P441265	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P441514	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P441361	
	SM 5310 B-2014	Organic Carbon	26		mg C/L	P441427	
2467257	EPA 200.7 Rev. 4.4	Calcium	2.10		mg/L	P441235	
		Iron	420		ug/L	P441235	
		Magnesium	1.80		mg/L	P441235	
		Potassium	1.2	I	mg/L	P441235	
		Sodium	5.3		mg/L	P441235	
		Strontium	7.5	I	ug/L	P441235	
		Tin	3.0	U	ug/L	P441235	
		Titanium	0.75	U	ug/L	P441235	
		Vanadium	2.0	U	ug/L	P441235	
		Zinc	5.0	U	ug/L	P441235	
	EPA 200.8 Rev. 5.4	Aluminum	238		ug/L	P441235	
		Antimony	0.050	U	ug/L	P441235	
		Arsenic	0.58		ug/L	P441235	
		Barium	8.13		ug/L	P441235	
		Beryllium	0.011	I	ug/L	P441235	
		Boron	19.4		ug/L	P441235	
		Cadmium	0.020	U	ug/L	P441235	
		Chromium	0.40	U	ug/L	P441235	
		Cobalt	0.115		ug/L	P441235	
		Copper	0.40	U	ug/L	P441235	
		Lead	0.25	I	ug/L	P441235	
		Manganese	17.0		ug/L	P441235	
		Molybdenum	0.15	U	ug/L	P441235	
		Nickel	0.50	U	ug/L	P441235	
		Selenium	0.20	U	ug/L	P441235	
		Silver	0.010	U	ug/L	P441235	
		Thallium	0.10	U	ug/L	P441235	
	SM 2340 B-2011	Hardness	12.7		mg/L	P441235	

Field ID: 20030922

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 C-2015: The sample was reanalyzed out of holding time because of analytical difficulties.
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: LAKE ROWAN 280M E OF CENTER

Collection Date/Time: 02/07/2024 11:45

Field ID: G2NE0006

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2467252	DEP SOP: NU-094-1	Color (true)	130		PCU	P441150	
	EPA 180.1 Rev. 2.0	Turbidity	0.75	I	NTU	P441144	
	EPA 300.0 Rev. 2.1	Chloride	7.8		mg Cl/L	P441881	
		Sulfate	0.46	I	mg SO4/L	P441846	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P441619	
	SM 2540 C-2015	TDS	56		mg/L	P441653	
	SM 2540 D-2015	TSS	2	I	mg/L	P441543	
	SM 4500-F- C-2011	Fluoride	0.029	I	mg F/L	P441623	MS
2467254	EPA 350.1 Rev. 2.0	Ammonia-N	0.17		mg N/L	P441227	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P441265	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P441299	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P441361	
	SM 5310 B-2014	Organic Carbon	24		mg C/L	P441427	
2467258	EPA 200.7 Rev. 4.4	Calcium	1.98		mg/L	P441235	
		Iron	210		ug/L	P441235	
		Magnesium	1.27		mg/L	P441235	
		Potassium	0.33	I	mg/L	P441235	
		Sodium	3.9		mg/L	P441235	
		Strontium	10.0		ug/L	P441235	
		Tin	3.0	U	ug/L	P441235	
		Titanium	0.75	U	ug/L	P441235	
	EPA 200.8 Rev. 5.4	Vanadium	2.0	U	ug/L	P441235	
		Zinc	5.0	U	ug/L	P441235	
		Aluminum	100		ug/L	P441235	
		Antimony	0.050	U	ug/L	P441235	
		Arsenic	0.38		ug/L	P441235	
		Barium	9.32		ug/L	P441235	
		Beryllium	0.010	U	ug/L	P441235	
		Boron	19.5		ug/L	P441235	
		Cadmium	0.020	U	ug/L	P441235	
		Chromium	0.40	U	ug/L	P441235	
		Cobalt	0.035	I	ug/L	P441235	
		Copper	0.40	U	ug/L	P441235	
		Lead	0.22	I	ug/L	P441235	
		Manganese	27.2		ug/L	P441235	
		Molybdenum	0.15	U	ug/L	P441235	
		Nickel	0.50	U	ug/L	P441235	
		Selenium	0.20	U	ug/L	P441235	
		Silver	0.010	U	ug/L	P441235	
		Thallium	0.10	U	ug/L	P441235	
	SM 2340 B-2011	Hardness	10.2		mg/L	P441235	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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.

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P441149

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P441150

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P441144

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P441235

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: P441235

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P441846

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P441881

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P441227

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P441265

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441299

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441514

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P441361

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

Reference Method: SM 2320 B-2011
Batch ID: P441619

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

Reference Method: SM 2540 C-2015
Batch ID: P441653

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P442319

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P441543

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P441623

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2014
Batch ID: P441427

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: P441149

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.1		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P441150

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P441144

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P441235

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	109		P	85 - 115
Iron	114		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	102		P	85 - 115
Sodium	104		P	85 - 115
Strontium	97.1		P	85 - 115
Tin	97.4		P	85 - 115
Titanium	103		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	96.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P441235

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	100		P	85 - 115
Arsenic	103		P	85 - 115
Barium	101		P	85 - 115
Beryllium	97.2		P	85 - 115
Boron	105		P	85 - 115
Cadmium	99.4		P	85 - 115
Chromium	104		P	85 - 115
Cobalt	102		P	85 - 115
Copper	102		P	85 - 115
Lead	95.8		P	85 - 115
Manganese	103		P	85 - 115
Molybdenum	99.5		P	85 - 115
Nickel	102		P	85 - 115
Selenium	104		P	85 - 115
Silver	104		P	85 - 115
Thallium	101		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P441846

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P441881

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P441227

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	94.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P441265

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441299

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: P441514

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P441361

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

Reference Method: SM 2320 B-2011
Batch ID: P441619

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.7		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P441653

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	95.6		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P442319

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TDS	97.2		P	85 - 115

Reference Method: SM 2540 D-2015
Batch ID: P441543

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	108		P	85 - 115

Reference Method: SM 4500-F- C-2011
Batch ID: P441623

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	104		P	94 - 106

Reference Method: SM 5310 B-2014
Batch ID: P441427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P441235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467221	Calcium	106		P	80 - 120
2467221	Iron	114	113	P/P	80 - 120
2467221	Magnesium	106		P	80 - 120
2467221	Potassium	102		P	80 - 120
2467221	Sodium	103		P	80 - 120
2467221	Strontium	95.0	94.4	P/P	80 - 120
2467221	Tin	94.0	93.1	P/P	80 - 120
2467221	Titanium	102	99.1	P/P	80 - 120
2467221	Vanadium	101	99.6	P/P	80 - 120
2467221	Zinc	94.2	93.4	P/P	80 - 120
2467412	Calcium	109		P	80 - 120
2467412	Iron	114		P	80 - 120
2467412	Magnesium	113		P	80 - 120
2467412	Potassium	101		P	80 - 120
2467412	Sodium	104		P	80 - 120
2467412	Strontium	95.8		P	80 - 120
2467412	Tin	94.8		P	80 - 120
2467412	Titanium	99.3		P	80 - 120
2467412	Vanadium	102		P	80 - 120
2467412	Zinc	97.6		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P441235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467221	Aluminum	100	102	P/P	80 - 120
2467221	Antimony	104	102	P/P	80 - 120
2467221	Arsenic	104	105	P/P	80 - 120
2467221	Barium	104	102	P/P	80 - 120
2467221	Beryllium	97.5	97.8	P/P	80 - 120
2467221	Boron	103	105	P/P	80 - 120
2467221	Cadmium	102	102	P/P	80 - 120
2467221	Chromium	105	104	P/P	80 - 120
2467221	Cobalt	102	103	P/P	80 - 120
2467221	Copper	102	102	P/P	80 - 120
2467221	Lead	96.9	96.9	P/P	80 - 120
2467221	Manganese	104	105	P/P	80 - 120
2467221	Molybdenum	102	103	P/P	80 - 120
2467221	Nickel	103	104	P/P	80 - 120
2467221	Selenium	103	104	P/P	80 - 120
2467221	Silver	103	102	P/P	80 - 120
2467221	Thallium	104	104	P/P	80 - 120
2467412	Aluminum	102		P	80 - 120
2467412	Antimony	102		P	80 - 120
2467412	Arsenic	102		P	80 - 120
2467412	Barium	102		P	80 - 120
2467412	Beryllium	97.4		P	80 - 120
2467412	Boron	104		P	80 - 120
2467412	Cadmium	103		P	80 - 120
2467412	Chromium	104		P	80 - 120
2467412	Cobalt	102		P	80 - 120
2467412	Copper	101		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P441235

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467412	Lead	98.1		P	80 - 120
2467412	Manganese	104		P	80 - 120
2467412	Molybdenum	101		P	80 - 120
2467412	Nickel	103		P	80 - 120
2467412	Selenium	103		P	80 - 120
2467412	Silver	104		P	80 - 120
2467412	Thallium	104		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P441846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467588	Sulfate	108		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P441881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467405	Chloride	93.7		P	90 - 110
2467544	Chloride	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P441227

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467253	Ammonia-N	96.0	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P441265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467408	Kjeldahl Nitrogen	99.9	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441299

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467187	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441514

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467253	NO2NO3-N	99.2	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P441361

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467313	Total-P	105	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P441623

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467031	Fluoride	107	107	F/F	94 - 106

Reference Method: SM 5310 B-2014
Batch ID: P441427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2467408	Organic Carbon	99.2	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P441149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467190	Color (true)	7.58	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P441150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467404	Color (true)	4.42	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P441144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467030	Turbidity	3.19	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P441235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467221	Calcium	0.0995	Spike	P	0 - 20
2467221	Iron	0.788	Spike	P	0 - 20
2467221	Magnesium	0.136	Spike	P	0 - 20
2467221	Potassium	0.0867	Spike	P	0 - 20
2467221	Sodium	0.0566	Spike	P	0 - 20
2467221	Strontium	0.606	Spike	P	0 - 20
2467221	Tin	1.01	Spike	P	0 - 20
2467221	Titanium	2.99	Spike	P	0 - 20
2467221	Vanadium	0.921	Spike	P	0 - 20
2467221	Zinc	0.762	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P441235

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467221	Aluminum	1.57	Spike	P	0 - 20
2467221	Antimony	1.25	Spike	P	0 - 20
2467221	Arsenic	0.526	Spike	P	0 - 20
2467221	Barium	1.45	Spike	P	0 - 20
2467221	Beryllium	0.325	Spike	P	0 - 20
2467221	Boron	1.43	Spike	P	0 - 20
2467221	Cadmium	0.132	Spike	P	0 - 20
2467221	Chromium	1.02	Spike	P	0 - 20
2467221	Cobalt	0.183	Spike	P	0 - 20
2467221	Copper	0.220	Spike	P	0 - 20
2467221	Lead	0.00103	Spike	P	0 - 20
2467221	Manganese	0.384	Spike	P	0 - 20
2467221	Molybdenum	0.972	Spike	P	0 - 20
2467221	Nickel	0.816	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P441235

Replicated					
Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467221	Selenium	0.532	Spike	P	0 - 20
2467221	Silver	1.08	Spike	P	0 - 20
2467221	Thallium	0.0100	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P441846

Replicated					
Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467201	Sulfate	3.45	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P441881

Replicated					
Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467405	Chloride	3.03	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P441227

Replicated					
Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467253	Ammonia-N	0.190	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P441265

Replicated					
Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467408	Kjeldahl Nitrogen	1.72	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441299

Replicated					
Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467187	NO2NO3-N	0.755	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P441514

Replicated					
Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467253	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P441361

Replicated					
Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P441361

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467313	Total-P	3.37	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P441619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467031	Total Alkalinity	0.591	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P441653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467032	TDS	7.14	Sample	P	0 - 10

Reference Method: SM 2540 C-2015
Batch ID: P442319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2471194	TDS	8.96	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P441623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467031	Fluoride	0.0	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2014
Batch ID: P441427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2467408	Organic Carbon	1.59	Spike	P	0 - 15

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A124064
Included Lab Sample IDs: 2467251, 2467252

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: DEP SOP: NU-094-1
Run ID: A124066
Included Lab Sample IDs: 2467251, 2467252

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.2	99.0	P/P	90 - 110
Color (true)	98.4	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A124088
Included Lab Sample IDs: 2467253, 2467254

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.0	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A124114
Included Lab Sample IDs: 2467254

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A124128
Included Lab Sample IDs: 2467253, 2467254

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	98.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A124149
Included Lab Sample IDs: 2467257, 2467258

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	99.3	P/P	90 - 110
Antimony	99.4	99.6	P/P	90 - 110
Arsenic	99.7	99.2	P/P	90 - 110
Barium	100	100	P/P	90 - 110
Beryllium	99.1	98.6	P/P	90 - 110
Boron	101	99.8	P/P	90 - 110
Cadmium	97.9	98.5	P/P	90 - 110
Chromium	98.3	98.0	P/P	90 - 110
Cobalt	98.0	97.1	P/P	90 - 110
Copper	99.2	98.0	P/P	90 - 110
Lead	95.0	94.9	P/P	90 - 110
Manganese	98.5	98.1	P/P	90 - 110
Molybdenum	99.7	100	P/P	90 - 110
Nickel	98.7	97.1	P/P	90 - 110
Selenium	99.7	99.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A124149

Included Lab Sample IDs: 2467257, 2467258

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	99.5	100	P/P	90 - 110
Thallium	99.8	100	P/P	90 - 110

Reference Method: SM 5310 B-2014

Run ID: A124169

Included Lab Sample IDs: 2467253, 2467254

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	114	98.8	P/P	70 - 130

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A124178

Included Lab Sample IDs: 2467257, 2467258

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	105	107	P/P	90 - 110
Iron	105	106	P/P	90 - 110
Magnesium	104	105	P/P	90 - 110
Potassium	102	102	P/P	90 - 110
Sodium	102	102	P/P	90 - 110
Strontium	96.9	96.9	P/P	90 - 110
Tin	100	101	P/P	90 - 110
Titanium	103	104	P/P	90 - 110
Vanadium	103	103	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A124204

Included Lab Sample IDs: 2467253

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A124236

Included Lab Sample IDs: 2467251, 2467252

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.3	95.4	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A124236

Included Lab Sample IDs: 2467251, 2467252

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A124275
Included Lab Sample IDs: 2467253, 2467254

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A124344
Included Lab Sample IDs: 2467251, 2467252

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	105	105	P/P	90 - 110
Chloride	105	105	P/P	90 - 110
Sulfate	107	106	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)	96.1				7.58	
	Color (true)	97.7				4.42	
EPA 180.1 Rev. 2.0	Turbidity	102				3.19	
EPA 200.7 Rev. 4.4	Calcium	109	106	109			0.0995
	Iron	114	114	113	114		0.788
	Magnesium	108	106	113			0.136
	Potassium	102	102	101			0.0867
	Sodium	104	103	104			0.0566
	Strontium	97.1	95.0	94.4	95.8		0.606
	Tin	97.4	94.0	93.1	94.8		1.01
	Titanium	103	102	99.1	99.3		2.99
	Vanadium	101	101	99.6	102		0.921
	Zinc	96.7	94.2	93.4	97.6		0.762
EPA 200.8 Rev. 5.4	Aluminum	101	100	102	102		1.57
	Antimony	100	104	102	102		1.25
	Arsenic	103	104	105	102		0.526
	Barium	101	104	102	102		1.45
	Beryllium	97.2	97.5	97.8	97.4		0.325
	Boron	105	103	105	104		1.43
	Cadmium	99.4	102	102	103		0.132
	Chromium	104	105	104	104		1.02
	Cobalt	102	102	103	102		0.183
	Copper	102	102	102	101		0.220
	Lead	95.8	96.9	96.9	98.1		0.0010
	Manganese	103	104	105	104		0.384
	Molybdenum	99.5	101	102	103		0.972
	Nickel	102	103	104	103		0.816
	Selenium	104	103	104	103		0.532
	Silver	104	103	102	104		1.08
	Thallium	101	104	104	104		0.0100
EPA 300.0 Rev. 2.1	Chloride	108	93.7	95.4		3.03	
	Sulfate	110	108			3.45	
EPA 350.1 Rev. 2.0	Ammonia-N	94.8	96.0	96.2			0.190
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	99.9	103			1.72
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	102			0.755
	NO2NO3-N	103	99.2	98.7			0.487
EPA 365.1 Rev. 2.0	Total-P	100	105	101			3.37
SM 2320 B-2011	Total Alkalinity	95.7				0.591	
SM 2540 C-2015	TDS	95.6				7.14	
	TDS	97.2				8.96	
SM 2540 D-2015	TSS	108					
SM 4500-F- C-2011	Fluoride	104	107	107			0.0
SM 5310 B-2014	Organic Carbon	97.2	99.2	101			1.59

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2467251, 2467252
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2467251, 2467252
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2467257, 2467258
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2467257, 2467258

Reference Method Descriptions

Method	Description	Associated Samples
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2467251, 2467252
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2467251, 2467252
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2467253, 2467254
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2467253, 2467254
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2467253, 2467254
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2467253, 2467254
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2467251, 2467252
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2467257, 2467258
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2467251, 2467252
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2467251, 2467252
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2467251, 2467252
SM 5310 B-2014	Nonpurgeable Organic Carbon in aqueous matrices	2467253, 2467254

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	02/08/2024			02/08/2024 15:28	Anna M. Plaviak	2467252
	02/08/2024			02/08/2024 15:54	Anna M. Plaviak	2467251
EPA 180.1 Rev. 2.0	02/08/2024			02/08/2024 14:04	Dipa Joshi	2467251
	02/08/2024			02/08/2024 14:05	Dipa Joshi	2467252
EPA 200.7 Rev. 4.4	02/08/2024	02/09/2024 12:50	George D Taylor	02/14/2024 16:01	Chase Roberts	2467257
	02/08/2024	02/09/2024 12:50	George D Taylor	02/14/2024 16:08	Chase Roberts	2467258
EPA 200.8 Rev. 5.4	02/08/2024	02/09/2024 12:50	George D Taylor	02/13/2024 19:05	Emily M Philpot	2467257
	02/08/2024	02/09/2024 12:50	George D Taylor	02/13/2024 19:14	Emily M Philpot	2467258
EPA 300.0 Rev. 2.1	02/08/2024			02/20/2024 03:49	James L Waggeberby	2467251
	02/08/2024			02/20/2024 04:04	James L Waggeberby	2467252
	02/08/2024			02/22/2024 16:08	Samantha L Bates	2467251
	02/08/2024			02/22/2024 16:54	Samantha L Bates	2467252
EPA 350.1 Rev. 2.0	02/08/2024			02/09/2024 12:33	Kenneth H Lee	2467253
	02/08/2024			02/09/2024 12:34	Kenneth H Lee	2467254
EPA 351.2 Rev. 2.0	02/08/2024	02/12/2024 13:17	Ping Hua	02/13/2024 11:04	Ping Hua	2467253
	02/08/2024	02/12/2024 13:17	Ping Hua	02/13/2024 11:05	Ping Hua	2467254
EPA 353.2 Rev. 2.0	02/08/2024			02/12/2024 13:58	Fadila Guebre	2467254
	02/08/2024			02/15/2024 12:56	Fadila Guebre	2467253
EPA 365.1 Rev. 2.0	02/08/2024	02/13/2024 14:28	Adam P Silver	02/20/2024 14:58	Simonne.V. Calhoun	2467253
	02/08/2024	02/13/2024 14:28	Adam P Silver	02/20/2024 14:59	Simonne.V. Calhoun	2467254
SM 2320 B-2011	02/08/2024			02/17/2024 01:45	Dale L. Simmons	2467251
	02/08/2024			02/17/2024 01:54	Dale L. Simmons	2467252
SM 2340 B-2011	02/08/2024			02/14/2024 16:01	Chase Roberts	2467257
	02/08/2024			02/14/2024 16:08	Chase Roberts	2467258
SM 2540 C-2015	02/08/2024			02/12/2024 15:22	Yijie Li	2467252
	02/08/2024			02/26/2024 15:21	Yijie Li	2467251
SM 2540 D-2015	02/08/2024			02/12/2024 15:22	Yijie Li	2467251, 2467252
SM 4500-F- C-2011	02/08/2024			02/17/2024 01:45	Dale L. Simmons	2467251
	02/08/2024			02/17/2024 01:54	Dale L. Simmons	2467252
SM 5310 B-2014	02/08/2024			02/13/2024 16:15	Elise M. Gillis	2467253
	02/08/2024			02/13/2024 16:30	Elise M. Gillis	2467254