Chemical Analysis Report

NW-DIST-2023-08-22-01

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

Event Description: **Twin Lakes**
Request ID: **RQ-2023-08-21-21**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government Street
Suite 208
Pensacola, FL 32502-5794
Attn: Myranda Butler

For additional information please contact
Colin Wright, Ph.D.
Chris Bowen, B.S.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant Date Certified: 14-SEP-2023 11:35

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 group are included in this report: 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: TWIN LAKE **Collection Date/Time: 08/21/2023 10:45**

Field ID: G3NW0215 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432527	DEP SOP: NU-094-1	Color (true)	60		PCU	P434184	
	EPA 180.1 Rev. 2.0	Turbidity	14		NTU	P434180	
	EPA 300.0 Rev. 2.1	Chloride	34		mg Cl/L	P434330	
		Sulfate	8.4		mg SO4/L	P434332	
	SM 2320 B-2011	Total Alkalinity	61		mg CaCO3/L	P434411	RPD
	SM 2540 C-2015	TDS	156		mg/L	P434584	
	SM 2540 D-2015	TSS	40		mg/L	P434581	
	SM 4500-F- C-2011	Fluoride	0.14		mg F/L	P434417	
2432532	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P434681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.5		mg N/L	P434649	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P434739	
	EPA 365.1 Rev. 2.0	Total-P	0.44		mg P/L	P434210	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P434340	

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: TWIN LAKE SOUTH LOBE **Collection Date/Time: 08/21/2023 11:06**

Field ID: G3NW0448 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432528	DEP SOP: NU-094-1	Color (true)	40	A	PCU	P434182	
	EPA 180.1 Rev. 2.0	Turbidity	22		NTU	P434180	
	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P434330	
		Sulfate	6.9		mg SO4/L	P434332	
	SM 2320 B-2011	Total Alkalinity	59		mg CaCO3/L	P434411	RPD
	SM 2540 C-2015	TDS	149		mg/L	P434584	
	SM 2540 D-2015	TSS	17		mg/L	P434581	
	SM 4500-F- C-2011	Fluoride	0.13		mg F/L	P434417	
2432533	EPA 350.1 Rev. 2.0	Ammonia-N	0.057		mg N/L	P434443	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	3.3		mg N/L	P434650	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P434739	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P434210	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P434340	

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: COLEMAN LAKE **Collection Date/Time: 08/21/2023 11:55**

Field ID: G3NW0216 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432529	DEP SOP: NU-094-1	Color (true)	33		PCU	P434182	
	EPA 180.1 Rev. 2.0	Turbidity	26		NTU	P434180	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P434330	
		Sulfate	7.2		mg SO4/L	P434332	
	SM 2320 B-2011	Total Alkalinity	48		mg CaCO3/L	P434411	RPD
	SM 2540 C-2015	TDS	117		mg/L	P434585	
	SM 2540 D-2015	TSS	19		mg/L	P434582	
	SM 4500-F- C-2011	Fluoride	0.086	I	mg F/L	P434417	
2432534	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P434681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.3		mg N/L	P434320	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P434739	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P434210	
	SM 5310 B-2011	Organic Carbon	7.5		mg C/L	P434340	

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 are unavailable because of high analyte concentration in the QC sample.

Sample Location: TWIN LAKE EASTERN LAKE **Collection Date/Time: 08/21/2023 11:25**

Field ID: G3NW0449 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432530	DEP SOP: NU-094-1	Color (true)	26		PCU	P434182	
	EPA 180.1 Rev. 2.0	Turbidity	15		NTU	P434180	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P434330	
		Sulfate	6.6		mg SO4/L	P434332	
	SM 2320 B-2011	Total Alkalinity	54		mg CaCO3/L	P434411	RPD
	SM 2540 C-2015	TDS	114	A	mg/L	P434585	
	SM 2540 D-2015	TSS	32		mg/L	P434582	
	SM 4500-F- C-2011	Fluoride	0.050	I	mg F/L	P434417	
2432535	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P434681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P434320	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P434744	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P434311	
	SM 5310 B-2011	Organic Carbon	9.5		mg C/L	P434340	

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 are unavailable because of high analyte concentration in the QC sample.

Sample Location: KELL AIRE LAKE **Collection Date/Time: 08/21/2023 12:05**

Field ID: G3NW0217 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2432531	DEP SOP: NU-094-1	Color (true)	30		PCU	P434182	
	EPA 180.1 Rev. 2.0	Turbidity	23		NTU	P434180	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P434330	
		Sulfate	7.1		mg SO4/L	P434332	
	SM 2320 B-2011	Total Alkalinity	48		mg CaCO3/L	P434411	RPD
	SM 2540 C-2015	TDS	121		mg/L	P434585	
	SM 2540 D-2015	TSS	17		mg/L	P434582	
	SM 4500-F- C-2011	Fluoride	0.087	I	mg F/L	P434417	
2432536	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P434681	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P434320	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P434744	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P434311	
	SM 5310 B-2011	Organic Carbon	7.5		mg C/L	P434340	

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 are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P434182

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P434184

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434180

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434330

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434332

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434443

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434681

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434320

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434649

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434739

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434744

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434210

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434311

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

Reference Method: SM 2320 B-2011
Batch ID: P434411

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

Reference Method: SM 2540 C-2015
Batch ID: P434584

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2015
Batch ID: P434585

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P434581

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-2015
Batch ID: P434582

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P434417

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P434340

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: P434182

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P434184

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434180

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434330

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434332

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434443

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434681

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434320

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434649

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

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: P434739

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434744

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: P434210

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434311

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

Reference Method: SM 2320 B-2011
Batch ID: P434411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.8		P	92 - 105

Reference Method: SM 2540 C-2015
Batch ID: P434584

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

Reference Method: SM 2540 C-2015
Batch ID: P434585

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

Reference Method: SM 2540 D-2015
Batch ID: P434581

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	93.9		P	85 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2540 D-2015
Batch ID: P434582

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

Reference Method: SM 4500-F- C-2011
Batch ID: P434417

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P434340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434330

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432489	Chloride	101		P	90 - 110
2432529	Chloride	98.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432489	Sulfate	97.6		P	90 - 110
2432529	Sulfate	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434443

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432534	Ammonia-N	96.8	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432697	Ammonia-N	100	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434649

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432491	Kjeldahl Nitrogen	97.5	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432778	Kjeldahl Nitrogen	91.1	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432393	NO2NO3-N	98.8	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434744

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432535	NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432436	Total-P	105	105	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432651	Total-P	110	108	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P434417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432389	Fluoride	100	100	P/P	94 - 106

Reference Method: SM 5310 B-2011
Batch ID: P434340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2432534	Organic Carbon	94.6	96.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P434182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432528	Color (true)	2.81	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P434184

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432490	Color (true)	3.00	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P434180

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432389	Turbidity	1.71	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434330

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432489	Chloride	0.0772	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P434332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432489	Sulfate	0.100	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432534	Ammonia-N	4.67	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P434681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432697	Ammonia-N	1.75	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432534	Kjeldahl Nitrogen	4.15	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432491	Kjeldahl Nitrogen	2.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P434650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432778	Kjeldahl Nitrogen	4.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432393	NO2NO3-N	0.312	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P434744

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432535	NO2NO3-N	0.976	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432436	Total-P	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P434311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432651	Total-P	1.13	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P434411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432389	Total Alkalinity	4.05	Sample	F	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P434584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432097	TDS	5.41	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 C-2015
Batch ID: P434585

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432530	TDS	7.02	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P434417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432389	Fluoride	0.0	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P434340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2432534	Organic Carbon	1.06	Spike	P	0 - 20

* 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: A121177
Included Lab Sample IDs: 2432527, 2432528, 2432529, 2432530, 2432531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	98.0	P/P	95 - 105

Reference Method: DEP SOP: NU-094-1
Run ID: A121178
Included Lab Sample IDs: 2432527, 2432528, 2432529, 2432530, 2432531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 110
Color (true)	99.8	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A121182
Included Lab Sample IDs: 2432527, 2432528, 2432529, 2432530, 2432531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.7	98.4	P/P	90 - 110
Chloride	98.4	98.5	P/P	90 - 110
Sulfate	96.8	97.5	P/P	90 - 110
Sulfate	97.5	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A121224
Included Lab Sample IDs: 2432532, 2432533, 2432534

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

Reference Method: SM 5310 B-2011
Run ID: A121240
Included Lab Sample IDs: 2432532, 2432533, 2432534, 2432535, 2432536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.2	95.4	P/P	90 - 110
Organic Carbon	95.4	95.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A121249
Included Lab Sample IDs: 2432534, 2432535, 2432536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.6	98.9	P/P	90 - 110
Kjeldahl Nitrogen	98.9	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A121251
Included Lab Sample IDs: 2432535, 2432536

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-2011
Run ID: A121272
Included Lab Sample IDs: 2432527, 2432528, 2432529, 2432530, 2432531

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	96.2	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Run ID: A121272
Included Lab Sample IDs: 2432527, 2432528, 2432529, 2432530, 2432531

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A121292
Included Lab Sample IDs: 2432533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	98.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A121407
Included Lab Sample IDs: 2432532, 2432534, 2432535, 2432536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.1	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A121424
Included Lab Sample IDs: 2432532, 2432533, 2432534, 2432535, 2432536

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.5	P/P	90 - 110
NO2NO3-N	99.5	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A121429
Included Lab Sample IDs: 2432532, 2432533

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	106	P/P	90 - 110
Kjeldahl Nitrogen	106	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		
					LCS	SMP	MS
DEP SOP: NU-094-1	Color (true)	102				2.81	
	Color (true)	102				3.00	
EPA 180.1 Rev. 2.0	Turbidity	98.2				1.71	
EPA 300.0 Rev. 2.1	Chloride	98.1	101	98.2		0.0772	
	Sulfate	95.7	97.6	95.4		0.100	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	96.8	102			4.67
	Ammonia-N	96.6	100	103			1.75
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103					4.15
	Kjeldahl Nitrogen	102	97.5	101			2.27
	Kjeldahl Nitrogen	104	91.1	98.4			4.48
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.8	99.3			0.312
	NO2NO3-N	102	102	103			0.976
EPA 365.1 Rev. 2.0	Total-P	102	105	105			0.0
	Total-P	106	110	108			1.13
SM 2320 B-2011	Total Alkalinity	96.8				4.05	
SM 2540 C-2015	TDS	96.8				5.41	
	TDS	95.3				7.02	
SM 2540 D-2015	TSS	93.9					
	TSS	103					
SM 4500-F- C-2011	Fluoride	97.4	100	100			0.0
SM 5310 B-2011	Organic Carbon	93.2	94.6	96.0			1.06

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2432527, 2432528, 2432529, 2432530, 2432531
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2432527, 2432528, 2432529, 2432530, 2432531
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2432527, 2432528, 2432529, 2432530, 2432531
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2432527, 2432528, 2432529, 2432530, 2432531
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2432532, 2432533, 2432534, 2432535, 2432536
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2432532, 2432533, 2432534, 2432535, 2432536
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2432532, 2432533, 2432534, 2432535, 2432536
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2432532, 2432533, 2432534, 2432535, 2432536
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2432527, 2432528, 2432529, 2432530, 2432531
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2432527, 2432528, 2432529, 2432530, 2432531
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2432527, 2432528, 2432529, 2432530, 2432531
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2432527, 2432528, 2432529, 2432530, 2432531
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2432532, 2432533, 2432534, 2432535, 2432536

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	08/22/2023			08/22/2023 15:34	Alexis Price	2432528
	08/22/2023			08/22/2023 15:35	Alexis Price	2432529
	08/22/2023			08/22/2023 15:36	Alexis Price	2432530, 2432531
	08/22/2023			08/22/2023 15:56	Alexis Price	2432527
EPA 180.1 Rev. 2.0	08/22/2023			08/22/2023 12:40	Chandler E Cox	2432527
	08/22/2023			08/22/2023 12:41	Chandler E Cox	2432528
	08/22/2023			08/22/2023 12:43	Chandler E Cox	2432529
	08/22/2023			08/22/2023 12:44	Chandler E Cox	2432530
	08/22/2023			08/22/2023 12:46	Chandler E Cox	2432531
EPA 300.0 Rev. 2.1	08/22/2023			08/24/2023 13:52	James L Waggerby	2432529
	08/22/2023			08/24/2023 17:32	James L Waggerby	2432527
	08/22/2023			08/24/2023 17:47	James L Waggerby	2432528
	08/22/2023			08/24/2023 18:02	James L Waggerby	2432530
	08/22/2023			08/24/2023 18:17	James L Waggerby	2432531
EPA 350.1 Rev. 2.0	08/22/2023			08/28/2023 12:19	Ping Hua	2432533
	08/22/2023			09/07/2023 11:26	Khloe J Berg	2432532
	08/22/2023			09/07/2023 11:27	Khloe J Berg	2432534
	08/22/2023			09/07/2023 11:29	Khloe J Berg	2432535
	08/22/2023			09/07/2023 11:30	Khloe J Berg	2432536
EPA 351.2 Rev. 2.0	08/22/2023	08/24/2023 12:32	Dana G. Hughes	08/25/2023 12:09	Samantha L Bates	2432534
	08/22/2023	08/24/2023 12:32	Dana G. Hughes	08/25/2023 12:17	Samantha L Bates	2432535
	08/22/2023	08/24/2023 12:32	Dana G. Hughes	08/25/2023 12:18	Samantha L Bates	2432536
	08/22/2023	09/08/2023 10:05	Simonne.V. Calhoun	09/08/2023 15:21	Samantha L Bates	2432532
	08/22/2023	09/08/2023 10:05	Simonne.V. Calhoun	09/08/2023 15:29	Samantha L Bates	2432533
EPA 353.2 Rev. 2.0	08/22/2023			09/07/2023 12:53	Anna M. Plaviak	2432532
	08/22/2023			09/07/2023 12:54	Anna M. Plaviak	2432533
	08/22/2023			09/07/2023 12:55	Anna M. Plaviak	2432534
	08/22/2023			09/07/2023 14:38	Anna M. Plaviak	2432535
	08/22/2023			09/07/2023 14:43	Anna M. Plaviak	2432536
EPA 365.1 Rev. 2.0	08/22/2023	08/23/2023 18:21	Adam P Silver	08/24/2023 11:19	Simonne.V. Calhoun	2432532
	08/22/2023	08/23/2023 18:21	Adam P Silver	08/24/2023 11:20	Simonne.V. Calhoun	2432533
	08/22/2023	08/23/2023 18:21	Adam P Silver	08/24/2023 11:21	Simonne.V. Calhoun	2432534
	08/22/2023	08/24/2023 14:28	Alexis Price	08/25/2023 11:42	James L Waggerby	2432535
	08/22/2023	08/24/2023 14:28	Alexis Price	08/25/2023 11:43	James L Waggerby	2432536
SM 2320 B-2011	08/22/2023			08/27/2023 19:20	Dale L. Simmons	2432527
	08/22/2023			08/27/2023 19:33	Dale L. Simmons	2432528
	08/22/2023			08/27/2023 19:46	Dale L. Simmons	2432529
	08/22/2023			08/27/2023 19:58	Dale L. Simmons	2432530
	08/22/2023			08/27/2023 20:11	Dale L. Simmons	2432531

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 C-2015	08/22/2023			08/23/2023 16:38	Yijie Li	2432527, 2432528, 2432529, 2432530, 2432531
SM 2540 D-2015	08/22/2023			08/23/2023 16:38	Yijie Li	2432527, 2432528, 2432529, 2432530, 2432531
SM 4500-F- C-2011	08/22/2023			08/27/2023 19:20	Dale L. Simmons	2432527
	08/22/2023			08/27/2023 19:33	Dale L. Simmons	2432528
	08/22/2023			08/27/2023 19:46	Dale L. Simmons	2432529
	08/22/2023			08/27/2023 19:58	Dale L. Simmons	2432530
	08/22/2023			08/27/2023 20:11	Dale L. Simmons	2432531
SM 5310 B-2011	08/22/2023			08/24/2023 21:43	Elise M. Gillis	2432534
	08/22/2023			08/24/2023 22:52	Elise M. Gillis	2432532
	08/22/2023			08/24/2023 23:06	Elise M. Gillis	2432533
	08/22/2023			08/24/2023 23:20	Elise M. Gillis	2432535
	08/22/2023			08/25/2023 00:00	Elise M. Gillis	2432536