

Chemical Analysis Report

SO-DIST-2023-10-03-01

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

Event Description: **Caloosahatchee River System & Estuary**
Request ID: **RQ-2023-09-11-48**
Customer: **SO-DIST**
Project ID: **DISCRTNARY**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
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Date Certified: 19-OCT-2023 11:11



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: CLEW04

Collection Date/Time: 10/02/2023 09:17

Field ID: CLEW04				Matrix: W-SURF-FRH			
Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2442341	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P436132	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P436480	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P436374	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P435991	
2442346	EPA 350.1 Rev. 2.0 dissolved	Ammonia-N	0.035		mg N/L	P436484	
	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	1.1		mg N/L	P436428	
2442351	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.086		mg P/L	P435882	

Ref. Method and Comment:
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: ORANGE

Collection Date/Time: 10/02/2023 10:42

Field ID: ORANGE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2442342	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P436132	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P436480	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P436374	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P435991	
2442347	EPA 350.1 Rev. 2.0 dissolved	Ammonia-N	0.025		mg N/L	P436484	
	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	0.93		mg N/L	P436428	
2442352	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.075		mg P/L	P435882	

Ref. Method and Comment:
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: POPASH

Collection Date/Time: 10/02/2023 11:02

Field ID: POPASH

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2442343	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P436132	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1	J	mg N/L	P436480	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P436374	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P435991	
2442348	EPA 350.1 Rev. 2.0 dissolved	Ammonia-N	0.020		mg N/L	P436484	
	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	0.93		mg N/L	P436428	
2442353	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P435882	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Refer to the Lab Analysis Report for an explanation of QC Codes.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: CLEW07 (AS2)

Collection Date/Time: 10/02/2023 12:12

Field ID: CLEW07 (AS2)

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2442345	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P436133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P436480	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.29		mg N/L	P436374	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P435991	
2442350	EPA 350.1 Rev. 2.0 dissolved	Ammonia-N	0.031		mg N/L	P436484	
	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	1.1		mg N/L	P436428	
2442355	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P435882	

Ref. Method and Comment:

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: WHISKEY

Collection Date/Time: 10/02/2023 12:42

Field ID: WHISKEY

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2442356	EPA 350.1 Rev. 2.0	Ammonia-N	0.086		mg N/L	P436133	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.96		mg N/L	P436480	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P436375	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P435991	
2442360	EPA 350.1 Rev. 2.0 dissolved	Ammonia-N	0.084		mg N/L	P436484	
	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	0.82		mg N/L	P436428	
2442364	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.090		mg P/L	P435882	

Ref. Method and Comment:

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: CLEW10

Collection Date/Time: 10/02/2023 13:37

Field ID: CLEW10

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2442358	EPA 350.1 Rev. 2.0	Ammonia-N	0.066		mg N/L	P436135	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P436156	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P436447	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P436222	MS
2442362	EPA 350.1 Rev. 2.0 dissolved	Ammonia-N	0.068		mg N/L	P436135	
	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	0.98		mg N/L	P436429	
2442366	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11		mg P/L	P435883	

Sample Location: CLEW11Collection Date/Time: 10/02/2023 14:02

Field ID: CLEW11Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2442359	EPA 350.1 Rev. 2.0	Ammonia-N	0.090		mg N/L	P436135	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.87		mg N/L	P436156	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.091		mg N/L	P436447	
	EPA 365.1 Rev. 2.0	Total-P	0.071		mg P/L	P436117	
2442363	EPA 350.1 Rev. 2.0 dissolved	Ammonia-N	0.097		mg N/L	P436485	
	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	0.78		mg N/L	P436429	
2442367	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.047		mg P/L	P435883	

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436132

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436133

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436135

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436136

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

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436135

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

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436484

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

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436485

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436156

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436480

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 dissolved
Batch ID: P436428

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

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P436429

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P436374

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P436375

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P436447

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435991

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436113

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436117

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436222

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435882

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435883

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436132

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436133

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436135

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436136

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

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436135

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

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436484

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

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436485

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436156

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436480

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P436428

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

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P436429

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P436374

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P436375

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: P436447

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P435991

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436113

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: P436117

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436222

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435882

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435883

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.4		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442292	Ammonia-N	102	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442500	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442649	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436136

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442380	Ammonia-N	102	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442649	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436484

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442346	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436485

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2443959	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436156

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442184	Kjeldahl Nitrogen	98.8	97.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436480

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442343	Kjeldahl Nitrogen	107	115	P/F	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P436428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2443795	Kjeldahl Nitrogen	100	95.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P436429

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2443660	Kjeldahl Nitrogen	97.3	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P436374

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442293	NO2NO3-N	97.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P436375

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442356	NO2NO3-N	97.5	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P436447

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442180	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436113

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442389	Total-P	107	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436117

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442187	Total-P	101	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2443475	Total-P	110	113	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442364	O-Phosphate-P	95.8	96.8	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435883

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2442367	O-Phosphate-P	96.4	98.4	P/P	90 - 110

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442292	Ammonia-N	0.811	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442500	Ammonia-N	0.325	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442649	Ammonia-N	0.183	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P436136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442380	Ammonia-N	2.37	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442649	Ammonia-N	0.183	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442346	Ammonia-N	0.353	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0 dissolved
Batch ID: P436485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2443959	Ammonia-N	0.161	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P436156

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442184	Kjeldahl Nitrogen	0.965	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P436480

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442343	Kjeldahl Nitrogen	4.75	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0 dissolved

Batch ID: P436428

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2443795	Kjeldahl Nitrogen	3.13	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0 dissolved

Batch ID: P436429

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2443660	Kjeldahl Nitrogen	8.97	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P436374

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442293	NO2NO3-N	0.476	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P436375

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442356	NO2NO3-N	0.992	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P436447

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442180	NO2NO3-N	0.582	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P435991

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442303	Total-P	0.768	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P436113

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442389	Total-P	0.257	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436117

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442187	Total-P	1.97	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P436222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2443475	Total-P	3.06	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442364	O-Phosphate-P	0.538	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P435883

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2442367	O-Phosphate-P	1.39	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A121919

Included Lab Sample IDs: 2442351, 2442352, 2442353, 2442354, 2442355, 2442364, 2442365, 2442366, 2442367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	98.0	P/P	90 - 110
O-Phosphate-P	98.1	98.1	P/P	90 - 110
O-Phosphate-P	98.2	98.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122004

Included Lab Sample IDs: 2442341, 2442342, 2442343, 2442344, 2442345, 2442356

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A122010

Included Lab Sample IDs: 2442341, 2442342, 2442343, 2442344, 2442345, 2442356, 2442357, 2442358, 2442359

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	100	P/P	90 - 110
Ammonia-N	100	100	P/P	90 - 110
Ammonia-N	100	99.9	P/P	90 - 110
Ammonia-N	100	100	P/P	90 - 110
Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0 dissolved

Run ID: A122010

Included Lab Sample IDs: 2442362

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122028

Included Lab Sample IDs: 2442357

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.9	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122031

Included Lab Sample IDs: 2442359

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A122091

Included Lab Sample IDs: 2442341, 2442342, 2442343, 2442344, 2442345, 2442356, 2442357

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A122092

Included Lab Sample IDs: 2442358, 2442359

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.8	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122116

Included Lab Sample IDs: 2442358

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A122126

Included Lab Sample IDs: 2442358, 2442359

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

Reference Method: EPA 351.2 Rev. 2.0 dissolved

Run ID: A122139

Included Lab Sample IDs: 2442346, 2442347, 2442348, 2442349, 2442350, 2442360, 2442361

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	95.4	P/P	90 - 110
Kjeldahl Nitrogen	95.4	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0 dissolved

Run ID: A122140

Included Lab Sample IDs: 2442346, 2442347, 2442348, 2442349, 2442350, 2442360, 2442361, 2442363

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.1	98.9	P/P	90 - 110
Ammonia-N	98.4	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A122164

Included Lab Sample IDs: 2442341, 2442342, 2442343, 2442344, 2442345, 2442356, 2442357

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	90.4	P/P	90 - 110
Kjeldahl Nitrogen	90.4	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0 dissolved

Run ID: A122171

Included Lab Sample IDs: 2442362, 2442363

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.8	101	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
			LCS	SMP	MS	
EPA 350.1 Rev. 2.0	Ammonia-N	102	102	100		0.811
	Ammonia-N	101	101	102		0.325
	Ammonia-N	103	102	102		0.183
	Ammonia-N	101	102	99.4		2.37
EPA 350.1 Rev. 2.0 dissolved	Ammonia-N	103	102	102		0.183
	Ammonia-N	99.4	100	101		0.353
	Ammonia-N	99.8	103	104		0.161
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.9	98.8	97.7		0.965
	Kjeldahl Nitrogen	100	107	115		4.75
EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	102	100	95.1		3.13
	Kjeldahl Nitrogen	98.0	97.3	107		8.97
EPA 353.2 Rev. 2.0	NO2NO3-N	99.0	97.2			0.476
	NO2NO3-N	100	97.5	99.0		0.992
	NO2NO3-N	101	100	102		0.582
EPA 365.1 Rev. 2.0	Total-P	104				0.768
	Total-P	102	107	107		0.257
	Total-P	103	101	99.5		1.97
	Total-P	110	110	113		3.06
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.3	95.8	96.8		0.538
	O-Phosphate-P	99.4	96.4	98.4		1.39

Reference Method Descriptions

Method	Description	Associated Samples
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2442341, 2442342, 2442343, 2442344, 2442345, 2442356, 2442357, 2442358, 2442359
EPA 350.1 Rev. 2.0 dissolved	Ammonia, dissolved, in filtered, aqueous matrices as mg N/L	2442346, 2442347, 2442348, 2442349, 2442350, 2442360, 2442361, 2442362, 2442363
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2442341, 2442342, 2442343, 2442344, 2442345, 2442356, 2442357, 2442358, 2442359
EPA 351.2 Rev. 2.0 dissolved	Total Kjeldahl Nitrogen, dissolved, in filtered, aqueous matrices	2442346, 2442347, 2442348, 2442349, 2442350, 2442360, 2442361, 2442362, 2442363
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2442341, 2442342, 2442343, 2442344, 2442345, 2442356, 2442357, 2442358, 2442359
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2442341, 2442342, 2442343, 2442344, 2442345, 2442356, 2442357, 2442358, 2442359
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2442351, 2442352, 2442353, 2442354, 2442355, 2442364, 2442365, 2442366, 2442367

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 350.1 Rev. 2.0	10/03/2023			10/06/2023 12:39	Ping Hua	2442342
	10/03/2023			10/06/2023 12:40	Ping Hua	2442343
	10/03/2023			10/06/2023 12:52	Ping Hua	2442344
	10/03/2023			10/06/2023 12:56	Ping Hua	2442345
	10/03/2023			10/06/2023 12:57	Ping Hua	2442356
	10/03/2023			10/06/2023 13:52	Ping Hua	2442358
	10/03/2023			10/06/2023 13:53	Ping Hua	2442359
	10/03/2023			10/06/2023 14:19	Ping Hua	2442357
	10/03/2023			10/06/2023 14:41	Ping Hua	2442341
	10/03/2023			10/06/2023 13:55	Ping Hua	2442362
EPA 350.1 Rev. 2.0 dissolved	10/03/2023			10/13/2023 12:12	Ping Hua	2442346
	10/03/2023			10/13/2023 12:18	Ping Hua	2442347
	10/03/2023			10/13/2023 12:19	Ping Hua	2442348
	10/03/2023			10/13/2023 12:20	Ping Hua	2442349
	10/03/2023			10/13/2023 12:22	Ping Hua	2442350
	10/03/2023			10/13/2023 12:23	Ping Hua	2442360
	10/03/2023			10/13/2023 12:24	Ping Hua	2442361
	10/03/2023			10/13/2023 12:56	Ping Hua	2442363
	10/03/2023	10/09/2023 11:53	Simonne.V. Calhoun	10/11/2023 14:51	Samantha L Bates	2442358
	10/03/2023	10/09/2023 11:53	Simonne.V. Calhoun	10/11/2023 14:53	Samantha L Bates	2442359
EPA 351.2 Rev. 2.0	10/03/2023	10/13/2023 12:35	Simonne.V. Calhoun	10/16/2023 10:46	Samantha L Bates	2442341
	10/03/2023	10/13/2023 12:35	Simonne.V. Calhoun	10/16/2023 10:48	Samantha L Bates	2442342
	10/03/2023	10/13/2023 12:35	Simonne.V. Calhoun	10/16/2023 10:50	Samantha L Bates	2442343
	10/03/2023	10/13/2023 12:35	Simonne.V. Calhoun	10/16/2023 10:54	Samantha L Bates	2442344
	10/03/2023	10/13/2023 12:35	Simonne.V. Calhoun	10/16/2023 10:59	Samantha L Bates	2442345
	10/03/2023	10/13/2023 12:35	Simonne.V. Calhoun	10/16/2023 11:01	Samantha L Bates	2442356
	10/03/2023	10/13/2023 12:35	Simonne.V. Calhoun	10/16/2023 11:02	Samantha L Bates	2442357
	10/03/2023	10/12/2023 13:00	Simonne.V. Calhoun	10/13/2023 10:05	Samantha L Bates	2442346
	10/03/2023	10/12/2023 13:00	Simonne.V. Calhoun	10/13/2023 10:06	Samantha L Bates	2442347
	10/03/2023	10/12/2023 13:00	Simonne.V. Calhoun	10/13/2023 10:08	Samantha L Bates	2442348
EPA 351.2 Rev. 2.0 dissolved	10/03/2023	10/12/2023 13:00	Simonne.V. Calhoun	10/13/2023 10:09	Samantha L Bates	2442349
	10/03/2023	10/12/2023 13:00	Simonne.V. Calhoun	10/13/2023 10:14	Samantha L Bates	2442350
	10/03/2023	10/12/2023 13:00	Simonne.V. Calhoun	10/13/2023 10:16	Samantha L Bates	2442360
	10/03/2023	10/12/2023 13:00	Simonne.V. Calhoun	10/13/2023 10:18	Samantha L Bates	2442361
	10/03/2023	10/12/2023 13:00	Simonne.V. Calhoun	10/16/2023 13:53	Samantha L Bates	2442362
	10/03/2023	10/12/2023 13:00	Simonne.V. Calhoun	10/16/2023 13:54	Samantha L Bates	2442363
	10/03/2023			10/11/2023 12:38	Anna M. Plaviak	2442341
	10/03/2023			10/11/2023 12:39	Anna M. Plaviak	2442342
	10/03/2023			10/11/2023 12:41	Anna M. Plaviak	2442343
	10/03/2023			10/11/2023 12:42	Anna M. Plaviak	2442344
EPA 353.2 Rev. 2.0	10/03/2023					
	10/03/2023					
	10/03/2023					
	10/03/2023					

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 353.2 Rev. 2.0	10/03/2023			10/11/2023 12:43	Anna M. Plaviak	2442345
	10/03/2023			10/11/2023 12:50	Anna M. Plaviak	2442356
	10/03/2023			10/11/2023 12:56	Anna M. Plaviak	2442357
	10/03/2023			10/12/2023 14:17	Fadila Guebre	2442358
	10/03/2023			10/12/2023 14:18	Fadila Guebre	2442359
EPA 365.1 Rev. 2.0	10/03/2023	10/05/2023 13:10	Alexis Price	10/06/2023 12:47	Simonne.V. Calhoun	2442341
	10/03/2023	10/05/2023 13:10	Alexis Price	10/06/2023 12:48	Simonne.V. Calhoun	2442342, 2442343
	10/03/2023	10/05/2023 13:10	Alexis Price	10/06/2023 12:49	Simonne.V. Calhoun	2442344
	10/03/2023	10/05/2023 13:10	Alexis Price	10/06/2023 12:52	Simonne.V. Calhoun	2442345
	10/03/2023	10/05/2023 13:10	Alexis Price	10/06/2023 12:53	Simonne.V. Calhoun	2442356
	10/03/2023	10/06/2023 14:30	Alexis Price	10/09/2023 14:29	James L Waggeberby	2442357
	10/03/2023	10/06/2023 14:30	Alexis Price	10/09/2023 17:46	James L Waggeberby	2442359
EPA 365.1 Rev. 2.0 dissolved	10/03/2023	10/10/2023 15:15	Adam P Silver	10/11/2023 17:10	Simonne.V. Calhoun	2442358
	10/03/2023			10/03/2023 14:09	Elise M. Gillis	2442364
	10/03/2023			10/03/2023 14:13	Elise M. Gillis	2442351, 2442352
	10/03/2023			10/03/2023 14:14	Elise M. Gillis	2442353
	10/03/2023			10/03/2023 14:15	Elise M. Gillis	2442354
	10/03/2023			10/03/2023 14:21	Elise M. Gillis	2442355
	10/03/2023			10/03/2023 14:22	Elise M. Gillis	2442365
	10/03/2023			10/03/2023 14:30	Elise M. Gillis	2442367
	10/03/2023			10/03/2023 14:32	Elise M. Gillis	2442366