

Chemical Analysis Report

SO-DIST-2018-09-13-02

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **CALOOSA LT 3240BC**

Request ID: **RQ-2018-09-03-26**

Customer: **SO-DIST**

Project ID: **BMAP**

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FLDEP South District Office
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Date Certified: 01-OCT-2018 14:49



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 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: US 41, Marker # 38

Collection Date/Time: 09/12/2018 11:50

Field ID: G3SD0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2024996	SM 5310 B-00 dissolved	Organic Carbon	19		mg C/L	P351909	
2025004	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P351809	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P351830	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P351909	
2025012	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.071		mg P/L	P351614	
2025020	EPA 200.7 Rev. 4.4	Iron	300		ug/L	P351756	
		Zinc	5.0	U	ug/L	P351756	
	EPA 200.8 Rev. 5.4	Arsenic	1.53		ug/L	P351756	
		Cadmium	0.020	U	ug/L	P351756	
		Chromium	0.46	I	ug/L	P351756	
		Copper	0.74	I	ug/L	P351756	
		Lead	0.13	I	ug/L	P351756	
		Nickel	0.40	I	ug/L	P351756	
		Silver	0.010	U	ug/L	P351756	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Marker # 28

Collection Date/Time: 09/12/2018 12:05

Field ID: G3SD0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2024997	SM 5310 B-00 dissolved	Organic Carbon	18		mg C/L	P351909	
2025005	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P351810	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P351830	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P351909	
2025013	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.074		mg P/L	P351614	
2025021	EPA 200.7 Rev. 4.4	Iron	280		ug/L	P351756	
		Zinc	5.0	U	ug/L	P351756	
	EPA 200.8 Rev. 5.4	Arsenic	1.59		ug/L	P351756	
		Cadmium	0.020	U	ug/L	P351756	
		Chromium	0.50	I	ug/L	P351756	
		Copper	0.77	I	ug/L	P351756	
		Lead	0.16	I	ug/L	P351756	
		Nickel	0.44	I	ug/L	P351756	
		Silver	0.010	U	ug/L	P351756	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Marker # 22

Collection Date/Time: 09/12/2018 12:20

Field ID: G3SD0114

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2024998	SM 5310 B-00 dissolved	Organic Carbon	19		mg C/L	P351909	
2025006	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P351810	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P351830	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P351909	
2025014	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.074		mg P/L	P351614	
2025022	EPA 200.7 Rev. 4.4	Iron	290		ug/L	P351756	
		Zinc	5.0	U	ug/L	P351756	
	EPA 200.8 Rev. 5.4	Arsenic	1.55		ug/L	P351756	
		Cadmium	0.020	U	ug/L	P351756	
		Chromium	0.45	I	ug/L	P351756	
		Copper	0.74	I	ug/L	P351756	
		Lead	0.13	I	ug/L	P351756	
		Nickel	0.43	I	ug/L	P351756	
		Silver	0.010	U	ug/L	P351756	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Old Swing Bridge

Collection Date/Time: 09/12/2018 12:30

Field ID: G3SD0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2024999	SM 5310 B-00 dissolved	Organic Carbon	20		mg C/L	P351909	
2025007	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P351810	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P351830	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P351909	
2025015	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.075		mg P/L	P351614	
2025023	EPA 200.7 Rev. 4.4	Iron	340		ug/L	P351756	
		Zinc	5.0	U	ug/L	P351756	
	EPA 200.8 Rev. 5.4	Arsenic	1.59		ug/L	P351756	
		Cadmium	0.020	U	ug/L	P351756	
		Chromium	0.49	I	ug/L	P351756	
		Copper	0.70	I	ug/L	P351756	
		Lead	0.13	I	ug/L	P351756	
		Nickel	0.45	I	ug/L	P351756	
		Silver	0.010	U	ug/L	P351756	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: MidChannel@OrangeRiver

Collection Date/Time: 09/12/2018 12:42

Field ID: G3SD0116

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025000	SM 5310 B-00 dissolved	Organic Carbon	18		mg C/L	P351909	
2025008	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P351810	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P351830	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P351909	
2025016	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.065		mg P/L	P351614	
2025024	EPA 200.7 Rev. 4.4	Iron	400		ug/L	P351756	
		Zinc	5.0	U	ug/L	P351756	
	EPA 200.8 Rev. 5.4	Arsenic	1.77		ug/L	P351756	
		Cadmium	0.020	U	ug/L	P351756	
		Chromium	0.48	I	ug/L	P351756	
		Copper	0.64	I	ug/L	P351756	
		Lead	0.13	I	ug/L	P351756	
		Nickel	0.49	I	ug/L	P351756	
		Silver	0.010	U	ug/L	P351756	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Upstream of Power Plant

Collection Date/Time: 09/12/2018 12:55

Field ID: G3SD0117

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025001	SM 5310 B-00 dissolved	Organic Carbon	20		mg C/L	P351909	
2025009	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P351810	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P351831	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P351909	
2025017	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.086		mg P/L	P351614	
2025025	EPA 200.7 Rev. 4.4	Iron	340		ug/L	P351756	
		Zinc	5.0	U	ug/L	P351756	
	EPA 200.8 Rev. 5.4	Arsenic	1.59		ug/L	P351756	
		Cadmium	0.020	U	ug/L	P351756	
		Chromium	0.48	I	ug/L	P351756	
		Copper	0.78	I	ug/L	P351756	
		Lead	0.13	I	ug/L	P351756	
		Nickel	0.46	I	ug/L	P351756	
		Silver	0.010	U	ug/L	P351756	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Mid Channel off Oxbow

Collection Date/Time: 09/12/2018 13:10

Field ID: G3SD0118

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025002	SM 5310 B-00 dissolved	Organic Carbon	20		mg C/L	P351909	
2025010	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P351810	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.34		mg N/L	P351831	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P351909	
2025018	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.098		mg P/L	P351614	
2025026	EPA 200.7 Rev. 4.4	Iron	350		ug/L	P351756	
		Zinc	5.0	U	ug/L	P351756	
	EPA 200.8 Rev. 5.4	Arsenic	1.56		ug/L	P351756	
		Cadmium	0.020	U	ug/L	P351756	
		Chromium	0.46	I	ug/L	P351756	
		Copper	1.54		ug/L	P351756	
		Lead	0.13	I	ug/L	P351756	
		Nickel	0.48	I	ug/L	P351756	
		Silver	0.010	U	ug/L	P351756	

Ref. Method and Comment:

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Mid channel off point

Collection Date/Time: 09/12/2018 13:20

Field ID: G3SD0119

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2025011	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P351810	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.36		mg N/L	P351831	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P351909	
2025019	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.097		mg P/L	P351614	
2025027	EPA 200.7 Rev. 4.4	Iron	360		ug/L	P351756	
		Zinc	5.0	U	ug/L	P351756	
	EPA 200.8 Rev. 5.4	Arsenic	1.63		ug/L	P351756	
		Cadmium	0.020	U	ug/L	P351756	
		Chromium	0.51	I	ug/L	P351756	
		Copper	1.52		ug/L	P351756	
		Lead	0.13	I	ug/L	P351756	
		Nickel	0.52	I	ug/L	P351756	
		Silver	0.010	U	ug/L	P351756	

Ref. Method and Comment:

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: EPA 200.7 Rev. 4.4
Batch ID: P351756

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351756

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351809

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351810

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351830

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351831

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351614

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

Reference Method: SM 5310 B-00
Batch ID: P351909

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-00 dissolved
Batch ID: P351909

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P351756

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	108		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351756

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.4		P	85 - 115
Cadmium	106		P	85 - 115
Chromium	109		P	85 - 115
Copper	93.5		P	85 - 115
Lead	106		P	85 - 115
Nickel	95.4		P	85 - 115
Silver	104		P	85 - 115

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351809

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351810

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: P351830

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: P351831

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351614

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

Reference Method: SM 5310 B-00
Batch ID: P351909

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00 dissolved
Batch ID: P351909

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P351756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024826	Iron	106		P	80 - 120
2024826	Zinc	104		P	80 - 120
2025161	Iron	106	109	P/P	80 - 120
2025161	Zinc	102	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351756

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024826	Arsenic	98.1		P	80 - 120
2024826	Cadmium	105		P	80 - 120
2024826	Chromium	104		P	80 - 120
2024826	Copper	91.1		P	80 - 120
2024826	Lead	103		P	80 - 120
2024826	Nickel	90.8		P	80 - 120
2024826	Silver	101		P	80 - 120
2025161	Arsenic	103	102	P/P	80 - 120
2025161	Cadmium	107	106	P/P	80 - 120
2025161	Chromium	108	109	P/P	80 - 120
2025161	Copper	92.6	93.4	P/P	80 - 120
2025161	Lead	106	107	P/P	80 - 120
2025161	Nickel	96.0	95.8	P/P	80 - 120
2025161	Silver	105	105	P/P	80 - 120

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024888	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351831

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2025009	NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024937	O-Phosphate-P	99.4	100	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P351909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024928	Organic Carbon	97.2	98.0	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P351909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00 dissolved
Batch ID: P351909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024928	Organic Carbon	97.2	98.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P351756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025161	Iron	2.21	Spike	P	0 - 20
2025161	Zinc	0.392	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351756

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025161	Arsenic	0.339	Spike	P	0 - 20
2025161	Cadmium	0.782	Spike	P	0 - 20
2025161	Chromium	0.271	Spike	P	0 - 20
2025161	Copper	0.867	Spike	P	0 - 20
2025161	Lead	1.18	Spike	P	0 - 20
2025161	Nickel	0.159	Spike	P	0 - 20
2025161	Silver	0.227	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025004	Kjeldahl Nitrogen	3.01	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025006	Kjeldahl Nitrogen	2.13	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024888	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351831

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2025009	NO2NO3-N	0.619	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024937	O-Phosphate-P	0.400	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P351909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024928	Organic Carbon	0.450	Spike	P	0 - 20

Reference Method: SM 5310 B-00 dissolved
Batch ID: P351909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024928	Organic Carbon	0.450	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A86464

Included Lab Sample IDs: 2025012, 2025013, 2025014, 2025015, 2025016, 2025017, 2025018, 2025019

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.4	97.5	P/P	90 - 110
O-Phosphate-P	98.5	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86558

Included Lab Sample IDs: 2025004, 2025005, 2025006, 2025007, 2025008, 2025009, 2025010, 2025011

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86565

Included Lab Sample IDs: 2025020, 2025021, 2025022, 2025023, 2025024, 2025025, 2025026, 2025027

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	103	98.8	P/P	90 - 110
Iron	98.8	102	P/P	90 - 110
Zinc	102	99.1	P/P	90 - 110
Zinc	99.1	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86582

Included Lab Sample IDs: 2025004, 2025005, 2025006, 2025007, 2025008, 2025009, 2025010, 2025011

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	102	P/P	90 - 110
Kjeldahl Nitrogen	102	99.7	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A86587

Included Lab Sample IDs: 2025004, 2025005, 2025006, 2025007, 2025008, 2025009, 2025010, 2025011

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	98.9	P/P	90 - 110

Reference Method: SM 5310 B-00 dissolved

Run ID: A86587

Included Lab Sample IDs: 2024996, 2024997, 2024998, 2024999, 2025000, 2025001, 2025002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	98.0	P/P	90 - 110
Organic Carbon	98.0	98.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86668

Included Lab Sample IDs: 2025020, 2025021, 2025022, 2025023, 2025024, 2025025, 2025026, 2025027

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	93.6	94.6	P/P	90 - 110
Arsenic	95.8	96.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86668

Included Lab Sample IDs: 2025020, 2025021, 2025022, 2025023, 2025024, 2025025, 2025026, 2025027

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	97.3	98.6	P/P	90 - 110
Cadmium	97.9	97.3	P/P	90 - 110
Chromium	101	105	P/P	90 - 110
Chromium	103	103	P/P	90 - 110
Copper	90.7	91.3	P/P	90 - 110
Lead	105	105	P/P	90 - 110
Lead	105	105	P/P	90 - 110
Silver	101	101	P/P	90 - 110
Silver	101	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86743

Included Lab Sample IDs: 2025020, 2025021, 2025022, 2025023, 2025024, 2025025, 2025026, 2025027

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	93.3	91.1	P/P	90 - 110
Nickel	94.0	90.7	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				
EPA 200.7 Rev. 4.4	Iron	108	106	106	109		2.21
	Zinc	101	104	102	101		0.392
EPA 200.8 Rev. 5.4	Arsenic	99.4	98.1	103	102		0.339
	Cadmium	106	105	107	106		0.782
	Chromium	109	104	108	109		0.271
	Copper	93.5	92.6	93.4	91.1		0.867
	Lead	106	103	106	107		1.18
	Nickel	95.4	90.8	96.0	95.8		0.159
	Silver	104	101	105	105		0.227
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101					3.01
	Kjeldahl Nitrogen	104					2.13
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	101			0.0
	NO2NO3-N	102	101				0.619
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	100	99.4			0.400
SM 5310 B-00	Organic Carbon	102	97.2	98.0			0.450
SM 5310 B-00 dissolved	Organic Carbon	102	97.2	98.0			0.450

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2025020, 2025021, 2025022, 2025023, 2025024, 2025025, 2025026, 2025027
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2025020, 2025021, 2025022, 2025023, 2025024, 2025025, 2025026, 2025027
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2025004, 2025005, 2025006, 2025007, 2025008, 2025009, 2025010, 2025011
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2025004, 2025005, 2025006, 2025007, 2025008, 2025009, 2025010, 2025011
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2025012, 2025013, 2025014, 2025015, 2025016, 2025017, 2025018, 2025019
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2025004, 2025005, 2025006, 2025007, 2025008, 2025009, 2025010, 2025011
SM 5310 B-00 dissolved / E31780	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	2024996, 2024997, 2024998, 2024999, 2025000, 2025001, 2025002

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/18/2018 15:09	Betina Topolski	2025020
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/18/2018 15:17	Betina Topolski	2025021
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/18/2018 15:24	Betina Topolski	2025022
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/18/2018 15:31	Betina Topolski	2025023
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/18/2018 15:38	Betina Topolski	2025024
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/18/2018 15:46	Betina Topolski	2025025
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/18/2018 15:53	Betina Topolski	2025026
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/18/2018 16:23	Betina Topolski	2025027
EPA 200.8 Rev. 5.4	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/21/2018 23:10	Allison Taylor	2025020
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/21/2018 23:20	Allison Taylor	2025021
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/21/2018 23:30	Allison Taylor	2025022
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/21/2018 23:39	Allison Taylor	2025023
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/22/2018 01:35	Allison Taylor	2025024
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/22/2018 01:45	Allison Taylor	2025025
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/22/2018 01:54	Allison Taylor	2025026
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/22/2018 02:04	Allison Taylor	2025027
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/25/2018 19:23	Allison Taylor	2025020
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/25/2018 19:30	Allison Taylor	2025021
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/25/2018 19:37	Allison Taylor	2025022
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/25/2018 19:45	Allison Taylor	2025023
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/25/2018 19:52	Allison Taylor	2025024
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/25/2018 19:59	Allison Taylor	2025025
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/25/2018 20:07	Allison Taylor	2025027
	09/13/2018	09/17/2018 15:55	Elliott D. Healy	09/25/2018 20:14	Allison Taylor	2025026
EPA 351.2 Rev. 2.0	09/13/2018	09/18/2018 14:10	Adrian Shelby	09/19/2018 12:56	Joseph Suarez	2025004
	09/13/2018	09/18/2018 14:10	Adrian Shelby	09/19/2018 13:05	Joseph Suarez	2025005
	09/13/2018	09/18/2018 14:10	Adrian Shelby	09/19/2018 13:06	Joseph Suarez	2025006
	09/13/2018	09/18/2018 14:10	Adrian Shelby	09/19/2018 13:14	Joseph Suarez	2025007
	09/13/2018	09/18/2018 14:10	Adrian Shelby	09/19/2018 13:16	Joseph Suarez	2025008
	09/13/2018	09/18/2018 14:10	Adrian Shelby	09/19/2018 13:17	Joseph Suarez	2025009
	09/13/2018	09/18/2018 14:10	Adrian Shelby	09/19/2018 13:19	Joseph Suarez	2025010
	09/13/2018	09/18/2018 14:10	Adrian Shelby	09/19/2018 13:20	Joseph Suarez	2025011
EPA 353.2 Rev. 2.0	09/13/2018			09/18/2018 13:56	Lauren Bottorf	2025004
	09/13/2018			09/18/2018 13:57	Lauren Bottorf	2025005
	09/13/2018			09/18/2018 13:58	Lauren Bottorf	2025006
	09/13/2018			09/18/2018 13:59	Lauren Bottorf	2025007
	09/13/2018			09/18/2018 14:01	Lauren Bottorf	2025008
	09/13/2018			09/18/2018 14:08	Lauren Bottorf	2025009
	09/13/2018			09/18/2018 14:14	Lauren Bottorf	2025010
	09/13/2018			09/18/2018 14:15	Lauren Bottorf	2025011

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	09/13/2018			09/13/2018 15:50	Julia Storbeck	2025012, 2025013
	09/13/2018			09/13/2018 15:56	Julia Storbeck	2025014, 2025015
	09/13/2018			09/13/2018 15:57	Julia Storbeck	2025016
	09/13/2018			09/13/2018 15:58	Julia Storbeck	2025017
	09/13/2018			09/13/2018 15:59	Julia Storbeck	2025018
	09/13/2018			09/13/2018 16:00	Julia Storbeck	2025019
SM 5310 B-00	09/13/2018			09/19/2018 05:51	Megan Treadwell	2025004
	09/13/2018			09/19/2018 06:03	Megan Treadwell	2025005
	09/13/2018			09/19/2018 06:16	Megan Treadwell	2025006
	09/13/2018			09/19/2018 06:28	Megan Treadwell	2025007
	09/13/2018			09/19/2018 06:40	Megan Treadwell	2025008
	09/13/2018			09/19/2018 06:52	Megan Treadwell	2025009
SM 5310 B-00 dissolved	09/13/2018			09/19/2018 07:04	Megan Treadwell	2025010
	09/13/2018			09/19/2018 07:17	Megan Treadwell	2025011
	09/13/2018			09/19/2018 04:01	Megan Treadwell	2024996
	09/13/2018			09/19/2018 04:14	Megan Treadwell	2024997
	09/13/2018			09/19/2018 04:26	Megan Treadwell	2024998
	09/13/2018			09/19/2018 04:38	Megan Treadwell	2024999
	09/13/2018			09/19/2018 04:50	Megan Treadwell	2025000
	09/13/2018			09/19/2018 05:27	Megan Treadwell	2025001
	09/13/2018			09/19/2018 05:39	Megan Treadwell	2025002