

Chemical Analysis Report

CEN-DIST-2022-04-01-01

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

Event Description: **Ivanhoe - Western Lobe**

Request ID: **RQ-2022-03-28-41**

Customer: **CEN-DIST**

Project ID: **SMP**

Send Reports to:

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Date Certified: 18-APR-2022 10:12



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: Lake Ivanhoe @ Center of W Lobe

Collection Date/Time: 03/31/2022 10:05

Field ID: G2CE0262

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2316174	DEP SOP: NU-094-1	Color (true)**	8.6		PCU	P411874	
	EPA 180.1 Rev. 2.0	Turbidity	0.55	I	NTU	P411879	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P412225	
		Sulfate	22		mg SO4/L	P412233	
	SM 2320 B-2011	Total Alkalinity	31	A	mg CaCO3/L	P412137	
	SM 2540 C-2011	TDS	127		mg/L	P412129	
	SM 2540 D-2011	TSS	2	U	mg/L	P412020	
	SM 4500-F- C-2011	Fluoride	0.048	I	mg F/L	P412140	
	2316175	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P412027
		EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31		mg N/L	P411915
		EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P411952
		EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P412187
	SM 5310 B-2011	Organic Carbon	3.6		mg C/L	P412046	

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P411874

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P411879

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412225

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412233

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412027

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411915

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411952

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412187

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

Reference Method: SM 2320 B-2011
Batch ID: P412137

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P412129

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P412020

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P412140

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P412046

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: P411874

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P411879

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	96.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412233

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412027

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411915

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	90.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411952

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: P412187

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

Reference Method: SM 2320 B-2011
Batch ID: P412137

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.5		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500-F- C-2011
Batch ID: P412140

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P412046

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2315665	Chloride	96.4		P	90 - 110
2315675	Chloride	96.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2315665	Sulfate	95.5		P	90 - 110
2315675	Sulfate	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412027

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2316118	Ammonia-N	95.6	96.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411915

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2315666	Kjeldahl Nitrogen	102	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411952

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2315715	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412187

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2316180	Total-P	101	102	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P412140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2316174	Fluoride	98.3	97.7	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P412046

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2315649	Organic Carbon	95.5	96.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P411874

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2316178	Color (true)	2.79	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P411879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2316134	Turbidity	2.74	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2315665	Chloride	2.18	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P412233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2315665	Sulfate	0.151	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2316118	Ammonia-N	0.869	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P411915

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2315666	Kjeldahl Nitrogen	2.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P411952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2315715	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2316180	Total-P	0.430	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P412137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2316174	Total Alkalinity	1.42	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P412129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2315646	TDS	2.22	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P412020

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2315646	TSS	2.60	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P412140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2316174	Fluoride	0.492	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P412046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2315649	Organic Carbon	0.471	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: DEP SOP: NU-094-1

Run ID: A111272

Included Lab Sample IDs: 2316174

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A111273

Included Lab Sample IDs: 2316174

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A111301

Included Lab Sample IDs: 2316175

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A111345

Included Lab Sample IDs: 2316175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	99.0	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A111353

Included Lab Sample IDs: 2316175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	96.3	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A111368

Included Lab Sample IDs: 2316174

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.6	98.8	P/P	90 - 110
Sulfate	98.7	98.6	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A111388

Included Lab Sample IDs: 2316174

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.5	97.9	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A111388

Included Lab Sample IDs: 2316174

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A111478

Included Lab Sample IDs: 2316175

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A111489

Included Lab Sample IDs: 2316175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.4	95.8	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	MS
DEP SOP: NU-094-1	Color (true)	102			2.79	
EPA 180.1 Rev. 2.0	Turbidity	96.9			2.74	
EPA 300.0 Rev. 2.1	Chloride	98.3	96.4	96.9	2.18	
	Sulfate	97.6	95.5	97.0	0.151	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	95.6	96.6		0.869
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	90.8	102	99.8		2.36
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102		0.489
EPA 365.1 Rev. 2.0	Total-P	100	101	102		0.430
SM 2320 B-2011	Total Alkalinity	98.5			1.42	
SM 2540 C-2011	TDS				2.22	
SM 2540 D-2011	TSS				2.60	
SM 4500-F- C-2011	Fluoride	98.3	98.3	97.7		0.492
SM 5310 B-2011	Organic Carbon	97.4	95.5	96.4		0.471

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2316174
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2316174
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2316174
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2316174
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2316175
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2316175
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2316175
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2316175
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2316174
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2316174
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2316174
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2316174
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2316175

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	04/01/2022			04/01/2022 15:22	Samantha L Bates	2316174
EPA 180.1 Rev. 2.0	04/01/2022			04/01/2022 13:57	Anna M. Plaviak	2316174
EPA 300.0 Rev. 2.1	04/01/2022			04/07/2022 19:30	Anna M. Plaviak	2316174
EPA 350.1 Rev. 2.0	04/01/2022			04/06/2022 13:42	Ping Hua	2316175
EPA 351.2 Rev. 2.0	04/01/2022	04/08/2022 09:39	Samantha L Bates	04/14/2022 14:49	Alexandra J Mattheus	2316175
EPA 353.2 Rev. 2.0	04/01/2022			04/04/2022 17:21	Nathaniel J Jones	2316175
EPA 365.1 Rev. 2.0	04/01/2022	04/12/2022 17:10	Simonne.V. Calhoun	04/14/2022 14:59	James L Waggerby	2316175
SM 2320 B-2011	04/01/2022			04/08/2022 04:55	Dale L. Simmons	2316174
SM 2540 C-2011	04/01/2022			04/05/2022 14:26	Blanca Fach	2316174
SM 2540 D-2011	04/01/2022			04/05/2022 14:26	Blanca Fach	2316174
SM 4500-F- C-2011	04/01/2022			04/08/2022 04:47	Dale L. Simmons	2316174
SM 5310 B-2011	04/01/2022			04/07/2022 02:19	Khloe J Berg	2316175