

Chemical Analysis Report

CEN-DIST-2021-04-30-03

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

Event Description: **Lake Belle / Lake Leonore**
Request ID: **RQ-2021-03-29-02**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 24-MAY-2021 13:40



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 Leonore @ Center

Collection Date/Time: 04/29/2021 11:40

Field ID: G4CE0184

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2244453	EPA 180.1 Rev. 2.0	Turbidity	9.8		NTU	P397497	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P398559	
		Sulfate	63		mg SO4/L	P398562	
	SM 2120 B-2011	Color (true)	12		PCU	P397501	
	SM 2320 B-2011	Total Alkalinity	42	A	mg CaCO3/L	P398017	
	SM 2540 C-2011	TDS	206		mg/L	P397914	
	SM 2540 D-2011	TSS	8	I	mg/L	P397793	
	SM 4500 F-C-2011	Fluoride	0.071	I	mg F/L	P397639	
2244454	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P398153	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P397906	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.72		mg N/L	P397656	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P397970	
	SM 5310 B-2011	Organic Carbon	5.7		mg C/L	P397882	
2244455	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P397487	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P397497

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398559

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398562

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398153

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397906

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397656

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397970

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397487

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

Reference Method: SM 2120 B-2011
Batch ID: P397501

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P398017

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-2011
Batch ID: P397914

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P397793

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P397639

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P397882

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P398559

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P398562

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P398153

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P397906

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P397656

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P397970

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P397487

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

Reference Method: SM 2120 B-2011
 Batch ID: P397501

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.7		P	85 - 115

Reference Method: SM 2320 B-2011
 Batch ID: P398017

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P397639

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P397882

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398559

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244181	Chloride	96.9		P	90 - 110
2244474	Chloride	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398562

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244181	Sulfate	96.2		P	90 - 110
2244474	Sulfate	96.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244415	Ammonia-N	95.4	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397906

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244095	Kjeldahl Nitrogen	101	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244425	NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397970

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244415	Total-P	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244335	O-Phosphate-P	92.4	94.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P397639

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2244453	Fluoride	97.5	98.0	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P397882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2245283	Organic Carbon	98.8	98.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P397497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244178	Turbidity	1.47	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244181	Chloride	0.616	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P398562

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244181	Sulfate	0.897	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P398153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244415	Ammonia-N	0.915	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P397906

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244095	Kjeldahl Nitrogen	4.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P397656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244425	NO2NO3-N	1.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P397970

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244415	Total-P	0.897	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P397487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244335	O-Phosphate-P	2.25	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P397501

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244182	Color (true)	0.190	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P398017

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244453	Total Alkalinity	1.41	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P397914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244178	TDS	5.37	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P397639

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2244453	Fluoride	0.474	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P397882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2245283	Organic Carbon	0.469	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: A105108

Included Lab Sample IDs: 2244455

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	103	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A105114

Included Lab Sample IDs: 2244453

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

Reference Method: SM 2120 B-2011

Run ID: A105115

Included Lab Sample IDs: 2244453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: SM 4500 F-C-2011

Run ID: A105174

Included Lab Sample IDs: 2244453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A105180

Included Lab Sample IDs: 2244454

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

Reference Method: SM 5310 B-2011

Run ID: A105278

Included Lab Sample IDs: 2244454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	100	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A105344

Included Lab Sample IDs: 2244453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.8	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A105367

Included Lab Sample IDs: 2244454

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A105368

Included Lab Sample IDs: 2244454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	93.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A105414

Included Lab Sample IDs: 2244454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.3	97.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A105550

Included Lab Sample IDs: 2244453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.7	99.9	P/P	90 - 110
Sulfate	98.7	99.0	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					1.47	
EPA 300.0 Rev. 2.1	Chloride	100	96.9	97.8		0.616	
	Sulfate	98.9	96.2	96.8		0.897	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0	95.4	96.4			0.915
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	101	105			4.45
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	99.0	100			1.01
EPA 365.1 Rev. 2.0	Total-P	105	105	106			0.897
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6	92.4	94.5			2.25
SM 2120 B-2011	Color (true)	99.7				0.190	
SM 2320 B-2011	Total Alkalinity	100				1.41	
SM 2540 C-2011	TDS					5.37	
SM 4500 F-C-2011	Fluoride	96.8	97.5	98.0			0.474
SM 5310 B-2011	Organic Carbon	101	98.8	98.0			0.469

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2244453
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2244453
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2244453
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2244454
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2244454
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2244454
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2244454
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2244455
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2244453
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2244453
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2244453
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2244453
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2244453
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2244454

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	04/30/2021			04/30/2021 16:21	Sarah A Nixon	2244453
EPA 300.0 Rev. 2.1	04/30/2021			05/20/2021 17:49	Lipi Saha	2244453
EPA 350.1 Rev. 2.0	04/30/2021			05/13/2021 13:33	Ping Hua	2244454
EPA 351.2 Rev. 2.0	04/30/2021	05/10/2021 12:57	Yen Ta	05/11/2021 17:45	Virginia P. Brown	2244454
EPA 353.2 Rev. 2.0	04/30/2021			05/05/2021 10:25	Beverly Y. Sanders	2244454
EPA 365.1 Rev. 2.0	04/30/2021	05/11/2021 14:29	Yen Ta	05/12/2021 12:32	Shengyu Ding	2244454
EPA 365.1 Rev. 2.0 dissolved	04/30/2021			04/30/2021 14:47	Lipi Saha	2244455
SM 2120 B-2011	04/30/2021			04/30/2021 15:34	Madeline Gruver	2244453
SM 2320 B-2011	04/30/2021			05/12/2021 00:45	Dale L. Simmons	2244453
SM 2540 C-2011	04/30/2021			05/04/2021 15:06	Yijie Li	2244453
SM 2540 D-2011	04/30/2021			05/04/2021 15:06	Yijie Li	2244453
SM 4500 F-C-2011	04/30/2021			05/04/2021 16:13	Dale L. Simmons	2244453
SM 5310 B-2011	04/30/2021			05/08/2021 02:52	Madeline Gruver	2244454