Chemical Analysis Report

CEN-DIST-2019-05-02-01

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

Event Description: **Gleason Lk + LVI**
Request ID: **RQ-2019-04-29-44**
Customer: **CEN-DIST**
Project ID: **SMP**

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Date Certified: 17-MAY-2019 15:29

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 Gleason @ Center **Collection Date/Time: 05/01/2019 12:15**

Field ID: G2CE0114 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2082650	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P363261	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P363743	
		Sulfate	2.5		mg SO4/L	P363747	
	SM 2120 B	Color (true)	37	A	PCU	P363281	
	SM 2320 B-97	Total Alkalinity	51		mg CaCO3/L	P363868	
	SM 2540 C-97	TDS	110		mg/L	P363570	
	SM 2540 D-97	TSS	2	I	mg/L	P363450	
	SM 4500 F-C-97	Fluoride	0.084	I	mg F/L	P363761	
2082651	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P363628	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P363618	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P363310	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P363350	
	SM 5310 B-00	Organic Carbon	9.3		mg C/L	P363433	
2082652	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P363255	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P363261

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363743

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363747

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363628

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363618

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363310

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363350

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363255

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

Reference Method: SM 2120 B
Batch ID: P363281

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P363868

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

Reference Method: SM 2540 C-97
Batch ID: P363570

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P363450

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P363761

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P363433

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: P363743

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363747

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363628

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363618

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363310

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: P363350

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363255

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.7		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P363281

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.8		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P363868

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P363761

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P363433

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363743

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082330	Chloride	99.4		P	90 - 110
2082411	Chloride	94.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082330	Sulfate	99.4		P	90 - 110
2082411	Sulfate	96.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082651	Ammonia-N	101	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082505	NO2NO3-N	98.1	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363350

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082506	Total-P	101	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082652	O-Phosphate-P	93.1	95.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P363761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082695	Fluoride	98.3	98.3	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P363433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2082651	Organic Carbon	97.5	98.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P363261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082764	Turbidity	1.78	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363743

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082411	Chloride	0.130	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P363747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082411	Sulfate	0.345	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P363628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082651	Ammonia-N	1.29	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082505	Kjeldahl Nitrogen	1.94	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P363310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082505	NO2NO3-N	0.922	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P363350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082506	Total-P	2.13	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P363255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082652	O-Phosphate-P	2.86	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P363281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082650	Color (true)	0.744	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P363868

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082695	Total Alkalinity	0.0473	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P363570

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082503	TDS	0.873	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P363761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082695	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P363433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2082651	Organic Carbon	0.589	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: A91162
Included Lab Sample IDs: 2082652

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.1	93.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A91163
Included Lab Sample IDs: 2082650

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

Reference Method: SM 2120 B
Run ID: A91168
Included Lab Sample IDs: 2082650

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A91184
Included Lab Sample IDs: 2082651

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

Reference Method: SM 5310 B-00
Run ID: A91225
Included Lab Sample IDs: 2082651

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.3	96.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A91228
Included Lab Sample IDs: 2082650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.4	101	P/P	90 - 110
Sulfate	98.0	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A91255
Included Lab Sample IDs: 2082651

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A91300
Included Lab Sample IDs: 2082651

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A91333
Included Lab Sample IDs: 2082651

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.6	91.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A91346
Included Lab Sample IDs: 2082650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	99.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A91397
Included Lab Sample IDs: 2082650

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.1	103	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 180.1 Rev. 2.0	Turbidity					1.78	
EPA 300.0 Rev. 2.1	Chloride	99.0	94.8	99.4		0.130	
	Sulfate	98.4	96.3	99.4		0.345	
EPA 350.1 Rev. 2.0	Ammonia-N	103	101	99.5			1.29
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105					1.94
EPA 353.2 Rev. 2.0	NO2NO3-N	101	98.1	97.1			0.922
EPA 365.1 Rev. 2.0	Total-P	101	101	104			2.13
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.7	93.1	95.8			2.86
SM 2120 B	Color (true)	98.8				0.744	
SM 2320 B-97	Total Alkalinity	102				0.0473	
SM 2540 C-97	TDS					0.873	
SM 4500 F-C-97	Fluoride	97.5	98.3	98.3			0.0
SM 5310 B-00	Organic Carbon	96.6	97.5	98.3			0.589

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2082650
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2082650
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2082650
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2082651
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2082651
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2082651
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2082651
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2082652
SM 2120 B / E31780	True Color measured at 450 nm	2082650
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2082650
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2082650
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2082650
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2082650
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2082651

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	05/02/2019			05/02/2019 16:16	Adrian Shelby	2082650
EPA 300.0 Rev. 2.1	05/02/2019			05/09/2019 19:19	Lipi Saha	2082650
EPA 350.1 Rev. 2.0	05/02/2019			05/07/2019 13:36	Ping Hua	2082651
EPA 351.2 Rev. 2.0	05/02/2019	05/08/2019 12:15	Adrian Shelby	05/09/2019 12:25	Joseph Suarez	2082651
EPA 353.2 Rev. 2.0	05/02/2019			05/03/2019 10:33	Beverly Y. Sanders	2082651
EPA 365.1 Rev. 2.0	05/02/2019	05/03/2019 12:30	Sima Feizi	05/07/2019 14:23	Beverly Y. Sanders	2082651
EPA 365.1 Rev. 2.0 dissolved	05/02/2019			05/02/2019 12:39	Jhamieka S. Greenwood	2082652
SM 2120 B	05/02/2019			05/02/2019 14:28	Mariam Hanna	2082650
SM 2320 B-97	05/02/2019			05/14/2019 00:36	Dale L. Simmons	2082650
SM 2540 C-97	05/02/2019			05/03/2019 15:25	Mariam Hanna	2082650
SM 2540 D-97	05/02/2019			05/03/2019 16:35	Mariam Hanna	2082650
SM 4500 F-C-97	05/02/2019			05/09/2019 12:12	Dale L. Simmons	2082650
SM 5310 B-00	05/02/2019			05/06/2019 14:43	Lauren Lees	2082651