Chemical Analysis Report

CEN-DIST-2017-03-21-02

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

Event Description: **Puzzle Lk / St Johns River AB Lk Harney**
Request ID: **RQ-2017-03-13-48**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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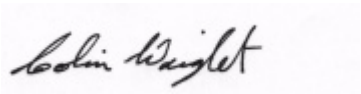
Certified by: Colin Wright, Program Administrator

Date Certified: 12-APR-2017 10:48



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 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: SAINT JOHNS RIVER ABOVE LAKE HARNEY **Collection Date/Time: 03/20/2017 12:50**

Field ID: G2CE0118 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1881539	EPA 180.1 Rev. 2.0	Turbidity	8.4		NTU	P321896	
	EPA 300.0 Rev. 2.1	Chloride	720		mg Cl/L	P322280	
		Sulfate	190		mg SO4/L	P322282	
	SM 2120 B	Color (true)	92		PCU	P321907	
	SM 2320 B-97	Total Alkalinity	90		mg CaCO3/L	P322690	
	SM 2540 C-97	TDS	1.45E+03		mg/L	P322642	
	SM 2540 D-97	TSS	12		mg/L	P322621	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P322417	
1881540	EPA 350.1 Rev. 2.0	Ammonia-N	0.077		mg N/L	P321914	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P321930	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P322233	
	EPA 365.1 Rev. 2.0	Total-P	0.079		mg P/L	P321967	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P321943	
1881541	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.036		mg P/L	P321900	

Ref. Method and Comment:
SM 2540 D-97: 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: P321896

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322280

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322282

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321914

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321930

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322233

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321967

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321900

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

Reference Method: SM 2120 B
Batch ID: P321907

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P322690

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

Reference Method: SM 2540 C-97
Batch ID: P322642

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P322621

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P322417

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P321943

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: P322280

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322282

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321914

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321930

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322233

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321967

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321900

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

Reference Method: SM 2320 B-97
Batch ID: P322690

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P322417

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.6		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P321943

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.7		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322280

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881424	Chloride	97.3		P	90 - 110
1881692	Chloride	98.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322282

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881424	Sulfate	99.2		P	90 - 110
1881692	Sulfate	99.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881445	Ammonia-N	106	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881615	Kjeldahl Nitrogen	100	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1882306	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881445	Total-P	105	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321900

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881437	O-Phosphate-P	97.1	98.1	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P322417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881691	Fluoride	97.3	96.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P321943

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881540	Organic Carbon	96.7	98.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881443	Turbidity	0.408	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881424	Chloride	0.0685	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881424	Sulfate	0.146	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881445	Ammonia-N	1.02	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881615	Kjeldahl Nitrogen	2.82	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1882306	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881445	Total-P	2.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881437	O-Phosphate-P	0.941	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P321907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881424	Color (true)	4.26	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P322690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881691	Total Alkalinity	0.179	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P322642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881438	TDS	0.881	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P322417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881691	Fluoride	1.01	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P321943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881540	Organic Carbon	0.896	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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 180.1 Rev. 2.0
Run ID: A75240
Included Lab Sample IDs: 1881539

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A75242
Included Lab Sample IDs: 1881541

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

Reference Method: SM 2120 B
Run ID: A75244
Included Lab Sample IDs: 1881539

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A75245
Included Lab Sample IDs: 1881540

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	102	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A75258
Included Lab Sample IDs: 1881540

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.1	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A75298
Included Lab Sample IDs: 1881540

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A75304
Included Lab Sample IDs: 1881540

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.9	92.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A75375
Included Lab Sample IDs: 1881540

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A75396
Included Lab Sample IDs: 1881539

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	103	P/P	90 - 110
Sulfate	98.6	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A75433
Included Lab Sample IDs: 1881539

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A75542
Included Lab Sample IDs: 1881539

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	102	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					0.408	
EPA 300.0 Rev. 2.1	Chloride	101	97.3	98.2		0.0685	
	Sulfate	98.2	99.2	99.0		0.146	
EPA 350.1 Rev. 2.0	Ammonia-N	110	106	108			1.02
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.1	100	97.4			2.82
EPA 353.2 Rev. 2.0	NO2NO3-N	103	103	103			0.0
EPA 365.1 Rev. 2.0	Total-P	98.6	105	102			2.49
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	97.1	98.1			0.941
SM 2120 B	Color (true)					4.26	
SM 2320 B-97	Total Alkalinity	104				0.179	
SM 2540 C-97	TDS					0.881	
SM 4500 F-C-97	Fluoride	95.6	97.3	96.1			1.01
SM 5310 B-00	Organic Carbon	98.7	96.7	98.4			0.896

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1881539
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1881539
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1881539
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1881540
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1881540
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1881540
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1881540
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1881541
SM 2120 B / E31780	True Color measured at 450 nm	1881539
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1881539
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1881539
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1881539
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1881539
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1881540

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	03/21/2017			03/21/2017 15:05	Sima Feizi	1881539
EPA 300.0 Rev. 2.1	03/21/2017			03/28/2017	Ping Hua	1881539
EPA 350.1 Rev. 2.0	03/21/2017			03/21/2017	Julie Michelle Frank	1881540
EPA 351.2 Rev. 2.0	03/21/2017	03/22/2017	Adrian Shelby	03/23/2017	Joseph Suarez	1881540
EPA 353.2 Rev. 2.0	03/21/2017			03/27/2017	Beverly Y. Sanders	1881540
EPA 365.1 Rev. 2.0	03/21/2017	03/22/2017	Vijayalakshmi Reddy	03/23/2017	Lipi Saha	1881540
EPA 365.1 Rev. 2.0 dissolved	03/21/2017			03/21/2017 15:15	Julia Storbeck	1881541
SM 2120 B	03/21/2017			03/21/2017 20:08	Julie Michelle Frank	1881539
SM 2320 B-97	03/21/2017			03/31/2017	Dale L. Simmons	1881539
SM 2540 C-97	03/21/2017			03/24/2017	Yijie Li	1881539
SM 2540 D-97	03/21/2017			03/24/2017	Yijie Li	1881539
SM 4500 F-C-97	03/21/2017			03/28/2017	Dale L. Simmons	1881539
SM 5310 B-00	03/21/2017			03/21/2017	Christopher Armour	1881540