

Chemical Analysis Report

CEN-DIST-2016-08-05-01

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

Event Description: **Dora Canal+HA**
Request ID: **RQ-2016-07-04-49**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 25-AUG-2016 16:27

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

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: Dora Canal 500 yards from HW 19 BRIDGE

Collection Date/Time: 08/04/2016 11:45

Field ID: G1CE0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1822324	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P309292	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P309869	
		Sulfate	13		mg SO4/L	P309872	
	SM 2120 B	Color (true)	8.1		PCU	P309288	
	SM 2320 B-97	Total Alkalinity	124		mg CaCO3/L	P309385	
	SM 2540 C-97	TDS	222		mg/L	P309823	
	SM 2540 D-97	TSS	9	I	mg/L	P309764	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P309386	
1822325	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P309356	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P309739	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P309669	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P309653	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P310046	
1822326	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P309260	

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: P309292

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P309869

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P309872

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P309356

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P309739

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: P309669

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309653

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309260

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

Reference Method: SM 2120 B
Batch ID: P309288

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P309385

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

Reference Method: SM 2540 C-97
Batch ID: P309823

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P309764

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P309386

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P310046

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: P309869

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309872

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309356

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309739

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	108		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309669

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: P309653

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309260

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

Reference Method: SM 2320 B-97
Batch ID: P309385

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P309386

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P310046

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822460	Chloride	97.5		P	90 - 110
1822461	Chloride	94.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822460	Sulfate	93.4		P	90 - 110
1822461	Sulfate	91.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P309356

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1821877	Ammonia-N	97.6	95.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822097	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309653

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822306	Total-P	101	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309260

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822237	O-Phosphate-P	97.7	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P309386

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822094	Fluoride	99.5	99.5	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P310046

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1822244	Organic Carbon	99.5	104	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P309292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822095	Turbidity	0.644	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P309869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822460	Chloride	0.0560	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P309872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822460	Sulfate	0.232	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P309356

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1821877	Ammonia-N	1.81	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P309739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822325	Kjeldahl Nitrogen	3.02	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P309669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822097	NO2NO3-N	0.982	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822306	Total-P	1.53	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P309260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822237	O-Phosphate-P	0.722	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P309288

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822305	Color (true)	0.515	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P309385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822094	Total Alkalinity	0.198	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P309823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822270	TDS	3.38	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P309386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822094	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P310046

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822244	Organic Carbon	2.27	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A70962

Included Lab Sample IDs: 1822326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	99.8	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A70969

Included Lab Sample IDs: 1822324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.4	99.9	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A70970

Included Lab Sample IDs: 1822324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70996

Included Lab Sample IDs: 1822325

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	95.3	96.9	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A71002

Included Lab Sample IDs: 1822324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71002

Included Lab Sample IDs: 1822324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71097

Included Lab Sample IDs: 1822325

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO ₂ NO ₃ -N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71150

Included Lab Sample IDs: 1822325

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71170

Included Lab Sample IDs: 1822325

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71177

Included Lab Sample IDs: 1822324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.8	101	P/P	90 - 110
Sulfate	96.0	96.6	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A71236

Included Lab Sample IDs: 1822325

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.7	96.8	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.644	
EPA 300.0 Rev. 2.1	Chloride	98.9	97.5 94.8		0.0560	
	Sulfate	94.1	93.4 91.2		0.232	
EPA 350.1 Rev. 2.0	Ammonia-N	96.0	97.6 95.9			1.81
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	108				3.02
EPA 353.2 Rev. 2.0	NO2NO3-N	102	100 102			0.982
EPA 365.1 Rev. 2.0	Total-P	104	101 99.3			1.53
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	97.7 99.0			0.722
SM 2120 B	Color (true)				0.515	
SM 2320 B-97	Total Alkalinity	103			0.198	
SM 2540 C-97	TDS				3.38	
SM 4500 F-C-97	Fluoride	97.2	99.5 99.5			0.0
SM 5310 B-00	Organic Carbon	94.6	99.5 104			2.27

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1822324
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1822324
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1822324

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1822325
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1822325
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1822325
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1822325
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1822326
SM 2120 B / E31780	True Color measured at 450 nm	1822324
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1822324
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1822324
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1822324
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1822324
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1822325

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	08/05/2016			08/05/2016 14:23	Sima Feizi	1822324
EPA 300.0 Rev. 2.1	08/05/2016			08/17/2016	Ping Hua	1822324
EPA 350.1 Rev. 2.0	08/05/2016			08/08/2016	Julie Michelle Frank	1822325
EPA 351.2 Rev. 2.0	08/05/2016	08/15/2016	Sofia Elnemr	08/16/2016	Virginia P. Brown	1822325
EPA 353.2 Rev. 2.0	08/05/2016			08/11/2016	Peter D. Kaus	1822325
EPA 365.1 Rev. 2.0	08/05/2016	08/12/2016	Vijayalakshmi Reddy	08/16/2016	Lipi Saha	1822325
EPA 365.1 Rev. 2.0 dissolved	08/05/2016			08/05/2016 11:43	Julia Storbeck	1822326
SM 2120 B	08/05/2016			08/05/2016 13:54	Blanca Fach	1822324
SM 2320 B-97	08/05/2016			08/09/2016	Dale L. Simmons	1822324
SM 2540 C-97	08/05/2016			08/10/2016	Yijie Li	1822324
SM 2540 D-97	08/05/2016			08/10/2016	Yijie Li	1822324
SM 4500 F-C-97	08/05/2016			08/09/2016	Dale L. Simmons	1822324
SM 5310 B-00	08/05/2016			08/18/2016	Sofia Elnemr	1822325