

Chemical Analysis Report

CEN-DIST-2017-03-21-01

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

Event Description: **Hatchineha Canal / Reedy Below Russell**

Request ID: **RQ-2017-03-20-50**

Customer: **CEN-DIST**

Project ID: **SMP**

Send Reports to:

FL Dept. of Environmental Protection
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Date Certified: 12-APR-2017 14:03



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: Hatchineha Canal @ 1.1km US of Lake Hatchineha

Collection Date/Time: 03/20/2017 11:07

Field ID: G4CE0143

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1881424	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P321895	
	EPA 300.0 Rev. 2.1	Chloride	22	A	mg Cl/L	P322280	
		Sulfate	6.2	A	mg SO4/L	P322282	
	SM 2120 B	Color (true)	50	A	PCU	P321907	
	SM 2320 B-97	Total Alkalinity	40		mg CaCO3/L	P322690	
	SM 2540 C-97	TDS	109		mg/L	P322641	
	SM 2540 D-97	TSS	4	I	mg/L	P322620	
	SM 4500 F-C-97	Fluoride	0.089	I	mg F/L	P322417	
1881425	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P321913	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P321922	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P321994	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P321939	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P321942	
1881426	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	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: P321895

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: P321913

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P321922

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: P321994

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321939

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: P322641

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P322620

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: P321942

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: P321913

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321922

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321994

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321939

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: 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: P321942

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.6		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: P321913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881406	Ammonia-N	104	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P321922

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881432	Kjeldahl Nitrogen	97.0	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P321994

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881407	NO2NO3-N	104	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P321939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881425	Total-P	101	106	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: P321942

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881406	Organic Carbon	98.4	98.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881404	Turbidity	2.56	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: P321913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881406	Ammonia-N	2.77	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881432	Kjeldahl Nitrogen	2.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881407	NO2NO3-N	3.42	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881425	Total-P	4.67	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: P322641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881405	TDS	5.18	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: P321942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881406	Organic Carbon	0.0517	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: 1881424

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A75242

Included Lab Sample IDs: 1881426

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A75244

Included Lab Sample IDs: 1881424

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: 1881425

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

Reference Method: SM 5310 B-00

Run ID: A75258

Included Lab Sample IDs: 1881425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.3	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75268

Included Lab Sample IDs: 1881425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75276

Included Lab Sample IDs: 1881425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.1	95.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75299

Included Lab Sample IDs: 1881425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75396

Included Lab Sample IDs: 1881424

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.6	101	P/P	90 - 110
Sulfate	93.8	98.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A75433

Included Lab Sample IDs: 1881424

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A75542

Included Lab Sample IDs: 1881424

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	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					2.56	
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	108	104	108			2.77
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	97.0	101			2.46
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	104	100			3.42
EPA 365.1 Rev. 2.0	Total-P	105	101	106			4.67
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					5.18	
SM 4500 F-C-97	Fluoride	95.6	97.3	96.1			1.01
SM 5310 B-00	Organic Carbon	99.6	98.4	98.4			0.0517

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1881424
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1881424
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1881424
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1881425
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1881425
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1881425
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1881425
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1881426
SM 2120 B / E31780	True Color measured at 450 nm	1881424
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1881424
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1881424
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1881424
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1881424
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1881425

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	1881424
EPA 300.0 Rev. 2.1	03/21/2017			03/27/2017	Ping Hua	1881424
EPA 350.1 Rev. 2.0	03/21/2017			03/21/2017	Julie Michelle Frank	1881425
EPA 351.2 Rev. 2.0	03/21/2017	03/22/2017	Adrian Shelby	03/22/2017	Joseph Suarez	1881425
EPA 353.2 Rev. 2.0	03/21/2017			03/22/2017	Beverly Y. Sanders	1881425
EPA 365.1 Rev. 2.0	03/21/2017	03/22/2017	Vijayalakshmi Reddy	03/23/2017	Lipi Saha	1881425
EPA 365.1 Rev. 2.0 dissolved	03/21/2017			03/21/2017 15:07	Julia Storbeck	1881426
SM 2120 B	03/21/2017			03/21/2017 20:07	Julie Michelle Frank	1881424
SM 2320 B-97	03/21/2017			03/30/2017	Dale L. Simmons	1881424
SM 2540 C-97	03/21/2017			03/24/2017	Yijie Li	1881424
SM 2540 D-97	03/21/2017			03/24/2017	Yijie Li	1881424
SM 4500 F-C-97	03/21/2017			03/28/2017	Dale L. Simmons	1881424
SM 5310 B-00	03/21/2017			03/21/2017	Christopher Armour	1881425