Chemical Analysis Report

CEN-DIST-2016-11-02-01

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

Event Description: **Howey Height**
Request ID: **RQ-2016-10-10-56**
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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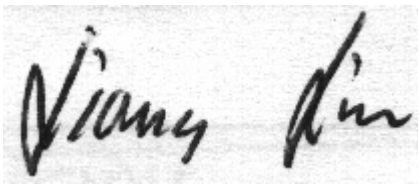
Certified by: Liang Lin, Environmental Administrator

Date Certified: 23-NOV-2016 12:16



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: Apopka-Beauclair Canal @ 400m Downstream of CR 448 **Collection Date/Time: 11/01/2016 13:15**

Field ID: G1CE0026 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1846788	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P314432	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P315415	
		Sulfate	30		mg SO4/L	P315503	
	SM 2120 B	Color (true)	79		PCU	P314413	
	SM 2320 B-97	Total Alkalinity	116		mg CaCO3/L	P314921	
	SM 2540 C-97	TDS	214		mg/L	P314955	
	SM 2540 D-97	TSS	2	I	mg/L	P315044	
	SM 4500 F-C-97	Fluoride	0.25		mg F/L	P314924	
1846789	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P315031	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P315346	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P314521	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P314967	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P314656	
1846790	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.090		mg P/L	P314419	

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: P314432

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315415

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315503

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315031

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315346

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: P314521

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314967

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314419

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

Reference Method: SM 2120 B
Batch ID: P314413

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P314921

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

Reference Method: SM 2540 C-97
Batch ID: P314955

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P315044

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P314924

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P314656

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: P315415

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315503

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315031

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: P315346

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314521

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	107		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314967

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314419

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.4		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P314921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P314924

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P314656

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315415

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846806	Chloride	99.0		P	90 - 110
1846938	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315503

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846806	Sulfate	97.9		P	90 - 110
1846938	Sulfate	94.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315031

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846789	Ammonia-N	103	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315346

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1844398	Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846727	NO2NO3-N	106	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314967

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846689	Total-P	105	98.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314419

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846796	O-Phosphate-P	98.7	100	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P314924

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1846901	Fluoride	99.4	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P314656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1847077	Organic Carbon	101		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P314432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846724	Turbidity	6.10	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846806	Chloride	0.189	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P315503

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846806	Sulfate	1.03	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P315031

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846789	Ammonia-N	1.97	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P315346

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1844398	Kjeldahl Nitrogen	1.85	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P314521

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: P314521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846727	NO2NO3-N	0.418	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314967

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846689	Total-P	3.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P314419

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846796	O-Phosphate-P	1.05	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P314413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846724	Color (true)	9.89	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P314921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846901	Total Alkalinity	0.287	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P314955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846687	TDS	2.61	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P314924

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1846901	Fluoride	0.494	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P314656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847077	Organic Carbon	0.938	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: SM 2120 B
Run ID: A72580
Included Lab Sample IDs: 1846788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.4	98.5	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A72581
Included Lab Sample IDs: 1846790

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A72583
Included Lab Sample IDs: 1846788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72599
Included Lab Sample IDs: 1846789

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: A72642
Included Lab Sample IDs: 1846789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	98.2	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A72739
Included Lab Sample IDs: 1846788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A72739
Included Lab Sample IDs: 1846788

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72765
Included Lab Sample IDs: 1846789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72783
Included Lab Sample IDs: 1846789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	104	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A72830
Included Lab Sample IDs: 1846788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	96.9	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72894
Included Lab Sample IDs: 1846789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					6.10	
EPA 300.0 Rev. 2.1	Chloride	99.4	99.0	101		0.189	
	Sulfate	94.6	97.9	94.9		1.03	
EPA 350.1 Rev. 2.0	Ammonia-N	103	103	101			1.97
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	101	103			1.85
EPA 353.2 Rev. 2.0	NO2NO3-N	107	106	105			0.418
EPA 365.1 Rev. 2.0	Total-P	98.8	105	98.1			3.29
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	98.7	100			1.05
SM 2120 B	Color (true)					9.89	
SM 2320 B-97	Total Alkalinity	102				0.287	
SM 2540 C-97	TDS					2.61	
SM 4500 F-C-97	Fluoride	98.5	99.4	100			0.494
SM 5310 B-00	Organic Carbon	98.2	101				0.938

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1846788
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1846788
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1846788
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1846789
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1846789
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1846789
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1846789
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1846790
SM 2120 B / E31780	True Color measured at 450 nm	1846788
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1846788
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1846788
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1846788
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1846788
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1846789

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	11/02/2016			11/02/2016 15:45	Julie Michelle Frank	1846788
EPA 300.0 Rev. 2.1	11/02/2016			11/18/2016	Ping Hua	1846788
EPA 350.1 Rev. 2.0	11/02/2016			11/10/2016	Julie Michelle Frank	1846789
EPA 351.2 Rev. 2.0	11/02/2016	11/17/2016	Adrian Shelby	11/18/2016	Joseph Suarez	1846789
EPA 353.2 Rev. 2.0	11/02/2016			11/03/2016	Beverly Y. Sanders	1846789
EPA 365.1 Rev. 2.0	11/02/2016	11/10/2016	Adrian Shelby	11/14/2016	Lipi Saha	1846789
EPA 365.1 Rev. 2.0 dissolved	11/02/2016			11/02/2016 16:06	Julia Storbeck	1846790
SM 2120 B	11/02/2016			11/02/2016 15:44	Julie Michelle Frank	1846788
SM 2320 B-97	11/02/2016			11/10/2016	Dale L. Simmons	1846788
SM 2540 C-97	11/02/2016			11/04/2016	Yijie Li	1846788
SM 2540 D-97	11/02/2016			11/04/2016	Yijie Li	1846788
SM 4500 F-C-97	11/02/2016			11/10/2016	Dale L. Simmons	1846788
SM 5310 B-00	11/02/2016			11/04/2016	Julie Michelle Frank	1846789