Chemical Analysis Report

CEN-DIST-2016-02-03-01

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

Event Description: **Parbor Lake**
Request ID: **RQ-2016-02-01-70**
Customer: **CEN-DIST**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 19-FEB-2016 14:15

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: RASALIE CANAL **Collection Date/Time: 02/02/2016 13:00**

Field ID: G4CE0087 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1768336	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P298044	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P298292	
		Sulfate	8.4		mg SO4/L	P298295	
	SM 2120 B	Color (true)	110		PCU	P298013	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P298264	
	SM 2540 C-97	TDS	80		mg/L	P298624	
	SM 2540 D-97	TSS	2	I	mg/L	P298553	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P298259	
1768337	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P298440	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P298216	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P298342	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P298222	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P298246	
1768338	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P298009	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298044

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298292

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298295

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298440

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298216

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: P298342

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298222

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298009

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

Reference Method: SM 2120 B
Batch ID: P298013

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P298264

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

Reference Method: SM 2540 C-97
Batch ID: P298624

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P298553

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P298259

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P298246

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: P298292

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298295

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298440

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298216

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298342

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: P298222

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298009

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	102		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P298264

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P298259

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	94 - 108

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P298246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298292

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768385	Chloride	108		P	90 - 110
1768419	Chloride	109		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768385	Sulfate	106		P	90 - 110
1768419	Sulfate	106		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298440

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768306	Ammonia-N	97.6	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768308	NO2NO3-N	99.7	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768309	Total-P	104	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298009

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768322	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P298259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768446	Fluoride	98.6	98.6	P/P	94 - 107

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P298246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768312	Organic Carbon	96.1	94.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768299	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768385	Chloride	0.493	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768385	Sulfate	2.03	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768306	Ammonia-N	0.981	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768423	Kjeldahl Nitrogen	3.11	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768308	NO2NO3-N	1.17	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768309	Total-P	7.19	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298009

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768322	O-Phosphate-P	0.196	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P298013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768297	Color (true)	0.295	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P298264

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768446	Total Alkalinity	0.242	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P298624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768386	TDS	1.82	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P298259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768446	Fluoride	0.0	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P298246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768312	Organic Carbon	1.60	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: A67433
Included Lab Sample IDs: 1768338

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	97.9	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A67434
Included Lab Sample IDs: 1768336

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67445
Included Lab Sample IDs: 1768336

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A67468
Included Lab Sample IDs: 1768336

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	107	P/P	90 - 110
Sulfate	96.0	104	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A67508
Included Lab Sample IDs: 1768337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.2	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A67513
Included Lab Sample IDs: 1768337

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

Reference Method: SM 4500 F-C-97
Run ID: A67514
Included Lab Sample IDs: 1768336

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	99.1	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A67515
Included Lab Sample IDs: 1768336

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	103	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67532
Included Lab Sample IDs: 1768337

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A67537
Included Lab Sample IDs: 1768337

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A67565
Included Lab Sample IDs: 1768337

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	99.5	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					0.0	
EPA 300.0 Rev. 2.1	Chloride	107	108	109		0.493	
	Sulfate	103	106	106		2.03	
EPA 350.1 Rev. 2.0	Ammonia-N	99.9	97.6	96.5			0.981
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.8					3.11
EPA 353.2 Rev. 2.0	NO2NO3-N	102	99.7	101			1.17
EPA 365.1 Rev. 2.0	Total-P	99.6	104	96.6			7.19
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	102	102			0.196
SM 2120 B	Color (true)					0.295	
SM 2320 B-97	Total Alkalinity	102				0.242	
SM 2540 C-97	TDS					1.82	
SM 4500 F-C-97	Fluoride	97.3	98.6	98.6			0.0
SM 5310 B-00	Organic Carbon	99.4	96.1	94.3			1.60

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1768336
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1768336
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1768336
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1768337

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1768337
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1768337
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1768337
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1768338
SM 2120 B / E31780	True Color measured at 450 nm	1768336
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1768336
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1768336
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1768336
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1768336
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1768337

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	02/03/2016			02/03/2016 16:16	Blanca Fach	1768336
EPA 300.0 Rev. 2.1	02/03/2016			02/06/2016	Ping Hua	1768336
EPA 350.1 Rev. 2.0	02/03/2016			02/10/2016	Diana M. Turner	1768337
EPA 351.2 Rev. 2.0	02/03/2016	02/08/2016	Sofia Elnemr	02/09/2016	Bryan A. Werth	1768337
EPA 353.2 Rev. 2.0	02/03/2016			02/09/2016	Peter D. Kaus	1768337
EPA 365.1 Rev. 2.0	02/03/2016	02/08/2016	Christopher Armour	02/08/2016	Lipi Saha	1768337
EPA 365.1 Rev. 2.0 dissolved	02/03/2016			02/03/2016 14:44	Bryan A. Werth	1768338
SM 2120 B	02/03/2016			02/03/2016 14:19	Rochelle Y Jackson	1768336
SM 2320 B-97	02/03/2016			02/09/2016	Dale L. Simmons	1768336
SM 2540 C-97	02/03/2016			02/05/2016	Yijie Li	1768336
SM 2540 D-97	02/03/2016			02/05/2016	Yijie Li	1768336
SM 4500 F-C-97	02/03/2016			02/08/2016	Dale L. Simmons	1768336
SM 5310 B-00	02/03/2016			02/06/2016	Sofia Elnemr	1768337