Chemical Analysis Report

BSSP-2017-11-29-01

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

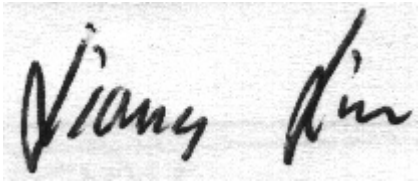
Event Description: **SCI Bench**
Request ID: **RQ-2017-11-27-30**
Customer: **BSSP**
Project ID: **SCI-BNCHMK**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Tallahassee, FL 32399-2400
Attn: Judy Ashton

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 18-DEC-2017 15:54



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 groups are included in this report: Metals and 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: Little Payne Upstream of CR664 **Collection Date/Time: 11/28/2017 14:55**

Field ID: Little Payne Upstream of CR664 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1949196	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P336080	
	EPA 300.0 Rev. 2.1	Chloride	16		mg Cl/L	P336266	
		Sulfate	31		mg SO4/L	P336270	
	SM 2120 B	Color (true)	46		PCU	P336073	
	SM 2320 B-97	Total Alkalinity	138		mg CaCO3/L	P336465	
	SM 2540 C-97	TDS	227		mg/L	P336392	
	SM 2540 D-97	TSS	5	I	mg/L	P336366	
	SM 4500 F-C-97	Fluoride	1.0		mg F/L	P336469	
1949197	EPA 350.1 Rev. 2.0	Ammonia-N	0.049		mg N/L	P336793	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.43		mg N/L	P336319	
	EPA 365.1 Rev. 2.0	Total-P	1.2		mg P/L	P336312	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P336334	
1949209	EPA 200.7 Rev. 4.4	Calcium	35.0		mg/L	P336084	
		Magnesium	20.3		mg/L	P336084	
		Potassium	2.0		mg/L	P336084	
		Sodium	17.9		mg/L	P336084	
		Zinc	5.0	U	ug/L	P336084	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: 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: P336080

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336084

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336266

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336270

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336270

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336793

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336319

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336312

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

Reference Method: SM 2120 B
Batch ID: P336073

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336465

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

Reference Method: SM 2540 C-97
Batch ID: P336392

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P336366

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P336469

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P336334

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336084

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	101		P	85 - 115
Sodium	105		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336266

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	94.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336270

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336793

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336319

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: P336312

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

Reference Method: SM 2320 B-97
Batch ID: P336465

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P336469

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P336334

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948995	Calcium	103		P	80 - 120
1948995	Magnesium	103		P	80 - 120
1948995	Potassium	101		P	80 - 120
1948995	Sodium	104		P	80 - 120
1948995	Zinc	99.3		P	80 - 120
1949018	Calcium	102		P	80 - 120
1949018	Magnesium	108	107	P/P	80 - 120
1949018	Potassium	102	101	P/P	80 - 120
1949018	Sodium	105	105	P/P	80 - 120
1949018	Zinc	98.5	96.5	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336266

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949216	Chloride	95.0		P	90 - 110
1949218	Chloride	95.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336270

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949216	Sulfate	96.2		P	90 - 110
1949218	Sulfate	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949150	Ammonia-N	101	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336319

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949213	NO2NO3-N	92.1	92.6	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P336469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949217	Fluoride	96.3	96.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P336334

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949161	Organic Carbon	94.8	95.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P336080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949059	Turbidity	7.18	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949018	Calcium	0.813	Spike	P	0 - 20
1949018	Magnesium	0.730	Spike	P	0 - 20
1949018	Potassium	0.537	Spike	P	0 - 20
1949018	Sodium	0.00201	Spike	P	0 - 20
1949018	Zinc	1.12	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336266

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949216	Chloride	0.664	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949216	Sulfate	0.750	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949150	Ammonia-N	1.67	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949213	NO2NO3-N	0.439	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949197	Total-P	0.337	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P336073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949012	Color (true)	0.759	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P336465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949217	Total Alkalinity	1.90	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P336392

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949047	TDS	5.36	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P336469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949217	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336334

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949161	Organic Carbon	0.268	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: SM 2120 B
Run ID: A80591
Included Lab Sample IDs: 1949196

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A80593
Included Lab Sample IDs: 1949196

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A80619
Included Lab Sample IDs: 1949209

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	98.6	100	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	97.5	99.0	P/P	90 - 110
Sodium	98.4	98.7	P/P	90 - 110
Zinc	102	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A80632
Included Lab Sample IDs: 1949196

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	99.6	P/P	90 - 110
Sulfate	99.9	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A80683
Included Lab Sample IDs: 1949197

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

Reference Method: SM 5310 B-00
Run ID: A80692
Included Lab Sample IDs: 1949197

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A80731
Included Lab Sample IDs: 1949197

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A80732
Included Lab Sample IDs: 1949196

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

Reference Method: SM 4500 F-C-97
Run ID: A80732
Included Lab Sample IDs: 1949196

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A80825
Included Lab Sample IDs: 1949197

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	101	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						7.18	
EPA 200.7 Rev. 4.4	Calcium	103	103	102				0.813
	Magnesium	109	103	108	107			0.730
	Potassium	101	101	102	101			0.537
	Sodium	105	104	105	105			0.0020
	Zinc	101	99.3	98.5	96.5			1.12
EPA 300.0 Rev. 2.1	Chloride	94.2	95.0	95.3			0.664	
	Sulfate	94.5	96.2	95.4			0.750	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	101	99.4				1.67
EPA 353.2 Rev. 2.0	NO2NO3-N	104	92.1	92.6				0.439
EPA 365.1 Rev. 2.0	Total-P	102						0.337
SM 2120 B	Color (true)						0.759	
SM 2320 B-97	Total Alkalinity	103					1.90	
SM 2540 C-97	TDS						5.36	
SM 4500 F-C-97	Fluoride	96.8	96.3	96.3				0.0
SM 5310 B-00	Organic Carbon	97.0	94.8	95.2				0.268

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1949196
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1949209

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1949196
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1949196
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1949197
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1949197
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1949197
SM 2120 B / E31780	True Color measured at 450 nm	1949196
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1949196
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1949196
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1949196
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1949196
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1949197

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	11/29/2017			11/29/2017 16:26	DeAsia Armster	1949196
EPA 200.7 Rev. 4.4	11/29/2017	11/29/2017	Elliott D. Healy	11/30/2017	Betina Topolski	1949209
EPA 300.0 Rev. 2.1	11/29/2017			12/02/2017	Julia Storbeck	1949196
EPA 350.1 Rev. 2.0	11/29/2017			12/08/2017	Sofia Elnemr	1949197
EPA 353.2 Rev. 2.0	11/29/2017			12/04/2017	Lauren Bottorf	1949197
EPA 365.1 Rev. 2.0	11/29/2017	12/04/2017	Sima Feizi	12/05/2017	Beverly Y. Sanders	1949197
SM 2120 B	11/29/2017			11/29/2017 14:59	Tanya Welborn	1949196
SM 2320 B-97	11/29/2017			12/06/2017	Dale L. Simmons	1949196
SM 2540 C-97	11/29/2017			12/01/2017	Yijie Li	1949196
SM 2540 D-97	11/29/2017			12/01/2017	Yijie Li	1949196
SM 4500 F-C-97	11/29/2017			12/06/2017	Dale L. Simmons	1949196
SM 5310 B-00	11/29/2017			12/04/2017	Ping Hua	1949197