

Chemical Analysis Report

BSSP-2017-12-08-01

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

Event Description: **Bench SCI-Paynes Crk@Hobbs Rd.**

Request ID: **RQ-2017-12-04-64**

Customer: **BSSP**

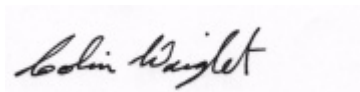
Project ID: **SCI-BNCHMK**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Tampa, FL 33637
Attn: Judy Ashton

For additional information please contact
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Certified by: Colin Wright, Program Administrator

Date Certified: 29-DEC-2017 15:53

A handwritten signature in black ink, appearing to read "Colin Wright", is written over a light gray rectangular 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 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: Paines Creek @ Hobbs Rd

Collection Date/Time: 12/07/2017 11:15

Field ID: 25020296

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1952256	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P336667	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P336894	
		Sulfate	67		mg SO4/L	P336897	
	SM 2120 B	Color (true)	38		PCU	P336664	
	SM 2320 B-97	Total Alkalinity	139		mg CaCO3/L	P337028	
	SM 2540 C-97	TDS	268		mg/L	P336962	
	SM 2540 D-97	TSS	3	I	mg/L	P337100	
	SM 4500 F-C-97	Fluoride	1.6		mg F/L	P337030	
1952257	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P337421	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.32		mg N/L	P337166	
	EPA 365.1 Rev. 2.0	Total-P	0.36		mg P/L	P337055	
	SM 5310 B-00	Organic Carbon	9.1		mg C/L	P336869	
1952260	EPA 200.7 Rev. 4.4	Calcium	38.9		mg/L	P336745	
		Magnesium	22.7		mg/L	P336745	
		Potassium	2.4		mg/L	P336745	
		Sodium	25.8		mg/L	P336745	
		Zinc	5.0	U	ug/L	P336745	

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: P336667

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P336745

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: P336894

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P336897

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P337421

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P337166

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P337055

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

Reference Method: SM 2120 B
Batch ID: P336664

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P337028

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

Reference Method: SM 2540 C-97
Batch ID: P336962

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P337100

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P337030

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P336869

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: P336745

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	104		P	85 - 115
Sodium	103		P	85 - 115
Zinc	99.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P336894

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P336897

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P337421

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P337166

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: P337055

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.7		P	90 - 110

Reference Method: SM 2320 B-97
 Batch ID: P337028

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	95 - 108

Reference Method: SM 4500 F-C-97
 Batch ID: P337030

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P336869

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P336869

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1951621	Calcium	103		P	80 - 120
1951621	Magnesium	106		P	80 - 120
1951621	Potassium	102		P	80 - 120
1951621	Sodium	101		P	80 - 120
1951621	Zinc	98.5		P	80 - 120
1951771	Calcium	100		P	80 - 120
1951771	Magnesium	100		P	80 - 120
1951771	Potassium	104	104	P/P	80 - 120
1951771	Sodium	105		P	80 - 120
1951771	Zinc	94.4	94.4	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336894

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1952184	Chloride	103		P	90 - 110
1952912	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336897

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1952184	Sulfate	102		P	90 - 110
1952912	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P337421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1952176	Ammonia-N	108	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P337166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1952257	NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P337055

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1952944	Total-P	97.5	99.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P337030

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1952923	Fluoride	95.2	96.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P336869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1952176	Organic Carbon	95.4	96.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P336667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952174	Turbidity	2.68	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P336745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1951771	Calcium	0.403	Spike	P	0 - 20
1951771	Magnesium	0.0344	Spike	P	0 - 20
1951771	Potassium	0.155	Spike	P	0 - 20
1951771	Sodium	1.00	Spike	P	0 - 20
1951771	Zinc	0.0163	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952184	Chloride	5.44	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952184	Sulfate	5.35	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P337421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952176	Ammonia-N	4.21	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P337166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952257	NO2NO3-N	0.188	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P337055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952944	Total-P	1.38	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P336664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952174	Color (true)	1.20	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P337028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952923	Total Alkalinity	0.0999	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P336962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952232	TDS	3.11	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P337030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952923	Fluoride	1.49	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1952176	Organic Carbon	0.436	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: A80794
Included Lab Sample IDs: 1952256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.3	97.2	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A80795
Included Lab Sample IDs: 1952256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A80857
Included Lab Sample IDs: 1952260

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	99.9	97.6	P/P	90 - 110
Magnesium	99.3	97.8	P/P	90 - 110
Potassium	101	101	P/P	90 - 110
Sodium	101	99.3	P/P	90 - 110
Zinc	99.6	101	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A80862
Included Lab Sample IDs: 1952257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.0	98.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A80872
Included Lab Sample IDs: 1952256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	106	107	P/P	90 - 110
Sulfate	102	103	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A80931
Included Lab Sample IDs: 1952256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A80931
Included Lab Sample IDs: 1952256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80966

Included Lab Sample IDs: 1952257

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80992

Included Lab Sample IDs: 1952257

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A81097

Included Lab Sample IDs: 1952257

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	105	105	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						2.68	
EPA 200.7 Rev. 4.4	Calcium	101	103	100				0.403
	Magnesium	101	106	100				0.0344
	Potassium	104	102	104	104			0.155
	Sodium	103	101	105				1.00
	Zinc	99.4	98.5	94.4	94.4			0.0163
EPA 300.0 Rev. 2.1	Chloride	102	103	102			5.44	
	Sulfate	99.6	102	101			5.35	
EPA 350.1 Rev. 2.0	Ammonia-N	107	108	101				4.21
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101					0.188
EPA 365.1 Rev. 2.0	Total-P	98.7	97.5	99.0				1.38
SM 2120 B	Color (true)						1.20	
SM 2320 B-97	Total Alkalinity	100					0.0999	
SM 2540 C-97	TDS						3.11	
SM 4500 F-C-97	Fluoride	96.3	95.2	96.8				1.49
SM 5310 B-00	Organic Carbon	95.3	95.4	96.2				0.436

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1952256
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1952260

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1952256
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1952256
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1952257
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1952257
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1952257
SM 2120 B / E31780	True Color measured at 450 nm	1952256
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1952256
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1952256
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1952256
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1952256
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1952257

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	12/08/2017			12/08/2017 16:37	Tanya Welborn	1952256
EPA 200.7 Rev. 4.4	12/08/2017	12/11/2017	Elliott D. Healy	12/12/2017	Martin Acosta	1952260
EPA 300.0 Rev. 2.1	12/08/2017			12/13/2017	Julia Storbeck	1952256
EPA 350.1 Rev. 2.0	12/08/2017			12/21/2017	Sofia Elnemr	1952257
EPA 353.2 Rev. 2.0	12/08/2017			12/19/2017	Beverly Y. Sanders	1952257
EPA 365.1 Rev. 2.0	12/08/2017	12/15/2017	Sima Feizi	12/18/2017	Lipi Saha	1952257
SM 2120 B	12/08/2017			12/08/2017 15:55	Tanya Welborn	1952256
SM 2320 B-97	12/08/2017			12/15/2017	Dale L. Simmons	1952256
SM 2540 C-97	12/08/2017			12/08/2017	Yijie Li	1952256
SM 2540 D-97	12/08/2017			12/08/2017	Yijie Li	1952256
SM 4500 F-C-97	12/08/2017			12/15/2017	Dale L. Simmons	1952256
SM 5310 B-00	12/08/2017			12/12/2017	Ping Hua	1952257