

Biological Analysis Report

NW-DIST-2018-05-22-02

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

Overflow Analyses Performed By:
University of West Florida
11000 University Parkway
Pensacola, FL 32514
DOH Accreditation E71969

Event Description: **Project Greenshores**
Request ID: **RQ-2018-05-21-15**
Customer: **NW-DIST**
Project ID: **DISTRICT**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

For additional information please contact
Cheryl Swanson - Administrator
J. Marshall Faircloth - Aquatic Toxicology
Jacqueline Savage - Bench Biology
Jacqueline Savage - Microbiology
Puja Jasrotia, Ph.D. - Molecular Biology
Cheryl Swanson - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Jacqueline Savage, Environmental Manager

Date Certified: 09-JUL-2018 16:52

A handwritten signature in black ink that reads "Jackie Savage". The signature is written in a cursive, flowing style.

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: Chlorophyll/Grain Size/BOD and Overflow.

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: Range Marker E. of Texar

Collection Date/Time: 05/21/2018 10:04

Field ID: 1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994435	SM 10200 H (mod.)	Chlorophyll-a, Corrected	4.6		ug/L	P346080	
		Phaeophytin-a	1.7		ug/L	P346080	
		Chlorophyll-a, Uncorrected	5.8		ug/L	P346080	
1994449	Enterolert/QT	Enterococci-Quanti-Tray	30		MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: 1/2 Bridge and Muscogee

Collection Date/Time: 05/21/2018 10:16

Field ID: 2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994436	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.4		ug/L	P346080	
		Phaeophytin-a	0.40	U	ug/L	P346080	
		Chlorophyll-a, Uncorrected	3.6		ug/L	P346080	
1994450	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: East of Primary Stormdrain PGS1

Collection Date/Time: 05/21/2018 10:25

Field ID: 3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994437	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.5		ug/L	P346080	
		Phaeophytin-a	0.40	U	ug/L	P346080	
		Chlorophyll-a, Uncorrected	3.8		ug/L	P346080	
1994451	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: 100 ft S. of Stormdrain

Collection Date/Time: 05/21/2018 10:35

Field ID: 4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994438	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.7		ug/L	P346080	
		Phaeophytin-a	0.40	U	ug/L	P346080	
		Chlorophyll-a, Uncorrected	4.0		ug/L	P346080	
1994452	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: End of Chase St.

Collection Date/Time: 05/21/2018 10:49

Field ID: 5

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994439	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.0		ug/L	P346080	

Field ID: 5

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994439	SM 10200 H (mod.)	Phaeophytin-a	0.40	U	ug/L	P346080	
		Chlorophyll-a, Uncorrected	3.2		ug/L	P346080	
1994453	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: 1/2 Muscogee and Hawkshaw 400 ft from Shore Collection Date/Time: 05/21/2018 10:55**Field ID: 6**

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994440	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.4		ug/L	P346080	
		Phaeophytin-a	0.40	U	ug/L	P346080	
		Chlorophyll-a, Uncorrected	3.6		ug/L	P346080	
1994454	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: 1/2 Bridge and Port**Collection Date/Time: 05/21/2018 11:02****Field ID: 7**

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994441	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.4		ug/L	P346080	
		Phaeophytin-a	0.40	U	ug/L	P346080	
		Chlorophyll-a, Uncorrected	3.5		ug/L	P346080	
1994455	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: West of Stormdrain Inside Rocks**Collection Date/Time: 05/21/2018 10:43****Field ID: 8**

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994442	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.5		ug/L	P346080	
		Phaeophytin-a	0.40	U	ug/L	P346080	
		Chlorophyll-a, Uncorrected	2.8		ug/L	P346080	
1994456	Enterolert/QT	Enterococci-Quanti-Tray	10		MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: West End of Hawkshaw 100ft S. of Outfall**Collection Date/Time: 05/21/2018 11:23****Field ID: 9**

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994443	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.8		ug/L	P346080	
		Phaeophytin-a	0.40	U	ug/L	P346080	
		Chlorophyll-a, Uncorrected	3.1		ug/L	P346080	

Field ID: 9

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994457	Enterolert/QT	Enterococci-Quanti-Tray	31		MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: Between Marina and Outfall

Collection Date/Time: 05/21/2018 11:19

Field ID: 10

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994444	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.6		ug/L	P346080	
		Phaeophytin-a	0.45	U	ug/L	P346080	
		Chlorophyll-a, Uncorrected	3.9		ug/L	P346080	
1994458	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: Entrance of Marina

Collection Date/Time: 05/21/2018 11:13

Field ID: 11

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994445	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.6		ug/L	P346104	
		Phaeophytin-a	0.58	I	ug/L	P346104	
		Chlorophyll-a, Uncorrected	3.0		ug/L	P346104	
1994459	Enterolert/QT	Enterococci-Quanti-Tray	52		MPN/100 mL		

Sample Location: 1/4 Between Bridge and Port 400ft from Shore

Collection Date/Time: 05/21/2018 11:07

Field ID: 12

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994446	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.6		ug/L	P346104	
		Phaeophytin-a	0.40	U	ug/L	P346104	
		Chlorophyll-a, Uncorrected	3.7		ug/L	P346104	
1994460	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

Sample Location: Inside Hawkshaw Lagoon

Collection Date/Time: 05/21/2018 11:40

Field ID: 13

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994447	SM 10200 H (mod.)	Chlorophyll-a, Corrected	20		ug/L	P346104	
		Phaeophytin-a	3.1		ug/L	P346104	
		Chlorophyll-a, Uncorrected	22		ug/L	P346104	
1994461	Enterolert/QT	Enterococci-Quanti-Tray	10		MPN/100 mL		

Sample Location: East of Stormdrain Inside PGSII

Collection Date/Time: 05/21/2018 11:45

Field ID: 14

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
-----------	-------------	-----------	--------	------	-------	----------	----------

Field ID: 14

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994448	SM 10200 H (mod.)	Chlorophyll-a, Corrected	3.6		ug/L	P346104	
		Phaeophytin-a	0.68	I	ug/L	P346104	
		Chlorophyll-a, Uncorrected	4.2		ug/L	P346104	
1994462	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
 Batch ID: P346080

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Reference Method: SM 10200 H (mod.)
 Batch ID: P346104

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.55	U	ug/L
Chlorophyll-a, Uncorrected	0.40	U	ug/L
Phaeophytin-a	0.40	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
 Batch ID: P346080

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	96.4		P	84 - 116

Reference Method: SM 10200 H (mod.)
 Batch ID: P346104

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	94.4		P	84 - 116

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
 Batch ID: P346080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994427	Chlorophyll-a, Corrected	3.69	Sample	P	0 - 25
1994427	Chlorophyll-a, Uncorrected	4.29	Sample	P	0 - 25

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P346104

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994531	Chlorophyll-a, Corrected	7.58	Sample	P	0 - 25
1994531	Chlorophyll-a, Uncorrected	7.31	Sample	P	0 - 25
1994531	Phaeophytin-a	4.33	Sample	P	0 - 25

* 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 Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
SM 10200 H (mod.)	Chlorophyll-a, Corrected	96.4			3.69	
	Chlorophyll-a, Corrected	94.4			7.58	
	Chlorophyll-a, Uncorrected				4.29	
	Chlorophyll-a, Uncorrected				7.31	
	Phaeophytin-a				4.33	

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
Enterolert/QT / E71969	Enterococci by Enterolert Quanti-Tray method by UWF Overflow Laboratory for NWD	1994449, 1994450, 1994451, 1994452, 1994453, 1994454, 1994455, 1994456, 1994457, 1994458, 1994459, 1994460, 1994461, 1994462
SM 10200 H (mod.) / E31780	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	1994435, 1994436, 1994437, 1994438, 1994439, 1994440, 1994441, 1994442, 1994443, 1994444, 1994445, 1994446, 1994447, 1994448

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	05/21/2018	05/21/2018 15:35		05/22/2018 16:00	UWF Lab	1994449, 1994450, 1994451, 1994452, 1994453, 1994454, 1994455, 1994456, 1994457, 1994458, 1994459, 1994460, 1994461, 1994462
SM 10200 H (mod.)	05/22/2018	05/22/2018 13:00	Mariam Hanna	05/29/2018 08:25	Carina A. Tull	1994435, 1994436, 1994437, 1994438, 1994439, 1994440, 1994441, 1994442, 1994443, 1994444
	05/22/2018	05/22/2018 13:00	Mariam Hanna	05/29/2018 09:10	Carina A. Tull	1994445, 1994446, 1994447, 1994448