Chemical Analysis Report

SO-DIST-2017-09-28-02

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

Event Description: **Sanibel Dune Lakes**
Request ID: **RQ-2017-09-25-34**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Maryann Dugan

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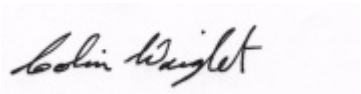
Certified by: Colin Wright, Program Administrator

Date Certified: 23-OCT-2017 11:30



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: Dunes Lake Discharge Weir Downstream **Collection Date/Time: 09/27/2017 10:45**

Field ID: DL04WeirDS Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1932419	EPA 180.1 Rev. 2.0	Turbidity	6.5	Q	NTU	P333568	
	EPA 300.0 Rev. 2.1	Chloride	1.7E+03		mg Cl/L	P332900	
		Sulfate	250		mg SO4/L	P332904	
	SM 2120 B	Color (true)	73	A	PCU	P332391	
	SM 2320 B-97	Total Alkalinity	191		mg CaCO3/L	P332839	
	SM 2540 C-97	TDS	3.41E+03		mg/L	P333019	
	SM 2540 D-97	TSS	4	I	mg/L	P332547	
	SM 4500 F-C-97	Fluoride	0.55		mg F/L	P332842	
1932420	EPA 350.1 Rev. 2.0	Ammonia-N	0.59		mg N/L	P332820	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.7		mg N/L	P332594	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P332771	
	EPA 365.1 Rev. 2.0	Total-P	0.27		mg P/L	P332624	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P332615	
1932421	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.14		mg P/L	P332411	

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The sample was reanalyzed out of holding time due to analytical difficulties.
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: P333568

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332900

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332904

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332820

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332594

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: P332771

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332624

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P332411

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

Reference Method: SM 2120 B
Batch ID: P332391

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P332839

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

Reference Method: SM 2540 C-97
Batch ID: P333019

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P332547

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P332842

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P332615

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: P332900

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332904

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: P332820

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: P332594

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P332771

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332624

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P332411

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

Reference Method: SM 2320 B-97
Batch ID: P332839

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P332842

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.4		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P332615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.7		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332900

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1933438	Chloride	96.8		P	90 - 110
1933439	Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332904

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1933438	Sulfate	94.8		P	90 - 110
1933439	Sulfate	93.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332820

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1931920	Ammonia-N	105	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332594

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932448	Kjeldahl Nitrogen	93.3	90.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P332771

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932352	NO2NO3-N	99.1	99.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932527	Total-P	94.9	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P332411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932290	O-Phosphate-P	95.0	97.4	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P332842

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932985	Fluoride	96.1	95.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P332615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932411	Organic Carbon	96.0	94.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P333568

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936944	Turbidity	2.26	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933438	Chloride	0.371	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933438	Sulfate	0.668	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1931920	Ammonia-N	0.878	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332594

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932448	Kjeldahl Nitrogen	2.64	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P332771

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: P332771

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932352	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932527	Total-P	0.335	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P332411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932290	O-Phosphate-P	2.11	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P332391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932419	Color (true)	1.22	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P332839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932985	Total Alkalinity	0.401	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P333019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1933567	TDS	5.46	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P332842

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932985	Fluoride	0.492	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P332615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932411	Organic Carbon	0.918	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: A79209
Included Lab Sample IDs: 1932419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	102	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A79216
Included Lab Sample IDs: 1932421

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.2	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A79302
Included Lab Sample IDs: 1932420

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.5	95.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A79342
Included Lab Sample IDs: 1932420

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.2	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A79346
Included Lab Sample IDs: 1932420

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	106	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A79348
Included Lab Sample IDs: 1932420

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A79368
Included Lab Sample IDs: 1932420

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A79374
Included Lab Sample IDs: 1932419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.2	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A79374
Included Lab Sample IDs: 1932419

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A79401
Included Lab Sample IDs: 1932419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	98.8	99.0	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A79632
Included Lab Sample IDs: 1932419

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

* 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					2.26	
EPA 300.0 Rev. 2.1	Chloride	97.7	96.8	97.2		0.371	
	Sulfate	94.5	94.8	93.8		0.668	
EPA 350.1 Rev. 2.0	Ammonia-N	103	105	104			0.878
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.7	93.3	90.1			2.64
EPA 353.2 Rev. 2.0	NO2NO3-N	103	99.1	99.1			0.0
EPA 365.1 Rev. 2.0	Total-P	99.2	94.9	95.2			0.335
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.8	95.0	97.4			2.11
SM 2120 B	Color (true)					1.22	
SM 2320 B-97	Total Alkalinity	101				0.401	
SM 2540 C-97	TDS					5.46	
SM 4500 F-C-97	Fluoride	95.4	96.1	95.6			0.492
SM 5310 B-00	Organic Carbon	96.7	96.0	94.9			0.918

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1932419
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1932419
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1932419
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1932420
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1932420
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1932420
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1932420
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1932421
SM 2120 B / E31780	True Color measured at 450 nm	1932419
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1932419
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1932419
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1932419
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1932419
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1932420

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	09/28/2017			10/17/2017 15:46	DeAsia Armster	1932419
EPA 300.0 Rev. 2.1	09/28/2017			10/05/2017	Julia Storbeck	1932419
EPA 350.1 Rev. 2.0	09/28/2017			10/05/2017	Sofia Elnemr	1932420
EPA 351.2 Rev. 2.0	09/28/2017	10/03/2017	Adrian Shelby	10/04/2017	Tanya Welborn	1932420
EPA 353.2 Rev. 2.0	09/28/2017			10/05/2017	Beverly Y. Sanders	1932420
EPA 365.1 Rev. 2.0	09/28/2017	10/03/2017	Sima Feizi	10/04/2017	Lipi Saha	1932420
EPA 365.1 Rev. 2.0 dissolved	09/28/2017			09/28/2017 14:42	Megan Treadwell	1932421
SM 2120 B	09/28/2017			09/28/2017 12:53	Tanya Welborn	1932419
SM 2320 B-97	09/28/2017			10/05/2017	Dale L. Simmons	1932419
SM 2540 C-97	09/28/2017			10/04/2017	Yijie Li	1932419
SM 2540 D-97	09/28/2017			09/29/2017	DeAsia Armster	1932419
SM 4500 F-C-97	09/28/2017			10/05/2017	Dale L. Simmons	1932419
SM 5310 B-00	09/28/2017			10/03/2017	Ping Hua	1932420