Chemical Analysis Report

SO-DIST-2017-09-20-02

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-2017-09-11-56**
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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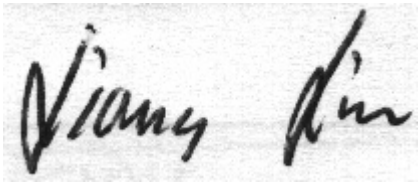
Certified by: Liang Lin, Environmental Administrator

Date Certified: 06-OCT-2017 14:05



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: Senibel Dunes Lakes (DL04) Weir DunesWeir Downstream **Collection Date/Time: 09/19/2017 08:30**

Field ID: Senibel Dunes Lakes (DL04) Wei Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1930042	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P331966	
	EPA 300.0 Rev. 2.1	Chloride	920		mg Cl/L	P331960	
		Sulfate	170		mg SO4/L	P331962	
	SM 2120 B	Color (true)	66		PCU	P331984	
	SM 2320 B-97	Total Alkalinity	153		mg CaCO3/L	P332043	
	SM 2540 C-97	TDS	2.11E+03		mg/L	P332441	
	SM 2540 D-97	TSS	6	I	mg/L	P332566	
	SM 4500 F-C-97	Fluoride	0.52		mg F/L	P332045	RPD
1930043	EPA 350.1 Rev. 2.0	Ammonia-N	0.19		mg N/L	P332112	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P332190	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P332205	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P332166	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P332139	
1930044	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.067		mg P/L	P331980	

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: P331966

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331960

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331962

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332112

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332190

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: P332205

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332166

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331980

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

Reference Method: SM 2120 B
Batch ID: P331984

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P332043

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

Reference Method: SM 2540 C-97
Batch ID: P332441

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P332566

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P332045

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P332139

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: P331960

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331962

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332112

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332190

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P332205

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332166

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331980

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	104		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P332043

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

Reference Method: SM 4500 F-C-97
Batch ID: P332045

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P332139

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331960

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1929607	Chloride	100		P	90 - 110
1929796	Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1929607	Sulfate	97.1		P	90 - 110
1929796	Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1930048	Ammonia-N	100	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332190

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1929951	Kjeldahl Nitrogen	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P332205

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1930043	NO2NO3-N	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1929908	Total-P	94.5	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331980

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1929894	O-Phosphate-P	95.4	97.3	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P332045

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1929886	Fluoride	96.6	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P332139

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1930157	Organic Carbon	99.5		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P331966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1930047	Turbidity	2.25	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331960

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1929607	Chloride	1.41	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P331962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1929607	Sulfate	0.394	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1930048	Ammonia-N	1.24	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332190

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1929951	Kjeldahl Nitrogen	0.775	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P332205

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: P332205

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1930043	NO2NO3-N	0.436	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1929908	Total-P	2.88	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P331980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1929894	O-Phosphate-P	1.97	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P331984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1929884	Color (true)	7.30	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P332043

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1929886	Total Alkalinity	0.111	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P332441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1930047	TDS	0.816	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P332045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1929886	Fluoride	3.43	Spike	F	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P332139

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1930157	Organic Carbon	0.0503	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: EPA 300.0 Rev. 2.1
Run ID: A78987
Included Lab Sample IDs: 1930042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	102	P/P	90 - 110
Sulfate	103	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A79048
Included Lab Sample IDs: 1930042

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A79053
Included Lab Sample IDs: 1930044

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

Reference Method: SM 2120 B
Run ID: A79054
Included Lab Sample IDs: 1930042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	105	105	P/P	85 - 115

Reference Method: SM 2320 B-97
Run ID: A79076
Included Lab Sample IDs: 1930042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.9	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A79076
Included Lab Sample IDs: 1930042

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A79109
Included Lab Sample IDs: 1930043

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 5310 B-00
Run ID: A79120
Included Lab Sample IDs: 1930043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.3	95.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A79142
Included Lab Sample IDs: 1930043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A79150
Included Lab Sample IDs: 1930043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A79186
Included Lab Sample IDs: 1930043

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.0	98.7	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					2.25	
EPA 300.0 Rev. 2.1	Chloride	99.3	100	99.1		1.41	
	Sulfate	97.9	97.1	97.3		0.394	
EPA 350.1 Rev. 2.0	Ammonia-N	104	100	99.1			1.24
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.8	101	102			0.775
EPA 353.2 Rev. 2.0	NO2NO3-N	106	106	107			0.436
EPA 365.1 Rev. 2.0	Total-P	97.8	94.5	97.3			2.88
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	95.4	97.3			1.97
SM 2120 B	Color (true)					7.30	
SM 2320 B-97	Total Alkalinity	101				0.111	
SM 2540 C-97	TDS					0.816	
SM 4500 F-C-97	Fluoride	98.8	96.6	101			3.43
SM 5310 B-00	Organic Carbon	96.1	99.5				0.0503

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1930042
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1930042
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1930042
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1930043
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1930043
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1930043
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1930043
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1930044
SM 2120 B / E31780	True Color measured at 450 nm	1930042
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1930042
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1930042
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1930042
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1930042
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1930043

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	09/20/2017			09/20/2017 16:03	DeAsia Armster	1930042
EPA 300.0 Rev. 2.1	09/20/2017			09/22/2017	Julia Storbeck	1930042
EPA 350.1 Rev. 2.0	09/20/2017			09/22/2017	Sofia Elnemr	1930043
EPA 351.2 Rev. 2.0	09/20/2017	09/25/2017	Adrian Shelby	09/27/2017	Joseph Suarez	1930043
EPA 353.2 Rev. 2.0	09/20/2017			09/22/2017	Beverly Y. Sanders	1930043
EPA 365.1 Rev. 2.0	09/20/2017	09/25/2017	Sima Feizi	09/26/2017	Lipi Saha	1930043
EPA 365.1 Rev. 2.0 dissolved	09/20/2017			09/20/2017 15:07	Megan Treadwell	1930044
SM 2120 B	09/20/2017			09/20/2017 16:13	Tanya Welborn	1930042
SM 2320 B-97	09/20/2017			09/22/2017	Dale L. Simmons	1930042
SM 2540 C-97	09/20/2017			09/25/2017	Yijie Li	1930042
SM 2540 D-97	09/20/2017			09/25/2017	Yijie Li	1930042
SM 4500 F-C-97	09/20/2017			09/22/2017	Dale L. Simmons	1930042
SM 5310 B-00	09/20/2017			09/23/2017	Ping Hua	1930043