Chemical Analysis Report

SO-DIST-2017-10-11-01

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-2017-10-09-11**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
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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: DL04 Weir Downstream **Collection Date/Time: 10/09/2017 14:30**

Field ID: Dunes Weir Downstream Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1935842	EPA 180.1 Rev. 2.0	Turbidity	18	Q	NTU	P333194	
	EPA 300.0 Rev. 2.1	Chloride	3.6E+03		mg Cl/L	P333258	
		Sulfate	460		mg SO4/L	P333262	
	SM 2120 B	Color (true)	83	Q	PCU	P333203	
	SM 2320 B-97	Total Alkalinity	184		mg CaCO3/L	P333538	
	SM 2540 C-97	TDS	6.53E+03	A	mg/L	P333886	
	SM 2540 D-97	TSS	8	I	mg/L	P333548	
	SM 4500 F-C-97	Fluoride	0.60		mg F/L	P333541	
1935843	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P333390	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P333457	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P333421	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P333271	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P333991	
1935844	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.037	Q	mg P/L	P333216	

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The sample expired upon receipt.
SM 2120 B: The sample expired upon receipt.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample expired upon receipt.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P333194

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333258

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333262

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333390

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333457

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333421

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333271

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333216

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

Reference Method: SM 2120 B
Batch ID: P333203

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P333538

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

Reference Method: SM 2540 C-97
Batch ID: P333886

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P333548

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P333541

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: P333991

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: P333258

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333262

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333390

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333457

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	109		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333421

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: P333271

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333216

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.1		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P333538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P333538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P333541

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P333991

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935913	Chloride	108		P	90 - 110
1936144	Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333262

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935913	Sulfate	106		P	90 - 110
1936144	Sulfate	105		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333457

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935669	Kjeldahl Nitrogen	102	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935838	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333271

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935701	Total-P	97.1	102	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333216

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935699	O-Phosphate-P	94.6	95.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P333541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1936092	Fluoride	98.3	96.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P333991

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1935843	Organic Carbon	90.0	89.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P333194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935768	Turbidity	5.66	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936144	Chloride	0.247	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P333262

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936144	Sulfate	0.413	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P333390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1934985	Ammonia-N	1.26	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P333457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935669	Kjeldahl Nitrogen	3.20	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P333421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935838	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P333271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935701	Total-P	4.82	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P333216

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935699	O-Phosphate-P	0.758	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P333203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935544	Color (true)	2.16	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P333538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936092	Total Alkalinity	0.292	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P333886

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935842	TDS	6.25	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P333541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1936092	Fluoride	0.986	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P333991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1935843	Organic Carbon	0.148	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: A79473
Included Lab Sample IDs: 1935842

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	108	107	P/P	90 - 110
Sulfate	104	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A79495
Included Lab Sample IDs: 1935842

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

Reference Method: SM 2120 B
Run ID: A79497
Included Lab Sample IDs: 1935842

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A79502
Included Lab Sample IDs: 1935844

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.4	97.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A79555
Included Lab Sample IDs: 1935843

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A79567
Included Lab Sample IDs: 1935843

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A79568
Included Lab Sample IDs: 1935843

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A79625
Included Lab Sample IDs: 1935842

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

Reference Method: SM 4500 F-C-97
Run ID: A79625
Included Lab Sample IDs: 1935842

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A79645
Included Lab Sample IDs: 1935843

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	98.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A79779
Included Lab Sample IDs: 1935843

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.4	91.4	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					5.66	
EPA 300.0 Rev. 2.1	Chloride	105	106	108		0.247	
	Sulfate	104	105	106		0.413	
EPA 350.1 Rev. 2.0	Ammonia-N	98.0					1.26
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	109	102	107			3.20
EPA 353.2 Rev. 2.0	NO2NO3-N	106	106	106			0.0
EPA 365.1 Rev. 2.0	Total-P	104	97.1	102			4.82
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	94.6	95.9			0.758
SM 2120 B	Color (true)					2.16	
SM 2320 B-97	Total Alkalinity	102				0.292	
SM 2540 C-97	TDS					6.25	
SM 4500 F-C-97	Fluoride	98.9	98.3	96.9			0.986
SM 5310 B-00	Organic Carbon	96.2	90.0	89.8			0.148

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	1935842
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1935842
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1935842
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1935843
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1935843
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1935843
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1935843
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1935844
SM 2120 B / E31780	True Color measured at 450 nm	1935842
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1935842
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1935842
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1935842
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1935842
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1935843

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	10/11/2017			10/11/2017 16:38	DeAsia Armster	1935842
EPA 300.0 Rev. 2.1	10/11/2017			10/12/2017	Julia Storbeck	1935842
EPA 350.1 Rev. 2.0	10/11/2017			10/13/2017	Sofia Elnemr	1935843
EPA 351.2 Rev. 2.0	10/11/2017	10/16/2017	Sofia Elnemr	10/18/2017	Joseph Suarez	1935843
EPA 353.2 Rev. 2.0	10/11/2017			10/16/2017	Beverly Y. Sanders	1935843
EPA 365.1 Rev. 2.0	10/11/2017	10/12/2017	Sima Feizi	10/13/2017	Lipi Saha	1935843
EPA 365.1 Rev. 2.0 dissolved	10/11/2017			10/11/2017 15:56	Megan Treadwell	1935844
SM 2120 B	10/11/2017			10/11/2017 16:57	Julia Storbeck	1935842
SM 2320 B-97	10/11/2017			10/18/2017	Dale L. Simmons	1935842
SM 2540 C-97	10/11/2017			10/16/2017	DeAsia Armster	1935842
SM 2540 D-97	10/11/2017			10/13/2017	DeAsia Armster	1935842
SM 4500 F-C-97	10/11/2017			10/17/2017	Dale L. Simmons	1935842
SM 5310 B-00	10/11/2017			10/24/2017	Ping Hua	1935843