

Chemical Analysis Report

SO-DIST-2016-10-20-01

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

Event Description: **SMP: Marco Island**
Request ID: **RQ-2016-10-17-62**
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: Ben Paswater

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 16-NOV-2016 09:19

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored 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 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: 3278P @ #4 SOUTH OF GOODLAND

Collection Date/Time: 10/19/2016 13:00

Field ID: G1SD0037-1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842437	EPA 180.1 Rev. 2.0	Turbidity	6.6		NTU	P313581	
	SM 2320 B-97	Total Alkalinity	139		mg CaCO3/L	P313685	
	SM 2540 D-97	TSS	16		mg/L	P314026	
	SM 4500 F-C-97	Fluoride	1.3		mg F/L	P313687	
1842439	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P314550	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P314680	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P313899	
	EPA 365.1 Rev. 2.0	Total-P	0.044		mg P/L	P314228	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P313763	
1842441	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P313596	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The result was confirmed on 11/01/2016.

Sample Location: 3278P @ #4 SOUTH OF GOODLAND DUP

Collection Date/Time: 10/19/2016 13:05

Field ID: G1SD0037-2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842438	EPA 180.1 Rev. 2.0	Turbidity	5.6		NTU	P313581	
	SM 2320 B-97	Total Alkalinity	138		mg CaCO3/L	P313685	
	SM 2540 D-97	TSS	20		mg/L	P314026	
	SM 4500 F-C-97	Fluoride	1.2		mg F/L	P313687	
1842440	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P314550	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P314680	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P313899	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P314228	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P313763	
1842442	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P313596	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The result was confirmed on 11/01/2016.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P313581

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P314550

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: P314680

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313899

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314228

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313596

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

Reference Method: SM 2320 B-97
Batch ID: P313685

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

Reference Method: SM 2540 D-97
Batch ID: P314026

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P313763

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314550

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314550

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: P314680

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313899

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314228

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313596

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

Reference Method: SM 2320 B-97
Batch ID: P313685

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P313763

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314550

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1841595	Ammonia-N	104	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842539	Kjeldahl Nitrogen	96.8	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313899

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1840428	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314228

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842031	Total-P	94.4	96.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313596

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842485	O-Phosphate-P	99.9	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842529	Fluoride	95.6	97.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P313763

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842031	Organic Carbon	96.9	94.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P313581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842283	Turbidity	0.840	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1841595	Ammonia-N	1.61	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842539	Kjeldahl Nitrogen	0.997	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313899

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1840428	NO2NO3-N	1.32	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314228

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842031	Total-P	2.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842485	O-Phosphate-P	1.37	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P313685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842529	Total Alkalinity	0.284	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842529	Fluoride	0.959	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P313763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842031	Organic Carbon	2.30	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 180.1 Rev. 2.0
Run ID: A72346
Included Lab Sample IDs: 1842437, 1842438

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A72349
Included Lab Sample IDs: 1842441, 1842442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	103	102	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A72377
Included Lab Sample IDs: 1842437, 1842438

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A72377
Included Lab Sample IDs: 1842437, 1842438

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

Reference Method: SM 5310 B-00
Run ID: A72401
Included Lab Sample IDs: 1842439, 1842440

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72436
Included Lab Sample IDs: 1842439, 1842440

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72588
Included Lab Sample IDs: 1842439, 1842440

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	102	P/P	90 - 110
Total-P	98.5	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72604
Included Lab Sample IDs: 1842439, 1842440

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72704
Included Lab Sample IDs: 1842439, 1842440

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	97.4	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.840	
EPA 350.1 Rev. 2.0	Ammonia-N	104	104 106			1.61
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	96.8 98.0			0.997
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104 103			1.32
EPA 365.1 Rev. 2.0	Total-P	98.2	94.4 96.7			2.20
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105	99.9 98.4			1.37
SM 2320 B-97	Total Alkalinity	105			0.284	
SM 4500 F-C-97	Fluoride	97.1	95.6 97.1			0.959
SM 5310 B-00	Organic Carbon	100	96.9 94.3			2.30

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1842437, 1842438
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1842439, 1842440
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1842439, 1842440
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1842439, 1842440
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1842439, 1842440
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1842441, 1842442
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1842437, 1842438
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1842437, 1842438
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1842437, 1842438
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1842439, 1842440

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	10/20/2016			10/20/2016 15:29	Sima Feizi	1842437, 1842438
EPA 350.1 Rev. 2.0	10/20/2016			11/03/2016	Sofia Elnemr	1842439, 1842440
EPA 351.2 Rev. 2.0	10/20/2016	11/07/2016	Adrian Shelby	11/08/2016	Joseph Suarez	1842439, 1842440
EPA 353.2 Rev. 2.0	10/20/2016			10/26/2016	Beverly Y. Sanders	1842439, 1842440
EPA 365.1 Rev. 2.0	10/20/2016	10/31/2016	Vijayalakshmi Reddy	11/01/2016	Lipi Saha	1842439, 1842440
EPA 365.1 Rev. 2.0 dissolved	10/20/2016			10/20/2016 15:43	Julia Storbeck	1842441
	10/20/2016			10/20/2016 15:44	Julia Storbeck	1842442
SM 2320 B-97	10/20/2016			10/22/2016	Dale L. Simmons	1842437, 1842438
SM 2540 D-97	10/20/2016			10/24/2016	Sima Feizi	1842437, 1842438
SM 4500 F-C-97	10/20/2016			10/22/2016	Dale L. Simmons	1842437, 1842438
SM 5310 B-00	10/20/2016			10/25/2016	Julie Michelle Frank	1842439, 1842440