Chemical Analysis Report

SW-DIST-2019-11-05-02

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

Event Description: **Horsehole - WBID 3703**
Request ID: **RQ-2019-11-04-20**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
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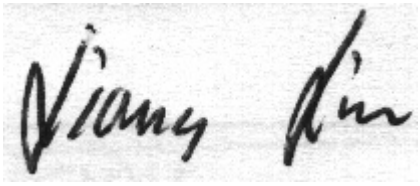
Date Certified: 22-NOV-2019 13:53



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Horsehole Creek @ 19 **Collection Date/Time: 11/04/2019 12:47**

Field ID: G1SW0103 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2133788	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P373813	
	EPA 300.0 Rev. 2.1	Chloride	9.6		mg Cl/L	P374254	
		Sulfate	1.2		mg SO4/L	P374257	
	SM 2120 B	Color (true)	140		PCU	P373732	
	SM 2320 B-97	Total Alkalinity	76		mg CaCO3/L	P374211	
	SM 2540 C-97	TDS	130	A	mg/L	P374060	
	SM 2540 D-97	TSS	6	I A	mg/L	P374031	
	SM 4500 F-C-97	Fluoride	0.045	I	mg F/L	P374214	
2133789	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P374131	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.60		mg N/L	P374073	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P373939	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P374299	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P374115	
2133790	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P373715	

Ref. Method and Comment:
SM 2120 B: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
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: P373813

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374254

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374257

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374131

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374073

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373939

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374299

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373715

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

Reference Method: SM 2120 B
Batch ID: P373732

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P374211

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

Reference Method: SM 2540 C-97
Batch ID: P374060

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P374031

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P374214

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P374115

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: P374254

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374257

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374131

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374073

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373939

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: P374299

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373715

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

Reference Method: SM 2120 B
Batch ID: P373732

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

Reference Method: SM 2320 B-97
Batch ID: P374211

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P374214

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

Reference Method: SM 5310 B-00
Batch ID: P374115

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	105		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374254

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133723	Chloride	101		P	90 - 110
2133887	Chloride	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374257

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133723	Sulfate	99.5		P	90 - 110
2133887	Sulfate	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374131

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133840	Ammonia-N	99.5	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133838	Kjeldahl Nitrogen	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133745	NO2NO3-N	99.8	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374299

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133743	Total-P	99.8	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133790	O-Phosphate-P	95.9	95.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P374214

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133723	Fluoride	99.1	98.4	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P374115

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2133874	Organic Carbon	103	103	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P373813

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133462	Turbidity	19.4	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374254

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133723	Chloride	0.235	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P374257

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133723	Sulfate	0.205	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P374131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133840	Ammonia-N	2.93	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P374073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133838	Kjeldahl Nitrogen	1.99	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P373939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133745	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P374299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133743	Total-P	0.269	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P373715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133790	O-Phosphate-P	0.705	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-97
Batch ID: P374211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133723	Total Alkalinity	0.251	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P374060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133788	TDS	6.95	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P374214

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133723	Fluoride	0.524	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P374115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2133874	Organic Carbon	0.493	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A95489
Included Lab Sample IDs: 2133790

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	98.5	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A95502
Included Lab Sample IDs: 2133788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A95526
Included Lab Sample IDs: 2133788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A95595
Included Lab Sample IDs: 2133789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A95686
Included Lab Sample IDs: 2133789

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A95691
Included Lab Sample IDs: 2133789

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A95706
Included Lab Sample IDs: 2133789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	105	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A95725
Included Lab Sample IDs: 2133788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.5	105	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A95725
Included Lab Sample IDs: 2133788

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A95765
Included Lab Sample IDs: 2133788

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.7	101	P/P	90 - 110
Sulfate	98.6	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A95807
Included Lab Sample IDs: 2133789

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	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					19.4	
EPA 300.0 Rev. 2.1	Chloride	101	101	98.5		0.235	
	Sulfate	100	99.5	98.5		0.205	
EPA 350.1 Rev. 2.0	Ammonia-N	101	99.5	103			2.93
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	101	103			1.99
EPA 353.2 Rev. 2.0	NO2NO3-N	103	99.8	99.3			0.487
EPA 365.1 Rev. 2.0	Total-P	101	99.8	100			0.269
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	95.9	95.0			0.705
SM 2120 B	Color (true)	103					
SM 2320 B-97	Total Alkalinity	101				0.251	
SM 2540 C-97	TDS					6.95	
SM 4500 F-C-97	Fluoride	98.8	99.1	98.4			0.524
SM 5310 B-00	Organic Carbon	105	103	103			0.493

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2133788
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2133788
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2133788
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2133789
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2133789
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2133789
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2133789
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2133790
SM 2120 B / E31780	True Color measured at 450 nm	2133788
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2133788
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2133788
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2133788
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2133788
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2133789

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	11/05/2019			11/06/2019 12:47	Rosalyn Ballman	2133788
EPA 300.0 Rev. 2.1	11/05/2019			11/14/2019 22:09	Lipi Saha	2133788
EPA 350.1 Rev. 2.0	11/05/2019			11/12/2019 12:16	Ping Hua	2133789
EPA 351.2 Rev. 2.0	11/05/2019	11/12/2019 13:35	Sima Feizi	11/13/2019 17:33	Jhamieka S. Greenwood	2133789
EPA 353.2 Rev. 2.0	11/05/2019			11/07/2019 11:29	Beverly Y. Sanders	2133789
EPA 365.1 Rev. 2.0	11/05/2019	11/15/2019 13:05	Yen Ta	11/18/2019 16:51	Benjamin T. Nordmann	2133789
EPA 365.1 Rev. 2.0 dissolved	11/05/2019			11/05/2019 14:02	Ping Hua	2133790
SM 2120 B	11/05/2019			11/05/2019 17:46	Madeline Funaro	2133788
SM 2320 B-97	11/05/2019			11/14/2019 04:22	Dale L. Simmons	2133788
SM 2540 C-97	11/05/2019			11/06/2019 14:36	Yijie Li	2133788
SM 2540 D-97	11/05/2019			11/06/2019 14:36	Yijie Li	2133788
SM 4500 F-C-97	11/05/2019			11/14/2019 04:22	Dale L. Simmons	2133788
SM 5310 B-00	11/05/2019			11/12/2019 21:19	Madeline Funaro	2133789