Chemical Analysis Report

NW-DIST-2016-05-27-02

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

Event Description: **TMDL Bioassessment**
Request ID: **RQ-2016-06-06-22**
Customer: **NW-DIST**
Project ID: **SMP**

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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: Yellow River **Collection Date/Time: 05/26/2016 12:30**

Field ID: G4NW0384 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802713	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P305301	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P305568	
		Sulfate	1.2		mg SO4/L	P305571	
	SM 2120 B	Color (true)	72		PCU	P305213	
	SM 2320 B-97	Total Alkalinity	7.9		mg CaCO3/L	P305749	
	SM 2540 C-97	TDS	40		mg/L	P305709	
	SM 2540 D-97	TSS	13		mg/L	P305637	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P305752	
1802714	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P305664	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30		mg N/L	P305557	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P305441	
	EPA 365.1 Rev. 2.0	Total-P	0.030		mg P/L	P305790	
	SM 5310 B-00	Organic Carbon	4.8		mg C/L	P306094	
1802715	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017		mg P/L	P305207	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: The precision data is unavailable due to low analyte concentration in the QC sample.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305301

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305568

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305571

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305664

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305557

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: P305441

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305790

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305207

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

Reference Method: SM 2120 B
Batch ID: P305213

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305749

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

Reference Method: SM 2540 C-97
Batch ID: P305709

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305637

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P306094

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: P305568

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305571

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305664

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305557

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305441

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305790

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305207

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

Reference Method: SM 2320 B-97
Batch ID: P305749

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P306094

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: P305568

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802670	Chloride	98.8		P	90 - 110
1802713	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305571

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802670	Sulfate	99.1		P	90 - 110
1802713	Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802739	Ammonia-N	99.6	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305557

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802714	Kjeldahl Nitrogen	96.6	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305441

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802739	NO2NO3-N	97.2	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802742	Total-P	97.5	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802567	Fluoride	97.4	97.4	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P306094

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802732	Organic Carbon	103		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802671	Turbidity	3.46	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305568

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802670	Chloride	0.312	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802739	Ammonia-N	0.486	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802714	Kjeldahl Nitrogen	5.15	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802739	NO2NO3-N	0.683	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802742	Total-P	0.433	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305207

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802745	O-Phosphate-P	1.69	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305213

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802649	Color (true)	1.21	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P305749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802567	Total Alkalinity	0.672	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P305709

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802731	TDS	5.03	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802567	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P306094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802732	Organic Carbon	1.90	Spike	P	0 - 20

* 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 365.1 Rev. 2.0 dissolved
Run ID: A69738
Included Lab Sample IDs: 1802715

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A69740
Included Lab Sample IDs: 1802713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.7	99.7	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69767
Included Lab Sample IDs: 1802713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A69804
Included Lab Sample IDs: 1802714

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	97.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A69814
Included Lab Sample IDs: 1802713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	99.9	96.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A69862
Included Lab Sample IDs: 1802714

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A69882
Included Lab Sample IDs: 1802714

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.8	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A69906
Included Lab Sample IDs: 1802713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A69906
Included Lab Sample IDs: 1802713

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A69970
Included Lab Sample IDs: 1802714

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.0	97.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A70009
Included Lab Sample IDs: 1802714

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	99.8	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					3.46	
EPA 300.0 Rev. 2.1	Chloride	99.7	98.8	101		0.312	
	Sulfate	98.4	99.1	99.4			
EPA 350.1 Rev. 2.0	Ammonia-N	99.5	99.6	100			0.486
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.9	96.6	103			5.15
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	97.2	98.2			0.683
EPA 365.1 Rev. 2.0	Total-P	102	97.5	98.0			0.433
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100					1.69
SM 2120 B	Color (true)					1.21	
SM 2320 B-97	Total Alkalinity	102				0.672	
SM 2540 C-97	TDS					5.03	
SM 4500 F-C-97	Fluoride	96.7	97.4	97.4			0.0
SM 5310 B-00	Organic Carbon	105	103				1.90

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1802713
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1802713
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1802713
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1802714
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1802714
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1802714
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1802714
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1802715

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2120 B / E31780	True Color measured at 450 nm	1802713
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1802713
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1802713
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1802713
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1802713
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1802714

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	05/27/2016			05/27/2016 16:00	Blanca Fach	1802713
EPA 300.0 Rev. 2.1	05/27/2016			06/03/2016	Elisa J Lutz	1802713
EPA 350.1 Rev. 2.0	05/27/2016			06/06/2016	Diana M. Turner	1802714
EPA 351.2 Rev. 2.0	05/27/2016	06/03/2016	Sofia Elnemr	06/07/2016	Christopher Armour	1802714
EPA 353.2 Rev. 2.0	05/27/2016			06/02/2016	Peter D. Kaus	1802714
EPA 365.1 Rev. 2.0	05/27/2016	06/08/2016	Vijayalakshmi Reddy	06/10/2016	Virginia P. Brown	1802714
EPA 365.1 Rev. 2.0 dissolved	05/27/2016			05/27/2016 15:07	Julia Storbeck	1802715
SM 2120 B	05/27/2016			05/27/2016 16:55	Chrisoulla Rakowski	1802713
SM 2320 B-97	05/27/2016			06/07/2016	Dale L. Simmons	1802713
SM 2540 C-97	05/27/2016			06/01/2016	Yijie Li	1802713
SM 2540 D-97	05/27/2016			06/01/2016	Yijie Li	1802713
SM 4500 F-C-97	05/27/2016			06/07/2016	Dale L. Simmons	1802713
SM 5310 B-00	05/27/2016			06/10/2016	Diana M. Turner	1802714