Chemical Analysis Report

NW-DIST-2017-04-13-01

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-2017-04-03-73**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
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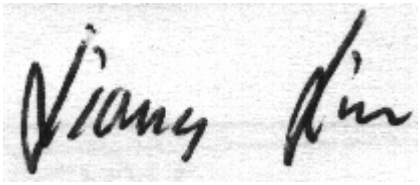
Certified by: Liang Lin, Environmental Administrator

Date Certified: 10-MAY-2017 14:18



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: Deer Moss Creek above Stormwater Rond **Collection Date/Time: 04/12/2017 11:35**

Field ID: G3NW0139 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1888726	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P323528	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P324107	
		Sulfate	12		mg SO4/L	P323864	
	SM 2120 B	Color (true)	5.6	I	PCU	P323337	
	SM 2320 B-97	Total Alkalinity	28	A	mg CaCO3/L	P323889	
	SM 2540 C-97	TDS	88		mg/L	P324100	
	SM 2540 D-97	TSS	2	U	mg/L	P323933	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P324403	
1888727	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P323348	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P323555	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.5		mg N/L	P323721	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P323697	
	SM 5310 B-00	Organic Carbon	1.4		mg C/L	P323466	
1888728	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.054		mg P/L	P323342	

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: P323528

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323864

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324107

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323348

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323555

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: P323721

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323697

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323342

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

Reference Method: SM 2120 B
Batch ID: P323337

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P323889

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

Reference Method: SM 2540 C-97
Batch ID: P324100

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P323933

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P324403

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P323466

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: P323864

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324107

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323348

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323555

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323721

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323697

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323342

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.9		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P323889

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

Reference Method: SM 4500 F-C-97
Batch ID: P324403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.7		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P323466

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323864

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888661	Sulfate	100		P	90 - 110
1888829	Sulfate	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324107

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888662	Chloride	102		P	90 - 110
1888828	Chloride	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323348

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888663	Ammonia-N	98.5	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323555

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888706	Kjeldahl Nitrogen	90.3	98.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323721

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1889032	NO2NO3-N	98.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323697

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888760	Total-P	101	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323342

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888665	O-Phosphate-P	95.9	96.9	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P324403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888726	Fluoride	104	103	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P323466

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1888705	Organic Carbon	96.6	98.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P323528

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888703	Turbidity	6.23	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888661	Sulfate	3.13	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324107

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888662	Chloride	0.262	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888663	Ammonia-N	1.51	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323555

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888706	Kjeldahl Nitrogen	5.62	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323721

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: P323721

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889032	NO2NO3-N	2.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323697

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888760	Total-P	0.887	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323342

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888665	O-Phosphate-P	0.943	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P323337

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888683	Color (true)	2.31	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P323889

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888726	Total Alkalinity	0.299	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P324100

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888667	TDS	0.546	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P324403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888726	Fluoride	0.558	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P323466

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1888705	Organic Carbon	1.71	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: SM 2120 B
Run ID: A75770
Included Lab Sample IDs: 1888726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	100	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A75771
Included Lab Sample IDs: 1888728

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.9	97.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A75772
Included Lab Sample IDs: 1888727

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

Reference Method: SM 5310 B-00
Run ID: A75801
Included Lab Sample IDs: 1888727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	96.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A75831
Included Lab Sample IDs: 1888726

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A75872
Included Lab Sample IDs: 1888727

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A75902
Included Lab Sample IDs: 1888727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	98.5	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A75903
Included Lab Sample IDs: 1888726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	101	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A75929
Included Lab Sample IDs: 1888727

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.9	99.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A75952
Included Lab Sample IDs: 1888726

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A75999
Included Lab Sample IDs: 1888726

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

Reference Method: SM 4500 F-C-97
Run ID: A76126
Included Lab Sample IDs: 1888726

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	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					6.23	
EPA 300.0 Rev. 2.1	Chloride	101	102	102		0.262	
	Sulfate	97.4	100	102		3.13	
EPA 350.1 Rev. 2.0	Ammonia-N	100	98.5	96.2			1.51
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	90.3	98.3			5.62
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	98.5	100			2.01
EPA 365.1 Rev. 2.0	Total-P	99.1	101	99.9			0.887
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.9	95.9	96.9			0.943
SM 2120 B	Color (true)					2.31	
SM 2320 B-97	Total Alkalinity	105				0.299	
SM 2540 C-97	TDS					0.546	

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
SM 4500 F-C-97	Fluoride	94.7	104	103			0.558
SM 5310 B-00	Organic Carbon	101	96.6	98.5			1.71

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1888726
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1888726
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1888726
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1888727
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1888727
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1888727
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1888727
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1888728
SM 2120 B / E31780	True Color measured at 450 nm	1888726
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1888726
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1888726
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1888726
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1888726
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1888727

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	04/13/2017			04/13/2017 16:21	Sima Feizi	1888726
EPA 300.0 Rev. 2.1	04/13/2017			04/20/2017	Ping Hua	1888726
	04/13/2017			04/26/2017	Ping Hua	1888726
EPA 350.1 Rev. 2.0	04/13/2017			04/13/2017	Julie Michelle Frank	1888727
EPA 351.2 Rev. 2.0	04/13/2017	04/18/2017	Adrian Shelby	04/19/2017	Joseph Suarez	1888727
EPA 353.2 Rev. 2.0	04/13/2017			04/20/2017	Beverly Y. Sanders	1888727
EPA 365.1 Rev. 2.0	04/13/2017	04/20/2017	Adrian Shelby	04/21/2017	Lipi Saha	1888727
EPA 365.1 Rev. 2.0 dissolved	04/13/2017			04/13/2017 13:54	Anthony C. Onicha	1888728
SM 2120 B	04/13/2017			04/13/2017 15:09	Julia Storbeck	1888726
SM 2320 B-97	04/13/2017			04/22/2017	Dale L. Simmons	1888726
SM 2540 C-97	04/13/2017			04/17/2017	Sima Feizi	1888726
SM 2540 D-97	04/13/2017			04/17/2017	Sima Feizi	1888726
SM 4500 F-C-97	04/13/2017			05/01/2017	Dale L. Simmons	1888726
SM 5310 B-00	04/13/2017			04/14/2017	Julie Michelle Frank	1888727