

Chemical Analysis Report

CEN-DIST-2017-12-05-01

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

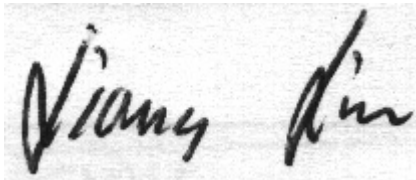
Event Description: **Spring G Lk / Shaw / Lil Haw**
Request ID: **RQ-2017-11-27-64**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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3319 Maguire Blvd., Suite 232
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Attn: Mike Linger

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 19-DEC-2017 11:15

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored 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: Little Haw Creek @ 25M DS of SR 40

Collection Date/Time: 12/04/2017 11:35

Field ID: G2CE0128

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1950299	EPA 180.1 Rev. 2.0	Turbidity	0.55		NTU	P336429	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P336533	
		Sulfate	0.42	I	mg SO4/L	P336535	
	SM 2120 B	Color (true)	700		PCU	P336416	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P336694	
	SM 2540 C-97	TDS	148		mg/L	P336675	
	SM 2540 D-97	TSS	2	U	mg/L	P336785	
	SM 4500 F-C-97	Fluoride	0.039	I	mg F/L	P336994	
1950300	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P336809	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P336646	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P336494	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P336572	
	SM 5310 B-00	Organic Carbon	52		mg C/L	P336636	
1950301	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P336404	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: 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: P336429

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P336533

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P336535

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P336809

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P336646

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: P336494

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336572

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336404

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

Reference Method: SM 2120 B
Batch ID: P336416

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336694

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

Reference Method: SM 2540 C-97
Batch ID: P336675

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P336785

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P336994

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P336636

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: P336533

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336535

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336809

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: P336646

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336494

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336572

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336404

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

Reference Method: SM 2320 B-97
Batch ID: P336694

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

Reference Method: SM 4500 F-C-97
Batch ID: P336994

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P336636

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950398	Chloride	96.9		P	90 - 110
1950455	Chloride	97.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336535

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950398	Sulfate	96.9		P	90 - 110
1950455	Sulfate	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336809

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950281	Ammonia-N	106	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950279	Kjeldahl Nitrogen	110	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336494

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950279	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336572

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950233	Total-P	99.3	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950337	O-Phosphate-P	97.9	98.7	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P336994

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950902	Fluoride	97.8	99.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P336636

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1950311	Organic Carbon	101		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P336429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950276	Turbidity	1.39	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950398	Chloride	0.686	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950281	Ammonia-N	0.177	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950279	Kjeldahl Nitrogen	0.657	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336494

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950279	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950233	Total-P	3.46	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950337	O-Phosphate-P	0.730	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P336416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950333	Color (true)	0.315	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P336694

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950902	Total Alkalinity	0.465	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P336675

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950278	TDS	5.68	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P336994

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950902	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1950311	Organic Carbon	1.13	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A80710

Included Lab Sample IDs: 1950301

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.9	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A80714

Included Lab Sample IDs: 1950299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A80718

Included Lab Sample IDs: 1950299

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A80735

Included Lab Sample IDs: 1950299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	96.3	P/P	90 - 110
Sulfate	98.9	94.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80739

Included Lab Sample IDs: 1950300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A80775

Included Lab Sample IDs: 1950300

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

Reference Method: SM 2320 B-97

Run ID: A80806

Included Lab Sample IDs: 1950299

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80834

Included Lab Sample IDs: 1950300

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80842

Included Lab Sample IDs: 1950300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	105	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A80909

Included Lab Sample IDs: 1950299

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80917

Included Lab Sample IDs: 1950300

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.4	97.1	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				1.39	
EPA 300.0 Rev. 2.1	Chloride	97.3	96.9 97.7		0.686	
	Sulfate	98.1	96.9 98.5			
EPA 350.1 Rev. 2.0	Ammonia-N	101	106 106			0.177
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	110 109			0.657
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102 102			0.0
EPA 365.1 Rev. 2.0	Total-P	99.4	99.3 103			3.46
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4	97.9 98.7			0.730
SM 2120 B	Color (true)				0.315	
SM 2320 B-97	Total Alkalinity	102			0.465	
SM 2540 C-97	TDS				5.68	
SM 4500 F-C-97	Fluoride	99.3	97.8 99.1			0.946
SM 5310 B-00	Organic Carbon	99.3	101			1.13

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1950299
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1950299
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1950299
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1950300

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1950300
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1950300
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1950300
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1950301
SM 2120 B / E31780	True Color measured at 450 nm	1950299
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1950299
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1950299
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1950299
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1950299
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1950300

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	12/05/2017			12/05/2017 17:45	DeAsia Armster	1950299
EPA 300.0 Rev. 2.1	12/05/2017			12/06/2017	Julia Storbeck	1950299
EPA 350.1 Rev. 2.0	12/05/2017			12/11/2017	Sofia Elnemr	1950300
EPA 351.2 Rev. 2.0	12/05/2017	12/08/2017	Adrian Shelby	12/11/2017	Joseph Suarez	1950300
EPA 353.2 Rev. 2.0	12/05/2017			12/06/2017	Lauren Bottorf	1950300
EPA 365.1 Rev. 2.0	12/05/2017	12/07/2017	Sima Feizi	12/11/2017	Lipi Saha	1950300
EPA 365.1 Rev. 2.0 dissolved	12/05/2017			12/05/2017 15:23	Megan Treadwell	1950301
SM 2120 B	12/05/2017			12/05/2017 15:01	Tanya Welborn	1950299
SM 2320 B-97	12/05/2017			12/09/2017	Dale L. Simmons	1950299
SM 2540 C-97	12/05/2017			12/06/2017	Yijie Li	1950299
SM 2540 D-97	12/05/2017			12/06/2017	Yijie Li	1950299
SM 4500 F-C-97	12/05/2017			12/14/2017	Dale L. Simmons	1950299
SM 5310 B-00	12/05/2017			12/08/2017	Ping Hua	1950300