

Chemical Analysis Report

CEN-DIST-2017-06-13-02

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

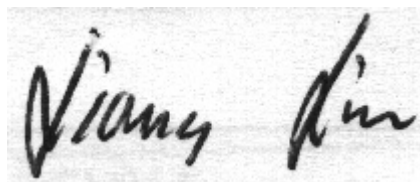
Event Description: **Blue Springs (Lake Co)**
Request ID: **RQ-2017-06-12-43**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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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: 07-JUL-2017 10:41

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: BLUE SPRINGS (LAKE CO.) @ WEIR

Collection Date/Time: 06/12/2017 11:35

Field ID: G1CE0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1905758	EPA 180.1 Rev. 2.0	Turbidity	0.20		NTU	P326754	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P327081	
		Sulfate	9.2		mg SO4/L	P327084	
	SM 2120 B	Color (true)	2.5	U	PCU	P326737	
	SM 2320 B-97	Total Alkalinity	106	A	mg CaCO3/L	P326902	
	SM 2540 C-97	TDS	163		mg/L	P327123	
	SM 2540 D-97	TSS	2	I	mg/L	P327089	
	SM 4500 F-C-97	Fluoride	0.083	I	mg F/L	P326909	
1905759	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P326814	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P326728	
	EPA 353.2 Rev. 2.0	NO2NO3-N	3.1		mg N/L	P326956	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P326879	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P327416	
1905760	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.033		mg P/L	P326748	

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: P326754

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P327081

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P327084

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P326814

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P326728

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: P326956

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326879

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326748

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

Reference Method: SM 2120 B
Batch ID: P326737

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P326902

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

Reference Method: SM 2540 C-97
Batch ID: P327123

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P327089

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P326909

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P327416

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: P327081

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327084

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326814

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: P326728

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326956

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: P326879

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326748

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

Reference Method: SM 2320 B-97
Batch ID: P326902

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P326909

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.8		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P327416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327081

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905857	Chloride	99.9		P	90 - 110
1905971	Chloride	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905857	Sulfate	97.8		P	90 - 110
1905971	Sulfate	96.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905678	Ammonia-N	98.1	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326728

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905759	Kjeldahl Nitrogen	107	110	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905859	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326879

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905685	Total-P	97.8	95.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905760	O-Phosphate-P	97.1	97.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P326909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905758	Fluoride	98.3	99.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P327416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1905985	Organic Carbon	92.4	91.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P326754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905675	Turbidity	5.43	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327081

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905857	Chloride	1.26	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P327084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905857	Sulfate	0.0850	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P326814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905678	Ammonia-N	1.12	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P326728

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905759	Kjeldahl Nitrogen	2.73	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326956

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P326956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905859	NO2NO3-N	0.480	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P326879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905685	Total-P	1.06	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P326748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905760	O-Phosphate-P	0.384	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P326737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905717	Color (true)	0.405	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P326902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905758	Total Alkalinity	0.769	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P327123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905717	TDS	4.06	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P326909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905758	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P327416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1905985	Organic Carbon	0.550	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: A77057
Included Lab Sample IDs: 1905758

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	99.5	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A77060
Included Lab Sample IDs: 1905760

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A77064
Included Lab Sample IDs: 1905758

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A77085
Included Lab Sample IDs: 1905759

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

Reference Method: SM 2320 B-97
Run ID: A77119
Included Lab Sample IDs: 1905758

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A77119
Included Lab Sample IDs: 1905758

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.3	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A77132
Included Lab Sample IDs: 1905759

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A77169

Included Lab Sample IDs: 1905759

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A77179

Included Lab Sample IDs: 1905759

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77183

Included Lab Sample IDs: 1905758

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.7	100	P/P	90 - 110
Sulfate	98.7	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A77311

Included Lab Sample IDs: 1905759

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	94.4	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				5.43	
EPA 300.0 Rev. 2.1	Chloride	105	99.9 97.8		1.26	
	Sulfate	102	97.8 96.3		0.0850	
EPA 350.1 Rev. 2.0	Ammonia-N	100	98.1 100			1.12
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	107 110			2.73
EPA 353.2 Rev. 2.0	NO2NO3-N	103	104 104			0.480
EPA 365.1 Rev. 2.0	Total-P	104	97.8 95.8			1.06
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.1 97.6			0.384
SM 2120 B	Color (true)				0.405	
SM 2320 B-97	Total Alkalinity	103			0.769	
SM 2540 C-97	TDS				4.06	
SM 4500 F-C-97	Fluoride	95.8	98.3 99.3			0.946
SM 5310 B-00	Organic Carbon	93.7	92.4 91.4			0.550

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1905758
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1905758
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1905758
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1905759
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1905759
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1905759
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1905759
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1905760
SM 2120 B / E31780	True Color measured at 450 nm	1905758
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1905758
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1905758
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1905758
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1905758
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1905759

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	06/13/2017			06/13/2017 17:34	Blanca Fach	1905758
EPA 300.0 Rev. 2.1	06/13/2017			06/20/2017	Julia Storbeck	1905758
EPA 350.1 Rev. 2.0	06/13/2017			06/14/2017	Sofia Elnemr	1905759
EPA 351.2 Rev. 2.0	06/13/2017	06/14/2017	Adrian Shelby	06/19/2017	Joseph Suarez	1905759
EPA 353.2 Rev. 2.0	06/13/2017			06/16/2017	Beverly Y. Sanders	1905759
EPA 365.1 Rev. 2.0	06/13/2017	06/15/2017	Adrian Shelby	06/16/2017	Lipi Saha	1905759
EPA 365.1 Rev. 2.0 dissolved	06/13/2017			06/13/2017 15:08	Anthony C. Onicha	1905760
SM 2120 B	06/13/2017			06/13/2017 16:20	Tanya Welborn	1905758
SM 2320 B-97	06/13/2017			06/15/2017	Dale L. Simmons	1905758
SM 2540 C-97	06/13/2017			06/14/2017	Yijie Li	1905758
SM 2540 D-97	06/13/2017			06/14/2017	Yijie Li	1905758
SM 4500 F-C-97	06/13/2017			06/15/2017	Dale L. Simmons	1905758
SM 5310 B-00	06/13/2017			06/22/2017	Ping Hua	1905759