

Chemical Analysis Report

CEN-DIST-2016-05-20-02

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

Event Description: **Reedy Crk in RCID+HA**

Request ID: **RQ-2016-05-16-66**

Customer: **CEN-DIST**

Project ID: **SMP**

Send Reports to:

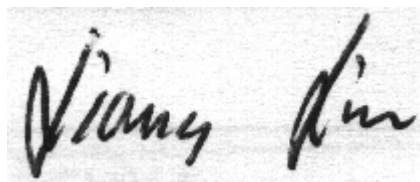
FL Dept. of Environmental Protection
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Attn: Mike Linger

For additional information please contact

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 14-JUN-2016 16:03

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: Reedy Creek @ 0.78 Miles North of RCID

Collection Date/Time: 05/19/2016 11:57

Field ID: G4CE0084

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1800897	EPA 180.1 Rev. 2.0	Turbidity	1.6	A	NTU	P304730	
	EPA 300.0 Rev. 2.1	Chloride	56		mg Cl/L	P305249	
		Sulfate	14		mg SO4/L	P305251	
	SM 2120 B	Color (true)	400	A	PCU	P304734	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P305294	
	SM 2540 C-97	TDS	216		mg/L	P305270	
	SM 2540 D-97	TSS	3	I	mg/L	P305161	
	SM 4500 F-C-97	Fluoride	0.071	I	mg F/L	P305297	
1800898	EPA 350.1 Rev. 2.0	Ammonia-N	0.079		mg N/L	P305263	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P305227	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.088		mg N/L	P304988	
	EPA 365.1 Rev. 2.0	Total-P	0.058		mg P/L	P305541	
	SM 5310 B-00	Organic Carbon	30		mg C/L	P305289	
1800899	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.028		mg P/L	P304726	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P304730

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P305249

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P305251

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P305263

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P305227

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: P304988

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305541

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304726

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

Reference Method: SM 2120 B
Batch ID: P304734

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305294

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

Reference Method: SM 2540 C-97
Batch ID: P305270

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305161

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P305297

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P305289

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: P305249

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305251

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305263

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: P305227

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: P304988

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305541

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304726

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

Reference Method: SM 2320 B-97
Batch ID: P305294

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

Reference Method: SM 4500 F-C-97
Batch ID: P305297

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P305289

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: P305249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800845	Chloride	99.4	99.1	P/P	90 - 110
1801143	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305251

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800845	Sulfate	96.6	96.6	P/P	90 - 110
1801143	Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305263

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800850	Ammonia-N	98.1	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305227

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800850	Kjeldahl Nitrogen	94.4	95.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304988

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800856	NO2NO3-N	97.6	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800849	Total-P	106	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304726

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800975	O-Phosphate-P	97.4	98.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P305297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1801212	Fluoride	96.7	96.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P305289

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1800849	Organic Carbon	100	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P304730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800897	Turbidity	1.93	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800845	Chloride	0.235	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800845	Sulfate	0.0227	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800850	Ammonia-N	1.78	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800850	Kjeldahl Nitrogen	0.945	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304988

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: P304988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800856	NO2NO3-N	0.741	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800849	Total-P	3.36	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P304726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800975	O-Phosphate-P	0.825	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P304734

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800897	Color (true)	0.988	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P305294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801212	Total Alkalinity	0.969	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P305270

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800848	TDS	9.63	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P305297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1801212	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P305289

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1800849	Organic Carbon	0.129	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: EPA 365.1 Rev. 2.0 dissolved

Run ID: A69604

Included Lab Sample IDs: 1800899

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69605

Included Lab Sample IDs: 1800897

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

Reference Method: SM 2120 B

Run ID: A69606

Included Lab Sample IDs: 1800897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.8	99.5	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69676

Included Lab Sample IDs: 1800897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	99.7	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69684

Included Lab Sample IDs: 1800898

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69751

Included Lab Sample IDs: 1800898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.3	99.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69765

Included Lab Sample IDs: 1800898

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

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
 Run ID: A69766
 Included Lab Sample IDs: 1800897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Run ID: A69766
 Included Lab Sample IDs: 1800897

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

Reference Method: EPA 351.2 Rev. 2.0
 Run ID: A69796
 Included Lab Sample IDs: 1800898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Run ID: A69885
 Included Lab Sample IDs: 1800898

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	103	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						1.93	
EPA 300.0 Rev. 2.1	Chloride	100	99.4	99.1	99.0			0.235
	Sulfate	98.5	96.6	96.6	98.0			0.0227
EPA 350.1 Rev. 2.0	Ammonia-N	99.5	98.1	101				1.78
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	94.4	95.6				0.945
EPA 353.2 Rev. 2.0	NO2NO3-N	101	97.6	96.6				0.741
EPA 365.1 Rev. 2.0	Total-P	100	106	102				3.36
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.4	98.3				0.825
SM 2120 B	Color (true)						0.988	
SM 2320 B-97	Total Alkalinity	102					0.969	
SM 2540 C-97	TDS						9.63	
SM 4500 F-C-97	Fluoride	96.1	96.7	96.7				0.0
SM 5310 B-00	Organic Carbon	101	100	101				0.129

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
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Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1800897
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1800897
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1800897
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1800898
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1800898
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1800898
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1800898
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1800899
SM 2120 B / E31780	True Color measured at 450 nm	1800897
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1800897
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1800897
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1800897
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1800897
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1800898

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	05/20/2016			05/20/2016 15:55	Sima Feizi	1800897
EPA 300.0 Rev. 2.1	05/20/2016			05/27/2016	Ping Hua	1800897
EPA 350.1 Rev. 2.0	05/20/2016			05/27/2016	Diana M. Turner	1800898
EPA 351.2 Rev. 2.0	05/20/2016	05/31/2016	Sofia Elnemr	06/01/2016	Christopher Armour	1800898
EPA 353.2 Rev. 2.0	05/20/2016			05/25/2016	Peter D. Kaus	1800898
EPA 365.1 Rev. 2.0	05/20/2016	06/03/2016	Vijayalakshmi Reddy	06/06/2016	Rochelle Y Jackson	1800898
EPA 365.1 Rev. 2.0 dissolved	05/20/2016			05/20/2016 14:55	Ping Hua	1800899
SM 2120 B	05/20/2016			05/20/2016 16:26	Rochelle Y Jackson	1800897
SM 2320 B-97	05/20/2016			05/28/2016	Dale L. Simmons	1800897
SM 2540 C-97	05/20/2016			05/25/2016	Yijie Li	1800897
SM 2540 D-97	05/20/2016			05/25/2016	Yijie Li	1800897
SM 4500 F-C-97	05/20/2016			05/28/2016	Dale L. Simmons	1800897
SM 5310 B-00	05/20/2016			05/28/2016	Diana M. Turner	1800898