

Chemical Analysis Report

CEN-DIST-2018-05-25-01

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

Event Description: **Spring Garden Creek**

Request ID: **RQ-2018-05-21-30**

Customer: **CEN-DIST**

Project ID: **SMP**

Send Reports to:

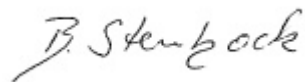
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Date Certified: 12-JUN-2018 17:45



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: Spring Garden Creek just DS of Deep Creek

Collection Date/Time: 05/24/2018 10:25

Field ID: G2CE0126

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1995520	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P346001	
	EPA 300.0 Rev. 2.1	Chloride	140		mg Cl/L	P346344	
		Sulfate	20		mg SO4/L	P346297	
	SM 2120 B	Color (true)	280		PCU	P345999	
	SM 2320 B-97	Total Alkalinity	76		mg CaCO3/L	P346092	RPD
	SM 2540 C-97	TDS	371		mg/L	P346200	
	SM 2540 D-97	TSS	5	I	mg/L	P346392	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P346097	
1995521	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P346417	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P346276	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P346061	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P346166	
	SM 5310 B-00	Organic Carbon	26		mg C/L	P346491	
1995522	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.15		mg P/L	P345988	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high 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.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P346001

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P346297

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P346344

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P346417

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346276

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346061

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346166

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345988

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

Reference Method: SM 2120 B
Batch ID: P345999

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P346092

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

Reference Method: SM 2540 C-97
Batch ID: P346200

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P346392

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P346097

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P346491

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: P346297

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346344

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346417

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346276

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346061

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: P346166

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: P345988

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

Reference Method: SM 2320 B-97
Batch ID: P346092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
 Batch ID: P346092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
 Batch ID: P346097

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.8		P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P346491

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P346297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995440	Sulfate	98.3		P	90 - 110
1995526	Sulfate	96.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P346344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1996333	Chloride	105		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P346417

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995457	Ammonia-N	101	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P346276

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995491	Kjeldahl Nitrogen	102	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P346061

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995490	NO2NO3-N	101		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995560	Total-P	100	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P346097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995691	Fluoride	96.8	96.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P346491

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1995456	Organic Carbon	101		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P346001

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995498	Turbidity	2.74	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995526	Sulfate	3.41	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P346344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1996189	Chloride	0.228	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995457	Ammonia-N	0.646	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995491	Kjeldahl Nitrogen	5.31	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P346061

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995490	NO2NO3-N	0.212	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995560	Total-P	1.94	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995432	O-Phosphate-P	1.03	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P345999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995526	Color (true)	3.64	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P346092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995691	Total Alkalinity	2.32	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P346200

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995498	TDS	6.61	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P346097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995691	Fluoride	0.470	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P346491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1995456	Organic Carbon	1.07	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: A84169

Included Lab Sample IDs: 1995522

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.5	98.6	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A84170

Included Lab Sample IDs: 1995520

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A84171

Included Lab Sample IDs: 1995520

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A84207

Included Lab Sample IDs: 1995521

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

Reference Method: SM 2320 B-97

Run ID: A84220

Included Lab Sample IDs: 1995520

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A84220

Included Lab Sample IDs: 1995520

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.1	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A84230

Included Lab Sample IDs: 1995520

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	100	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A84339

Included Lab Sample IDs: 1995520

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84352

Included Lab Sample IDs: 1995521

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A84361

Included Lab Sample IDs: 1995521

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84367

Included Lab Sample IDs: 1995521

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	104	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A84394

Included Lab Sample IDs: 1995521

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	100	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				2.74	
EPA 300.0 Rev. 2.1	Chloride	101	105		0.228	
	Sulfate	99.1	96.3	98.3	3.41	
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	101	99.5		0.646
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.2	102	108		5.31
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101			0.212
EPA 365.1 Rev. 2.0	Total-P	102	100	102		1.94
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.6				1.03
SM 2120 B	Color (true)				3.64	
SM 2320 B-97	Total Alkalinity	102			2.32	
SM 2540 C-97	TDS				6.61	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
SM 4500 F-C-97	Fluoride	95.8	96.8 96.1			0.470
SM 5310 B-00	Organic Carbon	98.0	101			1.07

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1995520
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1995520
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1995520
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1995521
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1995521
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1995521
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1995521
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1995522
SM 2120 B / E31780	True Color measured at 450 nm	1995520
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1995520
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1995520
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1995520
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1995520
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1995521

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	05/25/2018			05/25/2018 17:29	William L. Brown IV	1995520
EPA 300.0 Rev. 2.1	05/25/2018			06/01/2018 16:32	Lipi Saha	1995520
	05/25/2018			06/04/2018 17:55	Lipi Saha	1995520
EPA 350.1 Rev. 2.0	05/25/2018			06/05/2018 13:37	Julia Storbeck	1995521
EPA 351.2 Rev. 2.0	05/25/2018	06/01/2018 14:20	Adrian Shelby	06/05/2018 15:03	Joseph Suarez	1995521
EPA 353.2 Rev. 2.0	05/25/2018			05/29/2018 13:49	Lauren Bottorf	1995521
EPA 365.1 Rev. 2.0	05/25/2018	05/30/2018 13:15	Sima Feizi	06/05/2018 09:36	Beverly Y. Sanders	1995521
EPA 365.1 Rev. 2.0 dissolved	05/25/2018			05/25/2018 14:36	Megan Treadwell	1995522
SM 2120 B	05/25/2018			05/25/2018 16:06	Tanya Welborn	1995520
SM 2320 B-97	05/25/2018			05/30/2018 00:16	Dale L. Simmons	1995520
SM 2540 C-97	05/25/2018			05/29/2018 15:33	Yijie Li	1995520
SM 2540 D-97	05/25/2018			05/29/2018 15:33	Yijie Li	1995520
SM 4500 F-C-97	05/25/2018			05/30/2018 00:16	Dale L. Simmons	1995520
SM 5310 B-00	05/25/2018			06/05/2018 07:18	Megan Treadwell	1995521