

Biological Analysis Report

SW-DIST-2020-07-17-01

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

Overflow Analyses Performed By:
Benchmark Environmental, Inc.
1711 12th Street East
Palmetto, FL 34221
DOH Accreditation E84167

Event Description: **Run 7**
Request ID: **RQ-2020-06-15-12**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Bne Paswater

For additional information please contact
Cheryl Swanson - Administrator
Jacqueline Savage - Microbiology
Diane Power - Bench Biology
Lauren Gottfried - Aquatic Toxicology
Puja Jasrotia, Ph.D. - Molecular Biology
Amelia Rankin - Taxonomy (Invertebrate & Algal)
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8177

Certified by: Jacqueline Savage, Environmental Administrator

Date Certified: 13-AUG-2020 09:26



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 groups are included in this report: Chlorophyll/Grain Size/BOD, Molecular and Overflow.

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Clark Lake Drainage @ Brookside

Collection Date/Time: 07/16/2020 10:40

Field ID: G3SW0066

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184015	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P384145	
	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P384145	RPD
	SOP-PCR-1.3	GFD-purified-qPCR**	110	U	TSC/100 mL	P385132	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P384145	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P384145	
2184023	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	820		MPN/100 mL		

Sample Location: Clark Lake Drainage above Proctor Rd

Collection Date/Time: 07/16/2020 10:50

Field ID: G3SW0067

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184018	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	331		MPN/100 mL		

Sample Location: Phillippe Tributary @ Cattleman Rd

Collection Date/Time: 07/16/2020 12:10

Field ID: G3SW0065

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184013	SM 10200 H (mod.)	Chlorophyll-a, Corrected	14		ug/L	P385043	
		Phaeophytin-a	0.90	U	ug/L	P385043	
		Chlorophyll-a, Uncorrected	15		ug/L	P385043	

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: Phillippe Tributary @ Cattleman Rd

Collection Date/Time: 07/16/2020 12:10

Field ID: G3SW0065

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184016	SOP-PCR-1.0	HF183-qPCR**	94	U	GEU/100 mL	P384145	
	SOP-PCR-1.2	GULL2-qPCR**	5.6E+03	U	TSC/100 mL	P384145	RPD
	SOP-PCR-1.3	GFD-purified-qPCR**	110	U	TSC/100 mL	P385132	LCS, MS
	SOP-PCR-1.4	BacR-qPCR**	1.0E+03	U	TSC/100 mL	P384145	
	SOP-PCR-1.5	DG3-qPCR**	860	U	TSC/100 mL	P384145	
2184024	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	288		MPN/100 mL		

Sample Location: Island Park Boat Basin off Dock

Collection Date/Time: 07/16/2020 12:45

Field ID: G3SW0061

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184014	SM 10200 H (mod.)	Chlorophyll-a, Corrected	2.4	I	ug/L	P385043	
		Phaeophytin-a	3.4		ug/L	P385043	
		Chlorophyll-a, Uncorrected	4.6		ug/L	P385043	
2184017	Enterolert/QT	Enterococci-Quanti-Tray	41		MPN/100 mL		

Ref. Method and Comment:

SM 10200 H (mod.): Precision data is not available for at least one component due to the small amount of analyte in the QC sample. Refer to QA report for available precision data.

Sample Location: Maytheny Lagoon @ Buccaneer Ct

Collection Date/Time: 07/16/2020 11:20

Field ID: G3SW0071

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184019	Enterolert/QT	Enterococci-Quanti-Tray	857		MPN/100 mL		

Sample Location: Elligraw Bayou @ Bayview Way

Collection Date/Time: 07/16/2020 11:40

Field ID: G3SW0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184020	Enterolert/QT	Enterococci-Quanti-Tray	10	U	MPN/100 mL		

Sample Location: Elligraw Bayou by Tamiami Trail

Collection Date/Time: 07/16/2020 11:10

Field ID: G3SW0068

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184021	Enterolert/QT	Enterococci-Quanti-Tray	228		MPN/100 mL		

Sample Location: Catfish Creek @ Sawyer Loop Rd

Collection Date/Time: 07/16/2020 13:30

Field ID: G3SW0072

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2184022	SM 9223 B Quanti-Tray	Escherichia Coli-Quanti-Tray	134		MPN/100 mL		

Quality Assurance Report Method Blank Results

Reference Method: SM 10200 H (mod.)
Batch ID: P385043

Component	Result	Code	Units
Chlorophyll-a, Corrected	0.82	U	ug/L
Chlorophyll-a, Uncorrected	0.60	U	ug/L
Phaeophytin-a	0.90	U	ug/L

Reference Method: SOP-PCR-1.0
Batch ID: P384145

Component	Result	Code	Units
HF183-qPCR	280	U	GEU/100 mL

Reference Method: SOP-PCR-1.2
Batch ID: P384145

Component	Result	Code	Units
GULL2-qPCR	1.7E+04	U	TSC/100 mL

Reference Method: SOP-PCR-1.3
Batch ID: P385132

Component	Result	Code	Units
GFD-purified-qPCR	340	U	TSC/100 mL

Quality Assurance Report Method Blank Results

Reference Method: SOP-PCR-1.4
Batch ID: P384145

Component	Result	Code	Units
BacR-qPCR	3.0E+03	U	TSC/100 mL

Reference Method: SOP-PCR-1.5
Batch ID: P384145

Component	Result	Code	Units
DG3-qPCR	2.6E+03	U	TSC/100 mL

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 10200 H (mod.)
Batch ID: P385043

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlorophyll-a, Corrected	89.1		P	84 - 116

Reference Method: SOP-PCR-1.0
Batch ID: P384145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
HF183-qPCR	114	116	P/P	50 - 175

Reference Method: SOP-PCR-1.2
Batch ID: P384145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GULL2-qPCR	92.2	64.4	P/P	50 - 300

Reference Method: SOP-PCR-1.3
Batch ID: P385132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
GFD-purified-qPCR	106	12.7	P/F	50 - 175

Reference Method: SOP-PCR-1.4
Batch ID: P384145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
BacR-qPCR	107	117	P/P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P384145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
DG3-qPCR	93.6	93.2	P/P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.0

Batch ID: P384145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180711	HF183-qPCR	95.9	96.3	P	50 - 175
2180712	HF183-qPCR	96.9		P	50 - 175
2180713	HF183-qPCR	111		P/P	50 - 175
2181430	HF183-qPCR	105		P	50 - 175
2181431	HF183-qPCR	97.4		P	50 - 175
2181555	HF183-qPCR	90.8		P	50 - 175
2181556	HF183-qPCR	89.3		P	50 - 175
2181933	HF183-qPCR	98.5		P	50 - 175
2182342	HF183-qPCR	104		P	50 - 175
2183113	HF183-qPCR	107		P	50 - 175
2184015	HF183-qPCR	106		P	50 - 175
2184016	HF183-qPCR	104		P	50 - 175
2184370	HF183-qPCR	102		P	50 - 175

Reference Method: SOP-PCR-1.2

Batch ID: P384145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180711	GULL2-qPCR	71.5	60.4	P	50 - 300
2180712	GULL2-qPCR	75.5		P	50 - 300
2180713	GULL2-qPCR	91.0		P/P	50 - 300
2181555	GULL2-qPCR	61.6		P	50 - 300
2181556	GULL2-qPCR	53.5		P	50 - 300
2183113	GULL2-qPCR	76.4		P	50 - 300
2184015	GULL2-qPCR	70.8		P	50 - 300
2184016	GULL2-qPCR	58.1		P	50 - 300

Reference Method: SOP-PCR-1.3

Batch ID: P385132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2181555	GFD-purified-qPCR	94.1	115	P	50 - 175
2181556	GFD-purified-qPCR	55.0		P	50 - 175
2183113	GFD-purified-qPCR	106		P	50 - 175
2184015	GFD-purified-qPCR	80.4		P	50 - 175
2184016	GFD-purified-qPCR	89.2		P	50 - 175
2184371	GFD-purified-qPCR	94.4		P/P	50 - 175
2184373	GFD-purified-qPCR	39.2		F	50 - 175
2184576	GFD-purified-qPCR	104		P	50 - 175
2185504	GFD-purified-qPCR	80.3		P	50 - 175
2186533	GFD-purified-qPCR	57.6		P	50 - 175
2186923	GFD-purified-qPCR	56.2		P	50 - 175
2186924	GFD-purified-qPCR	58.4		P	50 - 175

Reference Method: SOP-PCR-1.4

Batch ID: P384145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180711	BacR-qPCR	77.3	87.1	P	50 - 175
2180712	BacR-qPCR	81.1		P	50 - 175
2180713	BacR-qPCR	94.8		P/P	50 - 175
2181430	BacR-qPCR	79.2		P	50 - 175

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SOP-PCR-1.4
Batch ID: P384145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2181431	BacR-qPCR	75.5		P	50 - 175
2181555	BacR-qPCR	80.0		P	50 - 175
2181556	BacR-qPCR	72.5		P	50 - 175
2181933	BacR-qPCR	77.9		P	50 - 175
2182342	BacR-qPCR	82.7		P	50 - 175
2183113	BacR-qPCR	83.6		P	50 - 175
2184015	BacR-qPCR	86.9		P	50 - 175
2184016	BacR-qPCR	76.2		P	50 - 175
2184370	BacR-qPCR	84.8		P	50 - 175

Reference Method: SOP-PCR-1.5
Batch ID: P384145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180711	DG3-qPCR	80.8		P	50 - 175
2180712	DG3-qPCR	82.3		P	50 - 175
2180713	DG3-qPCR	84.0	81.7	P/P	50 - 175
2181430	DG3-qPCR	80.4		P	50 - 175
2181431	DG3-qPCR	114		P	50 - 175
2181555	DG3-qPCR	80.8		P	50 - 175
2181556	DG3-qPCR	84.3		P	50 - 175
2181933	DG3-qPCR	83.6		P	50 - 175
2182342	DG3-qPCR	82.5		P	50 - 175
2183113	DG3-qPCR	81.8		P	50 - 175
2184015	DG3-qPCR	78.5		P	50 - 175
2184016	DG3-qPCR	99.4		P	50 - 175
2184370	DG3-qPCR	87.1		P	50 - 175

Quality Assurance Report Precision

Reference Method: SM 10200 H (mod.)
Batch ID: P385043

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2183923	Chlorophyll-a, Corrected	4.33	Sample	P	0 - 25
2183923	Chlorophyll-a, Uncorrected	4.84	Sample	P	0 - 25

Reference Method: SOP-PCR-1.0
Batch ID: P384145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180713	HF183-qPCR	14.3	Spike	P	0 - 25

Reference Method: SOP-PCR-1.2
Batch ID: P384145

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

Reference Method: SOP-PCR-1.2
Batch ID: P384145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180713	GULL2-qPCR	40.5	Spike	F	0 - 25

Reference Method: SOP-PCR-1.3
Batch ID: P385132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2184371	GFD-purified-qPCR	19.5	Spike	P	0 - 25

Reference Method: SOP-PCR-1.4
Batch ID: P384145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180713	BacR-qPCR	8.43	Spike	P	0 - 25

Reference Method: SOP-PCR-1.5
Batch ID: P384145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180713	DG3-qPCR	2.78	Spike	P	0 - 25

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2184015
Field Sample ID: G3SW0066

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	96.7	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	89.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	115	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	117	P	50 - 300

Lab Sample ID: 2184016
Field Sample ID: G3SW0065

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
SOP-PCR-1.0	SKETA-qPCR	97.2	P	50 - 300
SOP-PCR-1.2	SKETA-qPCR	82.0	P	50 - 300
SOP-PCR-1.4	SKETA-qPCR	101	P	50 - 300
SOP-PCR-1.5	SKETA-qPCR	111	P	50 - 300

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery		MS % Recovery			LCS	Precision	MS
								SMP	
SM 10200 H (mod.)	Chlorophyll-a, Corrected	89.1						4.33	
	Chlorophyll-a, Uncorrected							4.84	
SOP-PCR-1.0	HF183-qPCR	116	114	95.9	96.9	111			14.3
				96.3					
SOP-PCR-1.2	GULL2-qPCR	64.4	92.2	71.5	75.5	91.0			40.5
				60.4					
SOP-PCR-1.3	GFD-purified-qPCR	12.7	106	94.1	55.0	106			19.5
				80.4					
SOP-PCR-1.4	BacR-qPCR	117	107	77.3	81.1	94.8			8.43
				87.1					
SOP-PCR-1.5	DG3-qPCR	93.2	93.6	80.8	82.3	84.0			2.78
				81.7					

Reference Method Descriptions

Method	Description	Associated Samples
Enterolert/QT	Enterococci by Enterolert/QT by BEA in Palmetto	2184017, 2184019, 2184020, 2184021
SM 10200 H (mod.)	Phytoplankton chlorophyll-a corrected, uncorrected, and phaeophytin by spectrophotometry	2184013, 2184014
SM 9223 B Quanti-Tray	E. coli by Colilert/QT by BEA in Palmetto	2184018, 2184022, 2184023, 2184024
SOP-PCR-1.0	Detection and quantification of human-specific HF183 Bacteroides genetic marker with quantitative polymerase chain reaction	2184015, 2184016
SOP-PCR-1.2	Detection and quantification of coastal bird specific Catellicoccus marimammalium Gull2 genetic marker with quantitative polymerase chain reaction	2184015, 2184016
SOP-PCR-1.3	Detection and quantification of bird specific Helicobacter GFD genetic marker with quantitative polymerase chain reaction	2184015, 2184016
SOP-PCR-1.4	Detection and quantification of Ruminant specific Bacteroidetes BacR genetic marker with quantitative polymerase chain reaction	2184015, 2184016
SOP-PCR-1.5	Detection and quantification of canine-specific DG3 Bacteroides genetic marker with quantitative polymerase chain reaction	2184015, 2184016

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
Enterolert/QT	07/16/2020	07/16/2020 14:50		07/17/2020 15:47	Benchmark EnviroAnalytical - Palmetto	2184017, 2184019, 2184020, 2184021
SM 10200 H (mod.)	07/17/2020	07/17/2020 14:45	Jessica Fetgatter	07/22/2020 09:37	Yuliya Danyuk	2184013, 2184014
SM 9223 B Quanti-Tray	07/16/2020	07/16/2020 15:05		07/17/2020 15:48	Benchmark EnviroAnalytical - Palmetto	2184018, 2184022, 2184023, 2184024
SOP-PCR-1.0	07/17/2020	07/17/2020 13:43	Lauren Campbell	07/23/2020 14:27	Lauren Campbell	2184015, 2184016
SOP-PCR-1.2	07/17/2020	07/17/2020 13:43	Lauren Campbell	07/27/2020 10:28	Mailin Lopez	2184015, 2184016
SOP-PCR-1.3	07/17/2020	07/17/2020 13:43	Lauren Campbell	08/07/2020 15:28	Mailin Lopez	2184015, 2184016
SOP-PCR-1.4	07/17/2020	07/17/2020 13:43	Lauren Campbell	07/24/2020 11:56	Lauren Campbell	2184015, 2184016
SOP-PCR-1.5	07/17/2020	07/17/2020 13:43	Lauren Campbell	07/24/2020 13:30	Lauren Campbell	2184015, 2184016