

Chemical Analysis Report

NE-DIST-2019-07-02-02

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

Event Description: **UEC**
Request ID: **RQ-2019-07-01-10**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 25-JUL-2019 10:59

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: Metals and 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 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: Palm Coast Canal 0.6mi Down from road

Collection Date/Time: 07/01/2019 10:40

Field ID: G5NE0026

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100139	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P366657	
	EPA 300.0 Rev. 2.1	Chloride	43		mg Cl/L	P366802	
		Sulfate	12		mg SO4/L	P366804	
	SM 2120 B	Color (true)	62		PCU	P366624	
	SM 2320 B-97	Total Alkalinity	115		mg CaCO3/L	P366738	
	SM 2540 C-97	TDS	229		mg/L	P366897	
	SM 2540 D-97	TSS	5	I	mg/L	P366872	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P366745	
2100141	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P366779	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P366891	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P366829	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P366789	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P366799	
2100143	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.072		mg P/L	P366646	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Cracker Br. at Pellicer cr. campground

Collection Date/Time: 07/01/2019 11:25

Field ID: G5NE0582

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100140	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P366657	
	EPA 300.0 Rev. 2.1	Chloride	130		mg Cl/L	P366802	
		Sulfate	23		mg SO4/L	P366804	
	SM 2120 B	Color (true)	79	A	PCU	P366624	
	SM 2320 B-97	Total Alkalinity	94		mg CaCO3/L	P366738	
	SM 2540 C-97	TDS	396		mg/L	P366898	
	SM 2540 D-97	TSS	3	I	mg/L	P366873	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P366745	
2100142	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P366779	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P366891	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P366829	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P366789	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P366799	
2100144	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.079		mg P/L	P366646	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Moses Cr at US1

Collection Date/Time: 07/01/2019 11:50

Field ID: 27010050

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100136	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P366657	
	EPA 300.0 Rev. 2.1	Chloride	53		mg Cl/L	P366802	
		Sulfate	11		mg SO4/L	P366804	
		Color (true)	120		PCU	P366624	
	SM 2320 B-97	Total Alkalinity	124		mg CaCO3/L	P366738	
	SM 2540 C-97	TDS	284		mg/L	P366897	
	SM 2540 D-97	TSS	2	I	mg/L	P366872	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P366745	
2100137	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P366779	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P366891	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.086		mg N/L	P366829	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P366789	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P366799	
2100138	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.070		mg P/L	P366646	
2100153	EPA 200.7 Rev. 4.4	Barium	26.2		ug/L	P366814	
		Calcium	48.7		mg/L	P366814	
		Iron	670		ug/L	P366814	
		Magnesium	5.09		mg/L	P366814	
		Potassium	1.3		mg/L	P366814	
		Sodium	28.8		mg/L	P366814	
		Zinc	5.0	U	ug/L	P367077	
	EPA 200.8 Rev. 5.4	Aluminum	104		ug/L	P366814	
		Antimony	0.079	I	ug/L	P366814	
		Arsenic	1.63		ug/L	P366814	
		Boron**	37.9		ug/L	P366814	
		Cadmium	0.020	U	ug/L	P366814	
		Chromium	0.40	U	ug/L	P366814	
		Copper	0.46	I	ug/L	P366814	
		Lead	0.20	U	ug/L	P367663	
		Nickel	0.50	U	ug/L	P366814	
		Selenium	0.20	U	ug/L	P366814	
		Silver	0.010	U	ug/L	P366814	
		Thallium	0.10	U	ug/L	P366814	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Lake Vedra at Solana Rd.

Collection Date/Time: 07/01/2019 12:55

Field ID: 27010180

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100133	EPA 180.1 Rev. 2.0	Turbidity	7.2		NTU	P366657	
	EPA 300.0 Rev. 2.1	Chloride	130		mg Cl/L	P366802	
		Sulfate	96		mg SO4/L	P366804	
		Color (true)	55		PCU	P366623	
	SM 2320 B-97	Total Alkalinity	135		mg CaCO3/L	P366738	
	SM 2540 C-97	TDS	556		mg/L	P366897	
	SM 2540 D-97	TSS	10		mg/L	P366872	
	SM 4500 F-C-97	Fluoride	0.26		mg F/L	P366745	
2100134	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P366779	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P366890	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P366829	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P366775	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P366799	
2100135	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.039		mg P/L	P366646	
2100152	EPA 200.7 Rev. 4.4	Barium	12.5		ug/L	P366814	
		Calcium	62.4		mg/L	P366814	
		Iron	30	U	ug/L	P366814	
		Magnesium	19.1		mg/L	P366814	
		Potassium	8.3		mg/L	P366814	
		Sodium	73.0		mg/L	P366814	
		Zinc	5.0	U	ug/L	P366814	
	EPA 200.8 Rev. 5.4	Aluminum	84		ug/L	P366814	
		Antimony	0.20		ug/L	P366814	
		Arsenic	13.4		ug/L	P366814	
		Boron**	83.7		ug/L	P366814	
		Cadmium	0.020	U	ug/L	P366814	
		Chromium	0.70	I	ug/L	P366814	
		Copper	4.40		ug/L	P366814	
		Lead	0.20	U	ug/L	P366814	
		Nickel	0.50	U	ug/L	P366814	
		Selenium	0.20	U	ug/L	P366814	
		Silver	0.010	U	ug/L	P366814	
		Thallium	0.10	U	ug/L	P366814	

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: P366657

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366814

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	15	I	ug/L

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P367077

Component	Result	Code	Units
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366814

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.50		ug/L
Nickel	0.62	I	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367663

Component	Result	Code	Units
Lead	0.20	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366779

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366890

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366891

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366829

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366775

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366789

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366646

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

Reference Method: SM 2120 B
Batch ID: P366623

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P366624

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P366738

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P366897

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P366898

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P366872

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P366873

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P366745

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P366799

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366814

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	100		P	85 - 115
Calcium	91.8		P	85 - 115
Iron	96.4		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	99.2		P	85 - 115
Sodium	99.3		P	85 - 115
Zinc	99.4		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P367077

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366814

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	104		P	85 - 115
Boron	104		P	85 - 115
Cadmium	105		P	85 - 115
Chromium	102		P	85 - 115
Copper	101		P	85 - 115
Lead	104		P	85 - 115
Nickel	103		P	85 - 115
Selenium	103		P	85 - 115
Silver	105		P	85 - 115
Thallium	104		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367663

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Lead	94.1		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366779

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	107		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366890

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366891

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366829

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366775

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366789

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366646

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

Reference Method: SM 2120 B
Batch ID: P366623

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P366624

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P366738

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P366745

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P366799

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100485	Barium	99.0	100	P/P	80 - 120
2100485	Calcium	93.3		P	80 - 120
2100485	Iron	98.7	96.6	P/P	80 - 120
2100485	Magnesium	101	99.4	P/P	80 - 120
2100485	Potassium	98.7	96.9	P/P	80 - 120
2100485	Sodium	92.1	93.8	P/P	80 - 120
2100485	Zinc	101	102	P/P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P367077

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101041	Zinc	99.9	101	P/P	80 - 120
2101279	Zinc	100		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100485	Aluminum	103	101	P/P	80 - 120
2100485	Antimony	103	104	P/P	80 - 120
2100485	Arsenic	106	106	P/P	80 - 120
2100485	Boron	109	107	P/P	80 - 120
2100485	Cadmium	106	106	P/P	80 - 120
2100485	Chromium	104	103	P/P	80 - 120
2100485	Copper	104	104	P/P	80 - 120
2100485	Lead	107	106	P/P	80 - 120
2100485	Nickel	105	103	P/P	80 - 120
2100485	Selenium	103	103	P/P	80 - 120
2100485	Silver	106	119	P/P	80 - 120
2100485	Thallium	108	107	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100483	Lead	94.8	93.6	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099703	Chloride	104	105	P/P	90 - 110
2100316	Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099703	Sulfate	104	104	P/P	90 - 110
2100316	Sulfate	103		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366779

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100090	Ammonia-N	106	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366890

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100091	Kjeldahl Nitrogen	97.9	97.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366891

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100142	Kjeldahl Nitrogen	102	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100122	NO2NO3-N	96.5	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100090	Total-P	98.5	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100137	Total-P	100	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099950	O-Phosphate-P	92.7	93.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P366745

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099948	Fluoride	98.9	98.9	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P366799

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100320	Organic Carbon	95.8	95.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366657

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100118	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100485	Barium	1.28	Spike	P	0 - 20
2100485	Calcium	2.33	Spike	P	0 - 20
2100485	Iron	2.12	Spike	P	0 - 20
2100485	Magnesium	1.08	Spike	P	0 - 20
2100485	Potassium	1.40	Spike	P	0 - 20
2100485	Sodium	1.06	Spike	P	0 - 20
2100485	Zinc	1.31	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P367077

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101041	Zinc	0.642	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100485	Aluminum	1.75	Spike	P	0 - 20
2100485	Antimony	0.660	Spike	P	0 - 20
2100485	Arsenic	0.236	Spike	P	0 - 20
2100485	Boron	0.942	Spike	P	0 - 20
2100485	Cadmium	0.128	Spike	P	0 - 20
2100485	Chromium	0.769	Spike	P	0 - 20
2100485	Copper	0.179	Spike	P	0 - 20
2100485	Lead	1.21	Spike	P	0 - 20
2100485	Nickel	1.64	Spike	P	0 - 20
2100485	Selenium	0.0465	Spike	P	0 - 20
2100485	Silver	11.5	Spike	P	0 - 20
2100485	Thallium	0.474	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P367663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100483	Lead	1.27	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366802

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099703	Chloride	0.663	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P366804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099703	Sulfate	0.211	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366779

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100090	Ammonia-N	0.958	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366890

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100091	Kjeldahl Nitrogen	0.215	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366891

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100142	Kjeldahl Nitrogen	1.43	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100122	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100090	Total-P	0.0927	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100137	Total-P	2.41	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099950	O-Phosphate-P	1.07	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P366623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100084	Color (true)	0.275	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P366624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100140	Color (true)	1.27	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P366738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099948	Total Alkalinity	0.709	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P366897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099983	TDS	5.57	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P366898

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100159	TDS	2.90	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P366745

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099948	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P366799

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100320	Organic Carbon	0.0	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: A92506

Included Lab Sample IDs: 2100133, 2100136, 2100139, 2100140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115
Color (true)	101	101	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A92512

Included Lab Sample IDs: 2100133, 2100136, 2100139, 2100140

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A92513

Included Lab Sample IDs: 2100135, 2100138, 2100143, 2100144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	96.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A92518

Included Lab Sample IDs: 2100133, 2100136, 2100139, 2100140

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

Reference Method: SM 2320 B-97

Run ID: A92563

Included Lab Sample IDs: 2100133, 2100136, 2100139, 2100140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	P/P	90 - 110
Total Alkalinity	104	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A92563

Included Lab Sample IDs: 2100133, 2100136, 2100139, 2100140

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A92578

Included Lab Sample IDs: 2100134, 2100137, 2100141, 2100142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	108	109	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A92585

Included Lab Sample IDs: 2100134, 2100137, 2100141, 2100142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.7	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A92605

Included Lab Sample IDs: 2100134, 2100137, 2100141, 2100142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92610

Included Lab Sample IDs: 2100134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.6	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92628

Included Lab Sample IDs: 2100137, 2100141, 2100142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.6	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92675

Included Lab Sample IDs: 2100134, 2100137, 2100141, 2100142

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A92691

Included Lab Sample IDs: 2100152, 2100153

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	95 - 105
Calcium	99.2	99.1	P/P	95 - 105
Iron	99.1	98.6	P/P	95 - 105
Magnesium	99.2	98.7	P/P	95 - 105
Potassium	97.2	97.5	P/P	95 - 105
Sodium	96.4	96.7	P/P	95 - 105
Zinc	101	102	P/P	95 - 105

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A92819

Included Lab Sample IDs: 2100153

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	101	102	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92868

Included Lab Sample IDs: 2100152, 2100153

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	104	103	P/P	90 - 110
Antimony	102	103	P/P	90 - 110
Arsenic	103	103	P/P	90 - 110
Boron	109	108	P/P	90 - 110
Cadmium	104	104	P/P	90 - 110
Chromium	104	104	P/P	90 - 110
Copper	103	102	P/P	90 - 110
Lead	105	106	P/P	90 - 110
Nickel	102	103	P/P	90 - 110
Selenium	104	104	P/P	90 - 110
Silver	104	103	P/P	90 - 110
Thallium	99.0	99.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92947

Included Lab Sample IDs: 2100153

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	95.2	92.6	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						0.0	
EPA 200.7 Rev. 4.4	Barium	100		99.0	100			1.28
	Calcium	91.8		93.3				2.33
	Iron	96.4		98.7	96.6			2.12
	Magnesium	101		101	99.4			1.08
	Potassium	99.2		98.7	96.9			1.40
	Sodium	99.3		92.1	93.8			1.06
	Zinc	99.4		101	102			1.31
	Zinc	101		99.9	101	100		0.642
EPA 200.8 Rev. 5.4	Aluminum	101		103	101			1.75
	Antimony	101		103	104			0.660
	Arsenic	104		106	106			0.236
	Boron	104		109	107			0.942
	Cadmium	105		106	106			0.128
	Chromium	102		104	103			0.769
	Copper	101		104	104			0.179
	Lead	104		107	106			1.21
	Lead	94.1		94.8	93.6			1.27
	Nickel	103		105	103			1.64
	Selenium	103		103	103			0.0465
	Silver	105		106	119			11.5
	Thallium	104		108	107			0.474
EPA 300.0 Rev. 2.1	Chloride	103		104	105	104		0.663
	Sulfate	104		104	104	103		0.211
EPA 350.1 Rev. 2.0	Ammonia-N	107		106	108			0.958
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.7		97.9	97.6			0.215
	Kjeldahl Nitrogen	96.4		102	100			1.43
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100		96.5	96.5			0.0
EPA 365.1 Rev. 2.0	Total-P	100		98.5	98.4			0.0927
	Total-P	98.6		100	103			2.41
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4		92.7	93.7			1.07
SM 2120 B	Color (true)	100					0.275	
	Color (true)	102					1.27	
SM 2320 B-97	Total Alkalinity	104					0.709	
SM 2540 C-97	TDS						5.57	
	TDS						2.90	
SM 4500 F-C-97	Fluoride	101		98.9	98.9			0.0
SM 5310 B-00	Organic Carbon	96.8		95.8	95.8			0.0

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2100133, 2100136, 2100139, 2100140
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2100152, 2100153
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2100152, 2100153
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2100133, 2100136, 2100139, 2100140
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2100133, 2100136, 2100139, 2100140
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2100134, 2100137, 2100141, 2100142

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2100134, 2100137, 2100141, 2100142
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2100134, 2100137, 2100141, 2100142
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2100134, 2100137, 2100141, 2100142
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2100135, 2100138, 2100143, 2100144
SM 2120 B / E31780	True Color measured at 450 nm	2100133, 2100136, 2100139, 2100140
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2100133, 2100136, 2100139, 2100140
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2100133, 2100136, 2100139, 2100140
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2100133, 2100136, 2100139, 2100140
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2100133, 2100136, 2100139, 2100140
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2100134, 2100137, 2100141, 2100142

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	07/02/2019			07/02/2019 16:56	Adrian Shelby	2100133, 2100136, 2100139, 2100140
EPA 200.7 Rev. 4.4	07/02/2019	07/08/2019 13:00	Elliott D. Healy	07/10/2019 09:49	Betina Topolski	2100152
	07/02/2019	07/08/2019 13:00	Elliott D. Healy	07/10/2019 09:52	Betina Topolski	2100153
	07/02/2019	07/11/2019 15:55	Elliott D. Healy	07/16/2019 11:13	Betina Topolski	2100153
EPA 200.8 Rev. 5.4	07/02/2019	07/08/2019 13:00	Elliott D. Healy	07/17/2019 20:55	Robert K Palmer	2100152
	07/02/2019	07/08/2019 13:00	Elliott D. Healy	07/17/2019 21:05	Robert K Palmer	2100153
	07/02/2019	07/22/2019 09:40	Alexander Thompson	07/22/2019 16:58	Robert K Palmer	2100153
EPA 300.0 Rev. 2.1	07/02/2019			07/06/2019 00:28	Jhamieka S. Greenwood	2100133
	07/02/2019			07/06/2019 00:40	Jhamieka S. Greenwood	2100136
	07/02/2019			07/06/2019 00:52	Jhamieka S. Greenwood	2100139
	07/02/2019			07/06/2019 01:05	Jhamieka S. Greenwood	2100140
EPA 350.1 Rev. 2.0	07/02/2019			07/06/2019 12:18	Ping Hua	2100134
	07/02/2019			07/06/2019 12:19	Ping Hua	2100137
	07/02/2019			07/06/2019 12:21	Ping Hua	2100141
	07/02/2019			07/06/2019 12:22	Ping Hua	2100142
EPA 351.2 Rev. 2.0	07/02/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 11:15	Joseph Suarez	2100134
	07/02/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 11:23	Joseph Suarez	2100137
	07/02/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 11:25	Joseph Suarez	2100141
	07/02/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 11:26	Joseph Suarez	2100142
EPA 353.2 Rev. 2.0	07/02/2019			07/08/2019 12:49	Lauren Lees	2100134
	07/02/2019			07/08/2019 12:50	Lauren Lees	2100137
	07/02/2019			07/08/2019 12:51	Lauren Lees	2100141
	07/02/2019			07/08/2019 12:52	Lauren Lees	2100142
EPA 365.1 Rev. 2.0	07/02/2019	07/05/2019 15:00	Adrian Shelby	07/08/2019 12:02	Beverly Y. Sanders	2100134
	07/02/2019	07/08/2019 11:04	Joseph Suarez	07/09/2019 08:37	Lipi Saha	2100137
	07/02/2019	07/08/2019 11:04	Joseph Suarez	07/09/2019 08:40	Lipi Saha	2100141
	07/02/2019	07/08/2019 11:04	Joseph Suarez	07/09/2019 08:41	Lipi Saha	2100142
EPA 365.1 Rev. 2.0 dissolved	07/02/2019			07/02/2019 17:49	Jhamieka S. Greenwood	2100135
	07/02/2019			07/02/2019 17:50	Jhamieka S. Greenwood	2100138
	07/02/2019			07/02/2019 17:51	Jhamieka S. Greenwood	2100143
	07/02/2019			07/02/2019 17:52	Jhamieka S. Greenwood	2100144
SM 2120 B	07/02/2019			07/02/2019 15:30	Madeline Funaro	2100133
	07/02/2019			07/02/2019 15:33	Madeline Funaro	2100136
	07/02/2019			07/02/2019 15:34	Madeline Funaro	2100139
	07/02/2019			07/02/2019 15:36	Madeline Funaro	2100140
SM 2320 B-97	07/02/2019			07/04/2019 16:58	Dale L. Simmons	2100133
	07/02/2019			07/04/2019 17:53	Dale L. Simmons	2100136
	07/02/2019			07/04/2019 18:06	Dale L. Simmons	2100139
	07/02/2019			07/04/2019 18:19	Dale L. Simmons	2100140
SM 2540 C-97	07/02/2019			07/03/2019 15:12	Yijie Li	2100133, 2100136, 2100139, 2100140

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-97	07/02/2019			07/03/2019 15:12	Yijie Li	2100133, 2100136, 2100139, 2100140
SM 4500 F-C-97	07/02/2019			07/04/2019 16:58	Dale L. Simmons	2100133
	07/02/2019			07/04/2019 17:53	Dale L. Simmons	2100136
	07/02/2019			07/04/2019 18:06	Dale L. Simmons	2100139
	07/02/2019			07/04/2019 18:19	Dale L. Simmons	2100140
SM 5310 B-00	07/02/2019			07/05/2019 11:41	Madeline Funaro	2100134
	07/02/2019			07/05/2019 11:54	Madeline Funaro	2100137
	07/02/2019			07/06/2019 12:08	Madeline Funaro	2100141
	07/02/2019			07/06/2019 12:23	Madeline Funaro	2100142