

Chemical Analysis Report

NW-DIST-2016-04-12-01

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

Event Description: **WBID 351 361 432 445 476 321**

Request ID: **RQ-2016-02-22-04**

Customer: **NW-DIST**

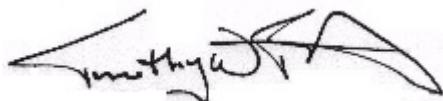
Project ID: **SMP**

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Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 29-APR-2016 10:18



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: Titi Creek Above Eglin 214

Collection Date/Time: 04/11/2016 11:00

Field ID: G4NW0369

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788478	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P302122	
	EPA 300.0 Rev. 2.1	Chloride	1.9		mg Cl/L	P302310	
		Sulfate	0.83		mg SO4/L	P302316	
	SM 2120 B	Color (true)	60	A	PCU	P302079	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302423	
	SM 2540 C-97	TDS	15	U	mg/L	P302837	
	SM 2540 D-97	TSS	2	I	mg/L	P302824	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302426	
1788487	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P302565	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P302842	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P302260	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P302570	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P302646	
1788496	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302106	

Ref. Method and Comment:

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

Sample Location: Titi Creek Above Eglin Rd 207

Collection Date/Time: 04/11/2016 11:40

Field ID: G4NW0364

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788479	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P302122	
	EPA 300.0 Rev. 2.1	Chloride	2.0		mg Cl/L	P302310	
		Sulfate	0.75		mg SO4/L	P302316	
	SM 2120 B	Color (true)	43		PCU	P302079	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302423	
	SM 2540 C-97	TDS	15	U	mg/L	P302837	
	SM 2540 D-97	TSS	3	I	mg/L	P302824	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302426	
1788488	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P302565	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P302848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P302260	
	EPA 365.1 Rev. 2.0	Total-P	0.005		mg P/L	P302570	
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P302646	
1788497	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302106	

Ref. Method and Comment:

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

Sample Location: Titi Creek @ Eglin 220 AKA JAXGRD #07015007 Collection Date/Time: 04/11/2016 12:00

Field ID: G4NW0368

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788480	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P302122	
	EPA 300.0 Rev. 2.1	Chloride	2.0		mg Cl/L	P302310	
		Sulfate	0.79		mg SO4/L	P302316	

Field ID: G4NW0368

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788480	SM 2120 B	Color (true)	42		PCU	P302079	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302423	
	SM 2540 C-97	TDS	15	I	mg/L	P302837	
	SM 2540 D-97	TSS	3	I	mg/L	P302824	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302426	
1788489	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P302565	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P302848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P302260	
	EPA 365.1 Rev. 2.0	Total-P	0.005		mg P/L	P302570	
	SM 5310 B-00	Organic Carbon	2.5		mg C/L	P302646	
1788498	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302106	

Ref. Method and Comment:

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

Sample Location: Titi Creek Above SR 285

Collection Date/Time: 04/11/2016 12:30

Field ID: G4NW0365

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788481	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P302122	
	EPA 300.0 Rev. 2.1	Chloride	1.9		mg Cl/L	P302310	
		Sulfate	0.86		mg SO4/L	P302316	
	SM 2120 B	Color (true)	56		PCU	P302079	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302423	
	SM 2540 C-97	TDS	15	U	mg/L	P302837	
	SM 2540 D-97	TSS	2	I	mg/L	P302824	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302426	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P302565	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P302848	
1788490	EPA 353.2 Rev. 2.0	NO2NO3-N	0.058		mg N/L	P302260	
	EPA 365.1 Rev. 2.0	Total-P	0.005		mg P/L	P302570	
	SM 5310 B-00	Organic Carbon	2.9		mg C/L	P302646	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302106	

Ref. Method and Comment:

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

Sample Location: Boiling Creek Above Eglin Rd 211

Collection Date/Time: 04/11/2016 14:00

Field ID: G4NW0342

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788482	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P302122	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P302310	
		Sulfate	0.50	I	mg SO4/L	P302316	
	SM 2120 B	Color (true)	12		PCU	P302079	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302423	
	SM 2540 C-97	TDS	15	U	mg/L	P302837	
	SM 2540 D-97	TSS	2	U	mg/L	P302824	

Field ID: G4NW0342

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788482	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302426	
1788491	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P302565	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P302848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P302260	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P302570	
	SM 5310 B-00	Organic Carbon	1.1		mg C/L	P302646	
1788500	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302106	

Ref. Method and Comment:

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

Sample Location: Catfish Br @ Eglin 736 AKA JAXGRD #02015003

Collection Date/Time: 04/11/2016 14:45

Field ID: G4NW0104

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788483	EPA 180.1 Rev. 2.0	Turbidity	0.40		NTU	P302122	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P302310	
		Sulfate	1.4		mg SO4/L	P302316	
	SM 2120 B	Color (true)	24		PCU	P302079	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302423	
	SM 2540 C-97	TDS	15	U	mg/L	P302837	
	SM 2540 D-97	TSS	2	U	mg/L	P302824	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302426	
1788492	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P302650	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.098	I	mg N/L	P302848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P302260	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P302571	
	SM 5310 B-00	Organic Carbon	1.7		mg C/L	P302646	
1788501	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302106	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Dean Creek, West Head @ Vonnie T Rd.

Collection Date/Time: 04/11/2016 15:20

Field ID: G4NW0279

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788484	EPA 180.1 Rev. 2.0	Turbidity	0.55		NTU	P302122	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P302310	
		Sulfate	1.4		mg SO4/L	P302316	
	SM 2120 B	Color (true)	15		PCU	P302079	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302423	
	SM 2540 C-97	TDS	15	I	mg/L	P302837	
	SM 2540 D-97	TSS	3	I	mg/L	P302824	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302426	
1788493	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P302650	

Field ID: G4NW0279

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788493	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P302848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.032		mg N/L	P302260	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P302571	
	SM 5310 B-00	Organic Carbon	1.2		mg C/L	P302646	
1788502	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302106	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: West Head of Dean Creek @ Natalie Lane

Collection Date/Time: 04/11/2016 15:30

Field ID: G4NW0278

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788485	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P302122	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P302310	
		Sulfate	1.4		mg SO4/L	P302316	
	SM 2120 B	Color (true)	46		PCU	P302080	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302423	
	SM 2540 C-97	TDS	21	I	mg/L	P302837	
	SM 2540 D-97	TSS	2	U	mg/L	P302824	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302426	
1788494	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P302650	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P302848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.017		mg N/L	P302261	
	EPA 365.1 Rev. 2.0	Total-P	0.005		mg P/L	P302571	
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P302646	
1788503	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302106	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Dean Creek Upstream of SR-87

Collection Date/Time: 04/11/2016 15:45

Field ID: G4NW0362

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788486	EPA 180.1 Rev. 2.0	Turbidity	0.70		NTU	P302122	
	EPA 300.0 Rev. 2.1	Chloride	4.2		mg Cl/L	P302310	
		Sulfate	1.3		mg SO4/L	P302316	
	SM 2120 B	Color (true)	44		PCU	P302080	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302423	
	SM 2540 C-97	TDS	25		mg/L	P302838	
	SM 2540 D-97	TSS	2	I	mg/L	P302825	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302426	
1788495	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P302650	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P302848	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P302261	

Field ID: G4NW0362

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1788495	EPA 365.1 Rev. 2.0	Total-P	0.005	I	mg P/L	P302571	
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P302646	
1788504	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302106	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P302122

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P302310

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P302316

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P302565

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P302650

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P302842

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P302848

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: P302260

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302261

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302570

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302571

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302106

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

Reference Method: SM 2120 B
Batch ID: P302079

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P302080

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P302423

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

Reference Method: SM 2540 C-97
Batch ID: P302837

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P302838

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P302824

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P302825

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P302426

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P302646

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: P302310

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302316

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302565

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302650

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302650

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302842

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302848

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302260

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302261

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: P302570

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302571

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302106

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

Reference Method: SM 2320 B-97
Batch ID: P302423

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P302426

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P302646

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	92.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788468	Chloride	102		P	90 - 110
1788557	Chloride	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788468	Sulfate	99.0		P	90 - 110
1788557	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302565

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788446	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302842

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788469	Kjeldahl Nitrogen	101	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302848

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788488	Kjeldahl Nitrogen	103	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302260

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788487	NO2NO3-N	98.2	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302261

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788494	NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302570

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788444	Total-P	98.1	94.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302571

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788492	Total-P	96.8	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302106

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788501	O-Phosphate-P	101	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P302426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788402	Fluoride	95.4	96.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P302646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1788446	Organic Carbon	97.0	94.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P302122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788468	Turbidity	3.15	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788468	Chloride	0.118	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788468	Sulfate	0.0331	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302565

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788446	Ammonia-N	1.46	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788534	Ammonia-N	0.169	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302842

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788469	Kjeldahl Nitrogen	1.06	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302848

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788488	Kjeldahl Nitrogen	5.17	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302260

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788487	NO2NO3-N	3.99	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302261

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788494	NO2NO3-N	1.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302570

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788444	Total-P	3.87	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302571

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788492	Total-P	1.79	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788501	O-Phosphate-P	1.37	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788478	Color (true)	1.14	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788538	Color (true)	2.04	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P302423

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788402	Total Alkalinity	0.0236	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P302837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788468	TDS	7.57	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P302838

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788533	TDS	3.13	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P302426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788402	Fluoride	0.995	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P302646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1788446	Organic Carbon	1.75	Spike	P	0 - 20

* 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 300.0 Rev. 2.1
Run ID: A68804
Included Lab Sample IDs: 1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	102	P/P	90 - 110
Chloride	103	103	P/P	90 - 110
Sulfate	101	97.6	P/P	90 - 110
Sulfate	98.8	101	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A68822
Included Lab Sample IDs: 1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	100	P/P	90 - 115
Color (true)	100	101	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A68831
Included Lab Sample IDs: 1788496, 1788497, 1788498, 1788499, 1788500, 1788501, 1788502, 1788503, 1788504

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.3	P/P	90 - 110
O-Phosphate-P	101	99.9	P/P	90 - 110
O-Phosphate-P	99.3	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68840
Included Lab Sample IDs: 1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A68882
Included Lab Sample IDs: 1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	98.5	P/P	90 - 110
NO2NO3-N	98.5	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A68927

Included Lab Sample IDs: 1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.7	P/P	90 - 110
Total Alkalinity	99.7	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68927

Included Lab Sample IDs: 1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	101	P/P	90 - 110
Fluoride	99.5	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68974

Included Lab Sample IDs: 1788487, 1788488, 1788489, 1788490, 1788491

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	104	P/P	90 - 110
Ammonia-N	104	103	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A68999

Included Lab Sample IDs: 1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	95.5	P/P	90 - 110
Organic Carbon	96.5	95.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69001

Included Lab Sample IDs: 1788492, 1788493, 1788494, 1788495

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.2	99.4	P/P	90 - 110
Ammonia-N	99.4	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69063

Included Lab Sample IDs: 1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69109

Included Lab Sample IDs: 1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	99.5	P/P	90 - 110
Kjeldahl Nitrogen	105	110	P/P	90 - 110
Kjeldahl Nitrogen	110	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69109

Included Lab Sample IDs: 1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.5	105	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				3.15	
EPA 300.0 Rev. 2.1	Chloride	104	102 105		0.118	
	Sulfate	100	99.0 102		0.0331	
EPA 350.1 Rev. 2.0	Ammonia-N	104	102 103			1.46
	Ammonia-N	97.9				0.169
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	101 99.7			1.06
	Kjeldahl Nitrogen	99.2	103 97.0			5.17
EPA 353.2 Rev. 2.0	NO2NO3-N	102	98.2 103			3.99
	NO2NO3-N	100	99.0 100			1.39
EPA 365.1 Rev. 2.0	Total-P	95.4	98.1 94.2			3.87
	Total-P	96.0	96.8 98.6			1.79
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	105	101 103			1.37
SM 2120 B	Color (true)				1.14	
	Color (true)				2.04	
SM 2320 B-97	Total Alkalinity	102			0.0236	
SM 2540 C-97	TDS				7.57	
	TDS				3.13	
SM 4500 F-C-97	Fluoride	98.0	95.4 96.5			0.995
SM 5310 B-00	Organic Carbon	92.5	97.0 94.0			1.75

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1788496, 1788497, 1788498, 1788499, 1788500, 1788501, 1788502, 1788503, 1788504
SM 2120 B / E31780	True Color measured at 450 nm	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495

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	04/12/2016			04/12/2016 15:22	Sima Feizi	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
EPA 300.0 Rev. 2.1	04/12/2016			04/14/2016	Ping Hua	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
EPA 350.1 Rev. 2.0	04/12/2016			04/19/2016	Diana M. Turner	1788487, 1788488, 1788489, 1788490, 1788491
EPA 351.2 Rev. 2.0	04/12/2016	04/25/2016	Sofia Elnemr	04/20/2016	Diana M. Turner	1788492, 1788493, 1788494, 1788495
	04/12/2016			04/26/2016	Christopher Armour	1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495
EPA 353.2 Rev. 2.0	04/12/2016			04/14/2016	Peter D. Kaus	1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495
EPA 365.1 Rev. 2.0	04/12/2016	04/20/2016	Christopher Armour	04/21/2016	Lipi Saha	1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495
EPA 365.1 Rev. 2.0 dissolved	04/12/2016			04/12/2016 14:20	Julia Storbeck	1788501
	04/12/2016			04/12/2016 15:21	Julia Storbeck	1788496
	04/12/2016			04/12/2016 15:22	Julia Storbeck	1788497
	04/12/2016			04/12/2016 15:23	Julia Storbeck	1788498, 1788499
	04/12/2016			04/12/2016 15:24	Julia Storbeck	1788500
	04/12/2016			04/12/2016 15:25	Julia Storbeck	1788502
	04/12/2016			04/12/2016 15:26	Julia Storbeck	1788503
	04/12/2016			04/12/2016 15:31	Julia Storbeck	1788504
SM 2120 B	04/12/2016			04/12/2016 13:51	Rochelle Y Jackson	1788478
	04/12/2016			04/12/2016 13:52	Rochelle Y Jackson	1788479
	04/12/2016			04/12/2016 13:53	Rochelle Y Jackson	1788480
	04/12/2016			04/12/2016 13:54	Rochelle Y Jackson	1788481, 1788482
	04/12/2016			04/12/2016 13:55	Rochelle Y Jackson	1788483
	04/12/2016			04/12/2016 13:56	Rochelle Y Jackson	1788484
	04/12/2016			04/12/2016 13:59	Rochelle Y Jackson	1788485
	04/12/2016			04/12/2016 14:00	Rochelle Y Jackson	1788486
SM 2320 B-97	04/12/2016			04/16/2016	Dale L. Simmons	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
SM 2540 C-97	04/12/2016			04/15/2016	Yijie Li	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
SM 2540 D-97	04/12/2016			04/15/2016	Yijie Li	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-97	04/12/2016			04/16/2016	Dale L. Simmons	1788478, 1788479, 1788480, 1788481, 1788482, 1788483, 1788484, 1788485, 1788486
SM 5310 B-00	04/12/2016			04/19/2016	Sofia Elnemr	1788487, 1788488, 1788489, 1788490, 1788491, 1788492, 1788493, 1788494, 1788495