

Chemical Analysis Report

WQAP-2016-07-27-07

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

Event Description: **Caney Branch, Ward Creek, Lake Lafayette Drain and Little River**
Request ID: **RQ-2016-07-25-47**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
MS #3560
Tallahassee, FL 32399-2400
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 22-AUG-2016 10:30



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 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: LAKE LAFAYETTE DRAIN @ CHAIRES CROSS **Collection Date/Time: 07/27/2016 08:40**
RD.

Field ID: G1WA0013-07272016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819654	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P308766	
	EPA 300.0 Rev. 2.1	Chloride	2.3		mg Cl/L	P309376	
	SM 2120 B	Color (true)	120		PCU	P308738	
	SM 2320 B-97	Total Alkalinity	6.0		mg CaCO3/L	P308919	
	SM 2540 C-97	TDS	39		mg/L	P309414	
	SM 2540 D-97	TSS	5	I	mg/L	P309011	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P308922	
1819657	EPA 350.1 Rev. 2.0	Ammonia-N	0.059		mg N/L	P308942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P309244	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P309032	
	EPA 365.1 Rev. 2.0	Total-P	0.083		mg P/L	P309281	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P309198	
1819660	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.049		mg P/L	P308735	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of 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: CANEY CREEK UPSTREAM OF US 90

Collection Date/Time: 07/27/2016 09:25

Field ID: G1WA0014-07272016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819651	EPA 180.1 Rev. 2.0	Turbidity	9.1		NTU	P308766	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P309376	
	SM 2120 B	Color (true)	100		PCU	P308738	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P308919	
	SM 2540 C-97	TDS	73		mg/L	P309414	
	SM 2540 D-97	TSS	6	I	mg/L	P309011	
	SM 4500 F-C-97	Fluoride	0.087	I	mg F/L	P308922	
1819652	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P308942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P309244	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.32		mg N/L	P309032	
	EPA 365.1 Rev. 2.0	Total-P	0.52		mg P/L	P309281	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P309198	
1819653	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.41		mg P/L	P308735	
1819676	EPA 200.7 Rev. 4.4	Calcium	6.61		mg/L	P308969	
		Iron	790		ug/L	P308969	
		Magnesium	2.73		mg/L	P308969	
		Potassium	3.3		mg/L	P308969	
		Sodium	4.2		mg/L	P308969	
		Zinc	5.0	U	ug/L	P308969	
	EPA 200.8 Rev. 5.4	Arsenic	0.73		ug/L	P308969	
		Cadmium	0.020	U	ug/L	P308969	
		Chromium	1.05		ug/L	P308969	

Field ID: G1WA0014-07272016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819676	EPA 200.8 Rev. 5.4	Copper	0.34	I	ug/L	P308969	
		Lead	0.38		ug/L	P308969	
		Nickel	0.36		ug/L	P308969	
		Silver	0.0050	U	ug/L	P308969	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of 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: CANEY CREEK UPSTREAM OF US 90

Collection Date/Time: 07/27/2016 09:25

Field ID: G1WA0014D-07272016DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819663	EPA 180.1 Rev. 2.0	Turbidity	8.6	A	NTU	P308767	
	EPA 300.0 Rev. 2.1	Chloride	6.2		mg Cl/L	P309376	
	SM 2120 B	Color (true)	100		PCU	P308738	
	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P308919	
	SM 2540 C-97	TDS	76		mg/L	P309414	
	SM 2540 D-97	TSS	5	I	mg/L	P309011	
	SM 4500 F-C-97	Fluoride	0.088	I	mg F/L	P308922	
1819664	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P308942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P309244	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P309033	
	EPA 365.1 Rev. 2.0	Total-P	0.51		mg P/L	P309281	
	SM 5310 B-00	Organic Carbon	9.5		mg C/L	P309198	
1819665	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.42		mg P/L	P308735	
1819677	EPA 200.7 Rev. 4.4	Calcium	6.90		mg/L	P308969	
		Iron	820		ug/L	P308969	
		Magnesium	2.87		mg/L	P308969	
		Potassium	3.4		mg/L	P308969	
		Sodium	4.4		mg/L	P308969	
		Zinc	5.0	U	ug/L	P308969	
	EPA 200.8 Rev. 5.4	Arsenic	0.75		ug/L	P308969	
		Cadmium	0.020	U	ug/L	P308969	
		Chromium	1.05		ug/L	P308969	
		Copper	0.45		ug/L	P308969	
		Lead	0.36		ug/L	P308969	
		Nickel	0.32		ug/L	P308969	
		Silver	0.0050	U	ug/L	P308969	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of 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: QA/QC BLANK

Collection Date/Time: 07/27/2016 08:25

Field ID: G1WA0014B-07272016

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819666	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P308767	

Field ID: G1WA0014B-07272016

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819666	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P309376	
	SM 2120 B	Color (true)	2.5	U	PCU	P308738	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P308919	
	SM 2540 C-97	TDS	15	U	mg/L	P309411	
	SM 2540 D-97	TSS	2	U	mg/L	P309008	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P308922	
1819667	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P308942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P309244	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P309033	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P309281	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P309198	
1819668	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P308735	
1819678	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P308969	
		Iron	30	U	ug/L	P308969	
		Magnesium	0.040	U	mg/L	P308969	
		Potassium	0.30	U	mg/L	P308969	
		Sodium	0.50	U	mg/L	P308969	
		Zinc	5.0	U	ug/L	P308969	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P308969	
		Cadmium	0.020	U	ug/L	P308969	
		Chromium	0.050	U	ug/L	P308969	
		Copper	0.10	U	ug/L	P308969	
		Lead	0.050	U	ug/L	P308969	
		Nickel	0.050	U	ug/L	P308969	
		Silver	0.0050	U	ug/L	P308969	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of 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: WARD CREEK @ CR 3 WEST BRIDGE

Collection Date/Time: 07/27/2016 12:00

Field ID: 303352108354339-07272016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819655	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P308766	
	EPA 300.0 Rev. 2.1	Chloride	4.1		mg Cl/L	P309376	
	SM 2120 B	Color (true)	140		PCU	P308738	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P308919	
	SM 2540 C-97	TDS	59		mg/L	P309414	
	SM 2540 D-97	TSS	4	I	mg/L	P309011	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P308922	
1819658	EPA 350.1 Rev. 2.0	Ammonia-N	0.14		mg N/L	P308942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P309244	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P309032	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P309281	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P309807	

Field ID: 303352108354339-07272016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819661	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.056		mg P/L	P308735	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of 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: LITTLE RIVER 100 METERS UPSTREAM OF SR 12 Collection Date/Time: 07/27/2016 13:40

Field ID: G1WA0020-07272016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1819656	EPA 180.1 Rev. 2.0	Turbidity	16		NTU	P308766	
	EPA 300.0 Rev. 2.1	Chloride	7.5		mg Cl/L	P309376	
	SM 2120 B	Color (true)	43	A	PCU	P308739	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P308919	
	SM 2540 C-97	TDS	90		mg/L	P309414	
	SM 2540 D-97	TSS	8	I	mg/L	P309011	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P308922	
1819659	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P308942	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P309244	
	EPA 353.2 Rev. 2.0	NO2NO3-N	4.4		mg N/L	P309032	
	EPA 365.1 Rev. 2.0	Total-P	0.084		mg P/L	P309281	
	SM 5310 B-00	Organic Carbon	6.3		mg C/L	P309198	
1819662	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P308735	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of 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: P308766

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P308767

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P308969

Component	Result	Code	Units
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

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308969

Component	Result	Code	Units
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308969

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309376

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308942

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309244

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309032

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309033

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309281

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308735

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

Reference Method: SM 2120 B
Batch ID: P308738

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P308739

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P308919

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

Reference Method: SM 2540 C-97
Batch ID: P309411

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P309414

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P309008

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P309011

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P308922

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P309198

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

Reference Method: SM 5310 B-00
Batch ID: P309807

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: P308969

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	105		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	103		P	85 - 115
Sodium	104		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308969

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	95.8		P	85 - 115
Cadmium	98.3		P	85 - 115
Chromium	101		P	85 - 115
Copper	92.6		P	85 - 115
Lead	94.9		P	85 - 115
Nickel	93.0		P	85 - 115
Silver	94.9		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309376

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308942

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: P309244

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309032

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309033

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309281

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308735

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

Reference Method: SM 2320 B-97
Batch ID: P308919

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P308922

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

Reference Method: SM 5310 B-00
Batch ID: P309198

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P309807

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308969

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308969

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819297	Calcium	104		P	80 - 120
1819297	Iron	105		P	80 - 120
1819297	Magnesium	104		P	80 - 120
1819297	Potassium	102		P	80 - 120
1819297	Sodium	102		P	80 - 120
1819297	Zinc	97.2		P	80 - 120
1820259	Calcium	107	110	P/P	80 - 120
1820259	Iron	107	108	P/P	80 - 120
1820259	Magnesium	109	111	P/P	80 - 120
1820259	Potassium	109	110	P/P	80 - 120
1820259	Sodium	105	107	P/P	80 - 120
1820259	Zinc	100	106	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308969

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819297	Arsenic	96.2		P	80 - 120
1819297	Cadmium	98.2		P	80 - 120
1819297	Chromium	100		P	80 - 120
1819297	Copper	88.7		P	80 - 120
1819297	Lead	96.3		P	80 - 120
1819297	Nickel	90.4		P	80 - 120
1819297	Silver	95.9		P	80 - 120
1820259	Arsenic	95.6	97.7	P/P	80 - 120
1820259	Cadmium	102	101	P/P	80 - 120
1820259	Chromium	105	104	P/P	80 - 120
1820259	Copper	92.9	94.2	P/P	80 - 120
1820259	Lead	98.2	98.0	P/P	80 - 120
1820259	Nickel	92.6	94.7	P/P	80 - 120
1820259	Silver	97.6	97.2	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309376

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819651	Chloride	98.1		P	90 - 110
1822305	Chloride	95.4	95.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819636	Kjeldahl Nitrogen	92.6	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819473	NO2NO3-N	99.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819664	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309281

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819638	Total-P	105	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308735

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819642	O-Phosphate-P	101	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P308922

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819631	Fluoride	98.0	98.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P309198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819637	Organic Carbon	106	106	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P309807

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1819965	Organic Carbon	106	102	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308766

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819472	Turbidity	0.703	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819663	Turbidity	0.233	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P308969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1820259	Calcium	1.98	Spike	P	0 - 20
1820259	Iron	1.38	Spike	P	0 - 20
1820259	Magnesium	1.74	Spike	P	0 - 20
1820259	Potassium	1.58	Spike	P	0 - 20
1820259	Sodium	1.32	Spike	P	0 - 20
1820259	Zinc	5.22	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P308969

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1820259	Arsenic	2.23	Spike	P	0 - 20
1820259	Cadmium	1.73	Spike	P	0 - 20
1820259	Chromium	0.582	Spike	P	0 - 20
1820259	Copper	1.32	Spike	P	0 - 20
1820259	Lead	0.287	Spike	P	0 - 20
1820259	Nickel	2.21	Spike	P	0 - 20
1820259	Silver	0.438	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P309376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1822305	Chloride	0.0134	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819657	Ammonia-N	0.208	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P309244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819636	Kjeldahl Nitrogen	15.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819473	NO2NO3-N	0.397	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P309033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819664	NO2NO3-N	0.587	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P309281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819638	Total-P	1.98	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819642	O-Phosphate-P	1.01	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P308738

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819686	Color (true)	2.99	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P308739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819656	Color (true)	0.366	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P308919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819631	Total Alkalinity	0.260	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P309411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819115	TDS	6.12	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P309414

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819634	TDS	2.80	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P308922

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819631	Fluoride	0.482	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P309198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819637	Organic Carbon	0.497	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P309807

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1819965	Organic Carbon	2.74	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 365.1 Rev. 2.0 dissolved
Run ID: A70793
Included Lab Sample IDs: 1819653, 1819660, 1819661, 1819662, 1819665, 1819668

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	98.3	P/P	90 - 110
O-Phosphate-P	99.7	99.0	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A70794
Included Lab Sample IDs: 1819651, 1819654, 1819655, 1819656, 1819663, 1819666

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	97.1	P/P	85 - 115
Color (true)	99.9	100	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70799
Included Lab Sample IDs: 1819651, 1819654, 1819655, 1819656, 1819663, 1819666

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105
Turbidity	99.0	100	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A70856

Included Lab Sample IDs: 1819651, 1819654, 1819655, 1819656, 1819663, 1819666

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

Reference Method: SM 4500 F-C-97

Run ID: A70856

Included Lab Sample IDs: 1819651, 1819654, 1819655, 1819656, 1819663, 1819666

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70861

Included Lab Sample IDs: 1819652, 1819657, 1819658, 1819659, 1819664, 1819667

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70885

Included Lab Sample IDs: 1819651, 1819654, 1819655, 1819656, 1819663, 1819666

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	99.6	P/P	90 - 110
Chloride	99.6	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70894

Included Lab Sample IDs: 1819652, 1819657, 1819658, 1819659, 1819664, 1819667

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	100	101	P/P	90 - 110
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A70934

Included Lab Sample IDs: 1819676, 1819677, 1819678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	90 - 110
Calcium	103	103	P/P	95 - 105
Iron	102	102	P/P	90 - 110
Iron	102	102	P/P	95 - 105
Magnesium	103	103	P/P	95 - 105
Magnesium	103	103	P/P	90 - 110
Potassium	102	101	P/P	95 - 105
Potassium	102	102	P/P	90 - 110
Sodium	101	101	P/P	95 - 105
Sodium	101	102	P/P	90 - 110
Zinc	98.5	99.5	P/P	95 - 105
Zinc	98.9	99.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A70940

Included Lab Sample IDs: 1819676, 1819677, 1819678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	97.1	97.5	P/P	90 - 110
Cadmium	97.5	97.7	P/P	90 - 110
Cadmium	98.5	97.1	P/P	90 - 110
Chromium	99.2	99.9	P/P	90 - 110
Chromium	99.3	99.2	P/P	90 - 110
Chromium	99.9	102	P/P	90 - 110
Lead	93.2	92.7	P/P	90 - 110
Lead	94.0	93.2	P/P	90 - 110
Lead	95.0	94.0	P/P	90 - 110
Silver	93.2	92.7	P/P	90 - 110
Silver	93.3	93.7	P/P	90 - 110
Silver	93.7	93.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A70945

Included Lab Sample IDs: 1819652, 1819657, 1819659, 1819664, 1819667

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A70963

Included Lab Sample IDs: 1819676, 1819677, 1819678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	94.7	93.7	P/P	90 - 110
Arsenic	97.2	94.7	P/P	90 - 110
Arsenic	98.3	95.5	P/P	90 - 110
Copper	91.5	91.1	P/P	90 - 110
Copper	94.4	91.5	P/P	90 - 110
Copper	96.9	93.6	P/P	90 - 110
Nickel	92.3	91.2	P/P	90 - 110
Nickel	94.3	92.3	P/P	90 - 110
Nickel	97.5	93.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70992

Included Lab Sample IDs: 1819652, 1819657, 1819658, 1819659, 1819664

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71009

Included Lab Sample IDs: 1819667

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71014

Included Lab Sample IDs: 1819652, 1819657, 1819658, 1819659, 1819664, 1819667

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.0	97.2	P/P	90 - 110
Kjeldahl Nitrogen	97.2	93.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A71153

Included Lab Sample IDs: 1819658

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.6	98.8	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						0.703	
	Turbidity						0.233	
EPA 200.7 Rev. 4.4	Calcium	106	104	107	110			1.98
	Iron	105	105	107	108			1.38
	Magnesium	107	104	109	111			1.74
	Potassium	103	102	109	110			1.58
	Sodium	104	102	105	107			1.32
	Zinc	100	97.2	100	106			5.22
EPA 200.8 Rev. 5.4	Arsenic	95.8	96.2	95.6	97.7			2.23
	Cadmium	98.3	98.2	102	101			1.73
	Chromium	101	100	105	104			0.582
	Copper	92.6	88.7	92.9	94.2			1.32
	Lead	94.9	96.3	98.2	98.0			0.287
	Nickel	93.0	90.4	92.6	94.7			2.21
	Silver	94.9	95.9	97.6	97.2			0.438
EPA 300.0 Rev. 2.1	Chloride	97.9	95.4	95.4	98.1			0.0134
EPA 350.1 Rev. 2.0	Ammonia-N	107						0.208
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	92.6	108				15.0
EPA 353.2 Rev. 2.0	NO2NO3-N	106	99.8					0.397
	NO2NO3-N	104	100					0.587
EPA 365.1 Rev. 2.0	Total-P	98.9	105	103				1.98
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	101	102				1.01
SM 2120 B	Color (true)						2.99	
	Color (true)						0.366	
SM 2320 B-97	Total Alkalinity	103					0.260	
SM 2540 C-97	TDS						6.12	
	TDS						2.80	
SM 4500 F-C-97	Fluoride	101	98.0	98.5				0.482
SM 5310 B-00	Organic Carbon	102	106	106				0.497
	Organic Carbon	99.0	106	102				2.74

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1819676, 1819677, 1819678
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1819676, 1819677, 1819678
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1819652, 1819657, 1819658, 1819659, 1819664, 1819667
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1819652, 1819657, 1819658, 1819659, 1819664, 1819667
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1819652, 1819657, 1819658, 1819659, 1819664, 1819667
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1819652, 1819657, 1819658, 1819659, 1819664, 1819667
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1819653, 1819660, 1819661, 1819662, 1819665, 1819668
SM 2120 B / E31780	True Color measured at 450 nm	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1819652, 1819657, 1819658, 1819659, 1819664, 1819667

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	07/27/2016			07/27/2016 16:42	Sima Feizi	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
EPA 200.7 Rev. 4.4	07/27/2016	08/01/2016	Elliott D. Healy	08/03/2016	Joshua Ayres	1819676, 1819677, 1819678
EPA 200.8 Rev. 5.4	07/27/2016	08/01/2016	Elliott D. Healy	08/03/2016	Charles J. Peterson	1819678
	07/27/2016	08/01/2016	Elliott D. Healy	08/04/2016	Charles J. Peterson	1819676, 1819677, 1819678
EPA 300.0 Rev. 2.1	07/27/2016			08/05/2016	Ping Hua	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
EPA 350.1 Rev. 2.0	07/27/2016			07/29/2016	Julie Michelle Frank	1819652, 1819657, 1819658, 1819659, 1819664, 1819667
EPA 351.2 Rev. 2.0	07/27/2016	08/05/2016	Sofia Elnemr	08/09/2016	Virginia P. Brown	1819652, 1819657, 1819658, 1819659, 1819664, 1819667
EPA 353.2 Rev. 2.0	07/27/2016			08/02/2016	Peter D. Kaus	1819652, 1819657, 1819658, 1819659, 1819664, 1819667
EPA 365.1 Rev. 2.0	07/27/2016	08/05/2016	Vijayalakshmi Reddy	08/08/2016	Lipi Saha	1819652, 1819657, 1819658, 1819659, 1819664
	07/27/2016	08/05/2016	Vijayalakshmi Reddy	08/09/2016	Lipi Saha	1819667
EPA 365.1 Rev. 2.0 dissolved	07/27/2016			07/27/2016 16:28	Julia Storbeck	1819660, 1819661
	07/27/2016			07/27/2016 16:29	Julia Storbeck	1819662
	07/27/2016			07/27/2016 16:32	Julia Storbeck	1819653
	07/27/2016			07/27/2016 16:33	Julia Storbeck	1819665
	07/27/2016			07/27/2016 16:39	Julia Storbeck	1819668
SM 2120 B	07/27/2016			07/27/2016 18:05	Rochelle Y Jackson	1819651
	07/27/2016			07/27/2016 18:06	Rochelle Y Jackson	1819654, 1819655
	07/27/2016			07/27/2016 18:08	Rochelle Y Jackson	1819663
	07/27/2016			07/27/2016 18:09	Rochelle Y Jackson	1819666
	07/27/2016			07/27/2016 18:14	Rochelle Y Jackson	1819656
SM 2320 B-97	07/27/2016			07/30/2016	Dale L. Simmons	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
SM 2540 C-97	07/27/2016			07/29/2016	Yijie Li	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
SM 2540 D-97	07/27/2016			07/29/2016	Yijie Li	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
SM 4500 F-C-97	07/27/2016			07/30/2016	Dale L. Simmons	1819651, 1819654, 1819655, 1819656, 1819663, 1819666
SM 5310 B-00	07/27/2016			08/04/2016	Sofia Elnemr	1819652, 1819657, 1819659, 1819664, 1819667
	07/27/2016			08/15/2016	Sofia Elnemr	1819658