Chemical Analysis Report

SE-DIST-2016-10-20-01

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

Event Description: **SMP - Fort Drum Creek(2)/Taylor Creek(1)**
Request ID: **RQ-2016-09-26-28**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

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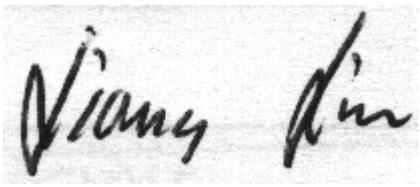
Certified by: Liang Lin, Environmental Administrator

Date Certified: 16-DEC-2016 12:36



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: Fort Drum Creek @ 441 South **Collection Date/Time: 10/19/2016 10:40**

Field ID: G3SE0013 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842447	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P313581	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P314615	
		Sulfate	4.0		mg SO4/L	P314617	
	SM 2120 B	Color (true)	7.2		PCU	P313599	
	SM 2320 B-97	Total Alkalinity	33		mg CaCO3/L	P313684	
	SM 2540 C-97	TDS	122	A	mg/L	P314589	
	SM 2540 D-97	TSS	9	I	mg/L	P314021	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P313686	
1842450	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P314643	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P314565	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.098		mg N/L	P313737	
	EPA 365.1 Rev. 2.0	Total-P	0.27		mg P/L	P314225	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P313761	
1842453	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.18		mg P/L	P313593	
1842459	EPA 200.7 Rev. 4.4	Calcium	14.2		mg/L	P313828	
		Iron	1.44E+03		ug/L	P313828	
		Magnesium	3.87		mg/L	P313828	
		Potassium	3.1		mg/L	P313828	
		Sodium	12.0		mg/L	P313828	
		Zinc	5.0	U	ug/L	P313828	
	EPA 200.8 Rev. 5.4	Arsenic	0.54		ug/L	P313828	
		Cadmium	0.020	U	ug/L	P313828	
		Chromium	1.14		ug/L	P313828	
		Copper	0.59		ug/L	P313828	
		Lead	0.29		ug/L	P313828	
		Nickel	0.32		ug/L	P313828	
		Silver	0.0050	U	ug/L	P313828	

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: Fort Drum Creek @ 304th St **Collection Date/Time: 10/19/2016 10:50**

Field ID: G3SE0012 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842448	EPA 180.1 Rev. 2.0	Turbidity	3.7	A	NTU	P313582	
	EPA 300.0 Rev. 2.1	Chloride	19		mg Cl/L	P313704	
		Sulfate	3.4		mg SO4/L	P313702	
	SM 2120 B	Color (true)	8.9		PCU	P313599	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P313684	
	SM 2540 C-97	TDS	125		mg/L	P314589	
	SM 2540 D-97	TSS	6	I	mg/L	P314021	
	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P313686	
1842451	EPA 350.1 Rev. 2.0	Ammonia-N	0.056		mg N/L	P314643	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P314565	MS

Field ID: G3SE0012 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842451	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P313737	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P314225	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P313761	
1842454	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.19		mg P/L	P313593	
1842460	EPA 200.7 Rev. 4.4	Calcium	13.6		mg/L	P313828	
		Iron	1.28E+03		ug/L	P313828	
		Magnesium	3.58		mg/L	P313828	
		Potassium	2.8		mg/L	P313828	
		Sodium	10.9		mg/L	P313828	
		Zinc	5.0	U	ug/L	P313828	
	EPA 200.8 Rev. 5.4	Arsenic	0.54		ug/L	P313828	
		Cadmium	0.020	U	ug/L	P313828	
		Chromium	0.99		ug/L	P313828	
		Copper	0.68		ug/L	P313828	
		Lead	0.30		ug/L	P313828	
		Nickel	0.30		ug/L	P313828	
		Silver	0.0050	U	ug/L	P313828	

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: IRL South of SR 60 **Collection Date/Time: 10/19/2016 12:15**

Field ID: G5SE0051 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842449	EPA 180.1 Rev. 2.0	Turbidity	5.5		NTU	P313582	
	EPA 300.0 Rev. 2.1	Chloride	1.1E+04		mg Cl/L	P314615	
		Sulfate	1.5E+03		mg SO4/L	P314617	
	SM 2120 B	Color (true)	310		PCU	P313599	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P313685	
	SM 2540 C-97	TDS	2.00E+04	Q	mg/L	P314775	
	SM 2540 D-97	TSS	8	I	mg/L	P314026	
	SM 4500 F-C-97	Fluoride	0.83		mg F/L	P313687	
1842455	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.068		mg P/L	P313596	
1842461	EPA 200.7 Rev. 4.4	Calcium	256		mg/L	P313921	
		Iron	340	I	ug/L	P313921	
		Magnesium	758		mg/L	P313921	
		Potassium	212		mg/L	P313921	
		Sodium	6.01E+03		mg/L	P313921	
	EPA 200.8 Rev. 5.4	Arsenic	2.44		ug/L	P313921	
		Cadmium	0.060	U	ug/L	P313921	
		Chromium	0.60	I	ug/L	P313921	
		Copper	1.6		ug/L	P313921	
		Lead	0.35	I	ug/L	P313921	
		Nickel	0.42	I	ug/L	P313921	
		Silver	0.015	U	ug/L	P313921	

Field ID: G5SE0051 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1842461	EPA 200.8 Rev. 5.4	Zinc	3.0	U	ug/L	P313921	

Ref. Method and Comment:
SM 2540 C-97: Sample reanalyzed out of holding time due to analytical difficulties.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium and sodium are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P313581

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P313582

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P313828

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
Zinc	5.0	U	ug/L

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P313921

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313828

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313921

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
Zinc	1.0	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313702

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313704

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314615

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314617

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314643

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314565

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313737

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314225

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313593

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313596

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

Reference Method: SM 2120 B
Batch ID: P313599

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P313684

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

Reference Method: SM 2320 B-97
Batch ID: P313685

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

Reference Method: SM 2540 C-97
Batch ID: P314589

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P314775

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P314021

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P314026

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P313686

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P313761

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: P313828

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	108		P	85 - 115
Magnesium	108		P	85 - 115
Potassium	100		P	85 - 115
Sodium	101		P	85 - 115
Zinc	98.9		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P313921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	105		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	101		P	85 - 115
Sodium	106		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313828

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.8		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	98.1		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313828

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Copper	95.0		P	85 - 115
Lead	96.4		P	85 - 115
Nickel	96.5		P	85 - 115
Silver	97.7		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313921

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.1		P	85 - 115
Cadmium	99.5		P	85 - 115
Chromium	113		P	85 - 115
Copper	94.6		P	85 - 115
Lead	96.4		P	85 - 115
Nickel	96.3		P	85 - 115
Silver	97.0		P	85 - 115
Zinc	97.5		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313702

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313704

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314617

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314643

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314565

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314565

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.3		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313737

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313593

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313596

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

Reference Method: SM 2320 B-97
Batch ID: P313684

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

Reference Method: SM 2320 B-97
Batch ID: P313685

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P313686

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P313761

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	103		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P313828

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1843195	Calcium	107		P	80 - 120
1843195	Iron	106		P	80 - 120
1843195	Magnesium	107		P	80 - 120
1843195	Potassium	101		P	80 - 120
1843195	Sodium	104		P	80 - 120
1843195	Zinc	101		P	80 - 120
1843639	Calcium	104		P	80 - 120
1843639	Iron	109	111	P/P	80 - 120
1843639	Magnesium	108	111	P/P	80 - 120
1843639	Potassium	103	104	P/P	80 - 120
1843639	Sodium	103		P	80 - 120
1843639	Zinc	102	100	P/P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P313921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1844050	Iron	102	103	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313828

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1843195	Arsenic	99.0		P	80 - 120
1843195	Cadmium	100		P	80 - 120
1843195	Chromium	97.2		P	80 - 120
1843195	Copper	94.8		P	80 - 120
1843195	Lead	96.6		P	80 - 120
1843195	Nickel	96.6		P	80 - 120
1843195	Silver	98.7		P	80 - 120
1843639	Arsenic	98.3	97.9	P/P	80 - 120
1843639	Cadmium	100	102	P/P	80 - 120
1843639	Chromium	95.7	95.6	P/P	80 - 120
1843639	Copper	90.9	90.5	P/P	80 - 120
1843639	Lead	96.6	95.6	P/P	80 - 120
1843639	Nickel	94.8	94.9	P/P	80 - 120
1843639	Silver	97.7	96.8	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313921

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1844050	Arsenic	103	106	P/P	70 - 130
1844050	Cadmium	92.6	95.1	P/P	70 - 130
1844050	Chromium	76.6	79.2	P/P	70 - 130
1844050	Copper	90.9	95.1	P/P	70 - 130
1844050	Lead	105	108	P/P	70 - 130
1844050	Nickel	99.3	101	P/P	70 - 130
1844050	Silver	88.4	89.3	P/P	70 - 130
1844050	Zinc	93.7	95.6	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313702

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842448	Sulfate	94.8		P	90 - 110
1842588	Sulfate	95.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842448	Chloride	97.1		P	90 - 110
1842588	Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842506	Chloride	99.9		P	90 - 110
1842615	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314617

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842506	Sulfate	96.5		P	90 - 110
1842615	Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314643

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842524	Ammonia-N	100	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314565

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842424	Kjeldahl Nitrogen	115	112	F/F	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842450	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842510	Total-P	101	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313593

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842427	O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313596

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842485	O-Phosphate-P	99.9	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P313686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842589	Fluoride	96.0	96.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842529	Fluoride	95.6	97.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P313761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1842419	Organic Carbon	100	98.0	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P313581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842283	Turbidity	0.840	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P313582

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842448	Turbidity	4.34	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P313828

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1843639	Calcium	0.434	Spike	P	0 - 20
1843639	Iron	1.94	Spike	P	0 - 20
1843639	Magnesium	2.36	Spike	P	0 - 20
1843639	Potassium	1.22	Spike	P	0 - 20
1843639	Sodium	0.621	Spike	P	0 - 20
1843639	Zinc	1.30	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P313921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1844050	Calcium	0.592	Spike	P	0 - 20
1844050	Iron	1.13	Spike	P	0 - 20
1844050	Magnesium	1.92	Spike	P	0 - 20
1844050	Potassium	0.481	Spike	P	0 - 20
1844050	Sodium	0.890	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313828

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1843639	Arsenic	0.383	Spike	P	0 - 20
1843639	Cadmium	1.26	Spike	P	0 - 20
1843639	Chromium	0.0458	Spike	P	0 - 20
1843639	Copper	0.533	Spike	P	0 - 20
1843639	Lead	1.04	Spike	P	0 - 20
1843639	Nickel	0.0847	Spike	P	0 - 20
1843639	Silver	0.875	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1844050	Arsenic	2.94	Spike	P	0 - 20
1844050	Cadmium	2.64	Spike	P	0 - 20
1844050	Chromium	3.27	Spike	P	0 - 20
1844050	Copper	4.30	Spike	P	0 - 20
1844050	Lead	2.92	Spike	P	0 - 20
1844050	Nickel	2.10	Spike	P	0 - 20
1844050	Silver	0.920	Spike	P	0 - 20
1844050	Zinc	2.10	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313702

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842588	Sulfate	0.387	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842588	Chloride	0.207	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842615	Chloride	1.21	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P314617

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842615	Sulfate	1.06	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P314643

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842524	Ammonia-N	2.27	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P314565

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842424	Kjeldahl Nitrogen	1.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842450	NO2NO3-N	0.334	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P314225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842510	Total-P	2.69	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842427	O-Phosphate-P	0.992	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P313596

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842485	O-Phosphate-P	1.37	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P313599

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842415	Color (true)	3.44	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P313684

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842589	Total Alkalinity	0.121	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P313685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842529	Total Alkalinity	0.284	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P314589

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842447	TDS	0.823	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P314775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1847747	TDS	7.57	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P313686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842589	Fluoride	0.487	Spike	P	0 - 3.0

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P313687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842529	Fluoride	0.959	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P313761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1842419	Organic Carbon	1.12	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: A72305
Included Lab Sample IDs: 1842448

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	102	P/P	90 - 110
Sulfate	99.7	98.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A72346
Included Lab Sample IDs: 1842447, 1842448, 1842449

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A72349
Included Lab Sample IDs: 1842453, 1842454, 1842455

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	99.5	P/P	90 - 110
O-Phosphate-P	99.5	102	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A72350
Included Lab Sample IDs: 1842447, 1842448

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.2	103	P/P	85 - 115

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A72352
Included Lab Sample IDs: 1842449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	105	102	P/P	85 - 115

Reference Method: SM 2320 B-97
Run ID: A72377
Included Lab Sample IDs: 1842447, 1842448, 1842449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	103	P/P	90 - 110
Total Alkalinity	105	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A72377
Included Lab Sample IDs: 1842447, 1842448, 1842449

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72388
Included Lab Sample IDs: 1842450, 1842451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	102	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A72401
Included Lab Sample IDs: 1842450, 1842451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A72447
Included Lab Sample IDs: 1842459, 1842460

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	90 - 110
Iron	103	104	P/P	90 - 110
Magnesium	103	104	P/P	90 - 110
Potassium	100	101	P/P	90 - 110
Sodium	101	101	P/P	90 - 110
Zinc	100	102	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A72482
Included Lab Sample IDs: 1842461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	101	P/P	90 - 110
Iron	103	103	P/P	90 - 110
Magnesium	104	103	P/P	95 - 105

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A72482
Included Lab Sample IDs: 1842461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Potassium	99.4	99.8	P/P	95 - 105
Sodium	103	101	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A72507
Included Lab Sample IDs: 1842459, 1842460, 1842461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.2	99.5	P/P	90 - 110
Arsenic	98.2	97.1	P/P	90 - 110
Cadmium	97.9	97.9	P/P	90 - 110
Cadmium	98.5	96.5	P/P	90 - 110
Chromium	96.4	96.6	P/P	90 - 110
Copper	95.3	95.0	P/P	90 - 110
Lead	94.8	95.0	P/P	90 - 110
Nickel	95.6	101	P/P	90 - 110
Nickel	97.6	96.3	P/P	90 - 110
Silver	96.8	96.3	P/P	90 - 110
Silver	97.7	95.9	P/P	90 - 110
Zinc	96.5	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72548
Included Lab Sample IDs: 1842450, 1842451

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A72549
Included Lab Sample IDs: 1842461

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	95.8	94.7	P/P	90 - 110
Copper	99.3	96.4	P/P	90 - 110
Lead	95.2	93.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A72589
Included Lab Sample IDs: 1842447, 1842449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Sulfate	98.5	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72636
Included Lab Sample IDs: 1842450, 1842451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72636
Included Lab Sample IDs: 1842450, 1842451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	96.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72672
Included Lab Sample IDs: 1842450, 1842451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	96.5	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			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						0.840	
	Turbidity						4.34	
EPA 200.7 Rev. 4.4	Calcium	105	107	104				0.434
	Calcium	106						0.592
	Iron	108	106	109	111			1.94
	Iron	105	102	103				1.13
	Magnesium	108	107	108	111			2.36
	Magnesium	104						1.92
	Potassium	100	101	103	104			1.22
	Potassium	101						0.481
	Sodium	101	104	103				0.621
	Sodium	106						0.890
	Zinc	98.9	101	102	100			1.30
EPA 200.8 Rev. 5.4	Arsenic	97.8	99.0	98.3	97.9			0.383
	Arsenic	97.1	103	106				2.94
	Cadmium	101	100	100	102			1.26
	Cadmium	99.5	92.6	95.1				2.64
	Chromium	98.1	97.2	95.7	95.6			0.0458
	Chromium	113	76.6	79.2				3.27
	Copper	95.0	94.8	90.9	90.5			0.533
	Copper	94.6	90.9	95.1				4.30
	Lead	96.4	96.6	96.6	95.6			1.04
	Lead	96.4	105	108				2.92
	Nickel	96.5	96.6	94.8	94.9			0.0847
	Nickel	96.3	99.3	101				2.10
	Silver	97.7	98.7	97.7	96.8			0.875
	Silver	97.0	88.4	89.3				0.920
	Zinc	97.5	93.7	95.6				2.10
EPA 300.0 Rev. 2.1	Chloride	100	99.6	97.1			0.207	
	Chloride	98.4	99.4	99.9			1.21	
	Sulfate	94.3	95.3	94.8			0.387	
	Sulfate	96.0	96.5	96.5			1.06	

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	103	100	103			2.27
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.3	115	112			1.52
EPA 353.2 Rev. 2.0	NO2NO3-N	108	101	101			0.334
EPA 365.1 Rev. 2.0	Total-P	97.8	101	98.0			2.69
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	100	101			0.992
	O-Phosphate-P	105	99.9	98.4			1.37
SM 2120 B	Color (true)					3.44	
SM 2320 B-97	Total Alkalinity	103				0.121	
	Total Alkalinity	105				0.284	
SM 2540 C-97	TDS					0.823	
	TDS					7.57	
SM 4500 F-C-97	Fluoride	97.6	96.0	96.5			0.487
	Fluoride	97.1	95.6	97.1			0.959
SM 5310 B-00	Organic Carbon	103	100	98.0			1.12

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1842447, 1842448, 1842449
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1842459, 1842460, 1842461
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1842459, 1842460, 1842461
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1842447, 1842448, 1842449
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1842447, 1842448, 1842449
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1842450, 1842451
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1842450, 1842451
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1842450, 1842451
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1842450, 1842451
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1842453, 1842454, 1842455
SM 2120 B / E31780	True Color measured at 450 nm	1842447, 1842448, 1842449
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1842447, 1842448, 1842449
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1842447, 1842448, 1842449
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1842447, 1842448, 1842449
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1842447, 1842448, 1842449
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1842450, 1842451

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	10/20/2016			10/20/2016 15:29	Sima Feizi	1842447, 1842448, 1842449
EPA 200.7 Rev. 4.4	10/20/2016	10/25/2016	Elliott D. Healy	10/26/2016	Betina Topolski	1842459, 1842460
	10/20/2016	10/26/2016	Elliott D. Healy	10/27/2016	Betina Topolski	1842461
EPA 200.8 Rev. 5.4	10/20/2016	10/25/2016	Elliott D. Healy	10/28/2016	Charles J. Peterson	1842459, 1842460
	10/20/2016	10/26/2016	Elliott D. Healy	10/28/2016	Charles J. Peterson	1842461
	10/20/2016	10/26/2016	Elliott D. Healy	10/31/2016	Charles J. Peterson	1842461
EPA 300.0 Rev. 2.1	10/20/2016			10/22/2016	Ping Hua	1842448
	10/20/2016			11/03/2016	Elisa J Lutz	1842447, 1842449
EPA 350.1 Rev. 2.0	10/20/2016			11/04/2016	Sofia Elnemr	1842450, 1842451
EPA 351.2 Rev. 2.0	10/20/2016	11/04/2016	Adrian Shelby	11/07/2016	Joseph Suarez	1842450, 1842451
EPA 353.2 Rev. 2.0	10/20/2016			10/24/2016	Beverly Y. Sanders	1842450, 1842451
EPA 365.1 Rev. 2.0	10/20/2016	10/31/2016	Vijayalakshmi Reddy	11/01/2016	Lipi Saha	1842450, 1842451
EPA 365.1 Rev. 2.0 dissolved	10/20/2016			10/20/2016 15:53	Julia Storbeck	1842453
	10/20/2016			10/20/2016 15:54	Julia Storbeck	1842454
	10/20/2016			10/20/2016 16:09	Julia Storbeck	1842455
SM 2120 B	10/20/2016			10/20/2016 16:01	Julie Michelle Frank	1842447, 1842448
	10/20/2016			10/20/2016 17:21	Jared I. Manley	1842449
SM 2320 B-97	10/20/2016			10/21/2016	Dale L. Simmons	1842447, 1842448
	10/20/2016			10/22/2016	Dale L. Simmons	1842449
SM 2540 C-97	10/20/2016			10/24/2016	Sima Feizi	1842447, 1842448
	10/20/2016			11/05/2016	Yijie Li	1842449
SM 2540 D-97	10/20/2016			10/24/2016	Sima Feizi	1842447, 1842448, 1842449
SM 4500 F-C-97	10/20/2016			10/21/2016	Dale L. Simmons	1842447, 1842448
	10/20/2016			10/22/2016	Dale L. Simmons	1842449
SM 5310 B-00	10/20/2016			10/24/2016	Julie Michelle Frank	1842450, 1842451