

Chemical Analysis Report

NW-DIST-2017-11-07-02

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

Event Description: **Shoal River/Yellow WBID 160A 160B 30**

Request ID: **RQ-2017-11-06-37**

Customer: **NW-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 04-DEC-2017 12:57



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: Nutrients and Pesticides.

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: Shoal River @ Bill Dugger Park SR-85

Collection Date/Time: 11/06/2017 11:05

Field ID: G4NW0023

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943580	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P334907	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P335056	
		Sulfate	1.2		mg SO4/L	P335059	
	SM 2120 B	Color (true)	42		PCU	P334891	
	SM 2320 B-97	Total Alkalinity	3.5		mg CaCO3/L	P335164	
	SM 2540 C-97	TDS	22	I	mg/L	P335255	
	SM 2540 D-97	TSS	6	I	mg/L	P335260	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335168	
1943585	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P335576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P335707	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P335646	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P334972	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P335303	
1943590	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P334874	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Shoal River @ B. Dugger Park SR-85

Collection Date/Time: 11/06/2017 11:10

Field ID: G4NW0023DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943581	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P334907	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P335056	
		Sulfate	1.2		mg SO4/L	P335059	
	SM 2120 B	Color (true)	44		PCU	P334891	
	SM 2320 B-97	Total Alkalinity	3.5		mg CaCO3/L	P335164	
	SM 2540 C-97	TDS	23	I	mg/L	P335255	
	SM 2540 D-97	TSS	6	I	mg/L	P335260	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335168	
1943586	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P335576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P335707	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.25		mg N/L	P335646	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P334972	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P335303	
1943591	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P334874	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Shoal River @ Bill Dugger Park SR-85

Collection Date/Time: 11/06/2017 11:15

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943582	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P334907	

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943582	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P335056	
		Sulfate	0.20	U	mg SO4/L	P335059	
	SM 2120 B	Color (true)	2.5	U	PCU	P334891	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P335164	
	SM 2540 C-97	TDS	15	U	mg/L	P335251	
	SM 2540 D-97	TSS	2	U	mg/L	P335256	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335168	
1943587	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P335576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P335707	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P335456	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P334972	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P335303	
1943592	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P334874	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Shoal River below Titi Creek

Collection Date/Time: 11/06/2017 11:45

Field ID: G4NW0410

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943583	EPA 180.1 Rev. 2.0	Turbidity	3.7		NTU	P334907	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P335056	
		Sulfate	1.3		mg SO4/L	P335059	
	SM 2120 B	Color (true)	43		PCU	P334891	
	SM 2320 B-97	Total Alkalinity	3.5		mg CaCO3/L	P335164	
	SM 2540 C-97	TDS	30		mg/L	P335255	
	SM 2540 D-97	TSS	5	I	mg/L	P335260	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335168	
1943588	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P335576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P335799	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P335646	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P334972	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P335303	
1943593	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P334874	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Shoal River below Titi Creek

Collection Date/Time: 11/06/2017 11:45

Field ID: G4NW0410

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943612	EPA 8321B	Sucralose**	0.064		ug/L	P334664	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P334632	
		Diuron	8.0E-04	U	ug/L	P334632	

Field ID: G4NW0410

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943612	USGS O-2060-01	Fenuron	0.0080	U	ug/L	P334632	
		Imidacloprid	0.0038		ug/L	P334632	
		Bentazon	8.0E-04	U	ug/L	P334632	
		Linuron	0.0040	U	ug/L	P334632	
		Acetaminophen**	0.0080	U	ug/L	P334632	
		MCP	0.0020	U	ug/L	P334632	
		Carbamazepine**	4.0E-04	U	ug/L	P334632	
		Triclopyr**	0.0040	U	ug/L	P334632	
		Primidone**	0.0040	U	ug/L	P334632	
		Fluridone**	4.0E-04	U	ug/L	P334632	

Sample Location: Yellow River @ Milligan Park

Collection Date/Time: 11/06/2017 12:50

Field ID: G4NW0260

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943584	EPA 180.1 Rev. 2.0	Turbidity	6.8		NTU	P334907	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P335056	
		Sulfate	0.96		mg SO4/L	P335059	
	SM 2120 B	Color (true)	48	A	PCU	P334892	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P335164	
	SM 2540 C-97	TDS	45		mg/L	P335255	
	SM 2540 D-97	TSS	6	I	mg/L	P335260	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P335168	
1943589	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P335576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20	I	mg N/L	P335799	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P335646	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P334972	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P335303	
1943594	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P334873	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Yellow River @ Milligan Park

Collection Date/Time: 11/06/2017 12:50

Field ID: G4NW0260

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943613	EPA 8321B	Sucralose**	0.034	I	ug/L	P334664	
	USGS O-2060-01	2,4-D	0.0020	U	ug/L	P334632	
		Diuron	8.0E-04	U	ug/L	P334632	
		Fenuron	0.010	I	ug/L	P334632	
		Imidacloprid	0.0018	I	ug/L	P334632	
		Bentazon	8.0E-04	U	ug/L	P334632	
		Linuron	0.0040	U	ug/L	P334632	
		Acetaminophen**	0.0080	U	ug/L	P334632	
		MCP	0.0020	U	ug/L	P334632	

Field ID: G4NW0260

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1943613	USGS O-2060-01	Carbamazepine**	4.0E-04	U	ug/L	P334632	
		Triclopyr**	0.0040	U	ug/L	P334632	
		Primidone**	0.0040	U	ug/L	P334632	
		Fluridone**	4.0E-04	U	ug/L	P334632	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P334907

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P335056

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P335059

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P335576

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P335707

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P335799

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P335456

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P335646

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: P334972

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334873

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334874

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

Reference Method: EPA 8321B
Batch ID: P334664

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P334891

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P334892

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P335164

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

Reference Method: SM 2540 C-97
Batch ID: P335251

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P335255

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
 Batch ID: P335256

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P335260

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P335168

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P335303

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

Reference Method: USGS O-2060-01
 Batch ID: P334632

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	8.0E-04	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCPD	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P335056

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P335059

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P335576

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335707

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335799

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335456

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335646

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334972

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334873

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334874

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

Reference Method: EPA 8321B
Batch ID: P334664

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	102		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P335164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P335168

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P335303

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P334632

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	52.5		P	40 - 150
Acetaminophen	102		P	30 - 150
Bentazon	48.3		P	30 - 150
Carbamazepine	119		P	40 - 150
Diuron	114		P	40 - 150
Fenuron	114		P	40 - 150
Fluridone	111		P	40 - 150
Imidacloprid	114		P	40 - 160
Linuron	106		P	40 - 150
MCP	57.5		P	40 - 150
Primidone	115		P	40 - 150
Triclopyr	53.3		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335056

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943504	Chloride	102		P	90 - 110
1943583	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P335059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943504	Sulfate	102		P	90 - 110
1943583	Sulfate	102		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P335576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943532	Ammonia-N	103	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P335707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943568	Kjeldahl Nitrogen	92.6	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P335799

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943712	Kjeldahl Nitrogen	103	95.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P335456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943514	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P335646

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943588	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P334873

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943217	O-Phosphate-P	103	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P334874

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943593	O-Phosphate-P	98.0	97.1	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P334664

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1942837	Sucralose	71.7	69.0	P/P	40 - 150

Reference Method: SM 4500 F-C-97
 Batch ID: P335168

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943504	Fluoride	101	100	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P335303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943505	Organic Carbon	97.4	98.2	P/P	85 - 115

Reference Method: USGS O-2060-01
 Batch ID: P334632

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1943517	Acetaminophen	128	104	P/P	30 - 150
1943517	Carbamazepine	76.8	73.4	P/P	40 - 150
1943517	Diuron	85.3	74.9	P/P	40 - 150
1943517	Fenuron	91.4	86.3	P/P	40 - 150
1943517	Fluridone	95.4	86.3	P/P	40 - 150
1943517	Imidacloprid	128	123	P/P	40 - 160
1943517	Linuron	95.9	91.9	P/P	40 - 150
1943517	Primidone	98.6	89.2	P/P	40 - 150
1943612	2,4-D	103	98.1	P/P	40 - 150
1943612	Bentazon	54.5	52.5	P/P	30 - 150
1943612	MCP	106	90.8	P/P	40 - 150
1943612	Triclopyr	100	82.9	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P334907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943567	Turbidity	3.19	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P335056

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943504	Chloride	0.0907	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P335059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943504	Sulfate	0.120	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P335576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943532	Ammonia-N	2.25	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943568	Kjeldahl Nitrogen	2.92	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P335799

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943712	Kjeldahl Nitrogen	6.56	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943514	NO2NO3-N	0.353	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P335646

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943588	NO2NO3-N	0.151	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P334972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943532	Total-P	3.28	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943217	O-Phosphate-P	5.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P334874

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943593	O-Phosphate-P	0.923	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P334664

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1942837	Sucralose	3.79	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P334891

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943529	Color (true)	1.63	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P334892

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943584	Color (true)	1.59	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P335164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943504	Total Alkalinity	0.321	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P335251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1942957	TDS	2.02	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P335255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943616	TDS	5.35	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P335168

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943504	Fluoride	0.484	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P335303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943505	Organic Carbon	0.455	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P334632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943517	Acetaminophen	20.8	Spike	P	0 - 30
1943517	Carbamazepine	4.53	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P334632

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1943517	Diuron	12.7	Spike	P	0 - 30
1943517	Fenuron	5.70	Spike	P	0 - 30
1943517	Fluridone	7.40	Spike	P	0 - 30
1943517	Imidacloprid	3.67	Spike	P	0 - 30
1943517	Linuron	4.24	Spike	P	0 - 30
1943517	Primidone	10.1	Spike	P	0 - 30
1943612	2,4-D	5.01	Spike	P	0 - 30
1943612	Bentazon	3.76	Spike	P	0 - 30
1943612	MCP	15.2	Spike	P	0 - 30
1943612	Triclopyr	18.9	Spike	P	0 - 30

* 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 Surrogates

Lab Sample ID: 1943612
Field Sample ID: G4NW0410

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	104	P	30 - 160
EPA 8321B	Carbamazepine-d10	131	P	30 - 160
EPA 8321B	Diuron-d6	110	P	30 - 160
EPA 8321B	Primidone-d5	108	P	30 - 160
EPA 8321B	Sucralose-d6	89.5	P	40 - 160
USGS O-2060-01	2,4-D-d3	67.8	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	104	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	131	P	30 - 160
USGS O-2060-01	Diuron-d6	110	P	30 - 160
USGS O-2060-01	Primidone-d5	108	P	30 - 160
USGS O-2060-01	Sucralose-d6	89.5	P	40 - 160

Lab Sample ID: 1943613
Field Sample ID: G4NW0260

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	101	P	30 - 160
EPA 8321B	Carbamazepine-d10	139	P	30 - 160
EPA 8321B	Diuron-d6	124	P	30 - 160
EPA 8321B	Primidone-d5	130	P	30 - 160
EPA 8321B	Sucralose-d6	66.9	P	40 - 160
USGS O-2060-01	2,4-D-d3	86.3	P	30 - 160
USGS O-2060-01	Acetaminophen-d4	101	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	139	P	30 - 160
USGS O-2060-01	Diuron-d6	124	P	30 - 160
USGS O-2060-01	Primidone-d5	130	P	30 - 160
USGS O-2060-01	Sucralose-d6	66.9	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A80109

Included Lab Sample IDs: 1943590, 1943591, 1943592, 1943593, 1943594

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	102	99.5	P/P	90 - 110
O-Phosphate-P	103	99.5	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A80114

Included Lab Sample IDs: 1943580, 1943581, 1943582, 1943583, 1943584

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	85 - 115
Color (true)	104	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A80117

Included Lab Sample IDs: 1943580, 1943581, 1943582, 1943583, 1943584

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A80134

Included Lab Sample IDs: 1943580, 1943581, 1943582, 1943583, 1943584

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	104	P/P	90 - 110
Chloride	104	103	P/P	90 - 110
Sulfate	101	102	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80199

Included Lab Sample IDs: 1943585, 1943586, 1943587, 1943588, 1943589

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

Reference Method: SM 2320 B-97

Run ID: A80224

Included Lab Sample IDs: 1943580, 1943581, 1943582, 1943583, 1943584

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

Reference Method: SM 4500 F-C-97

Run ID: A80224

Included Lab Sample IDs: 1943580, 1943581, 1943582, 1943583, 1943584

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

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A80228

Included Lab Sample IDs: 1943612, 1943613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	102	106	P/P	50 - 150
2,4-D	105	112	P/P	50 - 150
Bentazon	92.0	95.2	P/P	50 - 150
Bentazon	94.8	91.7	P/P	50 - 150
MCP	117	115	P/P	50 - 150
MCP	125	119	P/P	50 - 150
Triclopyr	107	104	P/P	50 - 150
Triclopyr	110	101	P/P	50 - 150

Reference Method: SM 5310 B-00

Run ID: A80269

Included Lab Sample IDs: 1943585, 1943586, 1943587, 1943588, 1943589

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.6	97.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A80274

Included Lab Sample IDs: 1943612, 1943613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	123	120	P/P	60 - 150

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80277

Included Lab Sample IDs: 1943587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO ₂ NO ₃ -N	101	102	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A80279

Included Lab Sample IDs: 1943612, 1943613

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	121	119	P/P	60 - 150
Carbamazepine	118	112	P/P	60 - 150
Diuron	128	129	P/P	60 - 150
Fenuron	111	109	P/P	60 - 150
Fluridone	113	110	P/P	60 - 160
Imidacloprid	110	106	P/P	60 - 150
Linuron	117	109	P/P	60 - 150
Primidone	103	110	P/P	60 - 150

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80369

Included Lab Sample IDs: 1943585, 1943586, 1943587, 1943588, 1943589

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80390

Included Lab Sample IDs: 1943585, 1943586, 1943588, 1943589

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80471

Included Lab Sample IDs: 1943585, 1943586, 1943587

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.5	99.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80473

Included Lab Sample IDs: 1943588, 1943589

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.1	99.1	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				3.19	
EPA 300.0 Rev. 2.1	Chloride	103	102 103		0.0907	
	Sulfate	103	102 102		0.120	
EPA 350.1 Rev. 2.0	Ammonia-N	106	103 99.7			2.25
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	92.6 97.0			2.92
	Kjeldahl Nitrogen	98.5	103 95.2			6.56
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104 104			0.353
	NO2NO3-N	103	102 101			0.151
EPA 365.1 Rev. 2.0	Total-P	102				3.28
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	108	103 96.2			5.16
	O-Phosphate-P	101	98.0 97.1			0.923
EPA 8321B	Sucralose	102	71.7 69.0			3.79
SM 2120 B	Color (true)				1.63	
	Color (true)				1.59	
SM 2320 B-97	Total Alkalinity	104			0.321	
SM 2540 C-97	TDS				2.02	
	TDS				5.35	
SM 4500 F-C-97	Fluoride	99.2	101 100			0.484
SM 5310 B-00	Organic Carbon	99.4	97.4 98.2			0.455
USGS O-2060-01	2,4-D	52.5	98.1 103			5.01
	Acetaminophen	102	128 104			20.8
	Bentazon	48.3	52.5 54.5			3.76
	Carbamazepine	119	76.8 73.4			4.53
	Diuron	114	85.3 74.9			12.7
	Fenuron	114	91.4 86.3			5.70

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
USGS O-2060-01	Fluridone	111	95.4	86.3		7.40
	Imidacloprid	114	128	123		3.67
	Linuron	106	95.9	91.9		4.24
	MCP	57.5	90.8	106		15.2
	Primidone	115	98.6	89.2		10.1
	Triclopyr	53.3	82.9	100		18.9

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1943580, 1943581, 1943582, 1943583, 1943584
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1943580, 1943581, 1943582, 1943583, 1943584
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1943580, 1943581, 1943582, 1943583, 1943584
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1943585, 1943586, 1943587, 1943588, 1943589
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1943585, 1943586, 1943587, 1943588, 1943589
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1943585, 1943586, 1943587, 1943588, 1943589
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1943585, 1943586, 1943587, 1943588, 1943589
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1943590, 1943591, 1943592, 1943593, 1943594
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1943612, 1943613
SM 2120 B / E31780	True Color measured at 450 nm	1943580, 1943581, 1943582, 1943583, 1943584
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1943580, 1943581, 1943582, 1943583, 1943584
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1943580, 1943581, 1943582, 1943583, 1943584
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1943580, 1943581, 1943582, 1943583, 1943584
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1943580, 1943581, 1943582, 1943583, 1943584
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1943585, 1943586, 1943587, 1943588, 1943589
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1943612, 1943613
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1943612, 1943613

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	11/07/2017			11/07/2017 17:16	DeAsia Armster	1943580, 1943581, 1943582, 1943583, 1943584
EPA 300.0 Rev. 2.1	11/07/2017			11/09/2017	Julia Storbeck	1943580, 1943581, 1943582, 1943583, 1943584
EPA 350.1 Rev. 2.0	11/07/2017			11/17/2017	Sofia Elnemr	1943585, 1943586, 1943587, 1943588, 1943589
EPA 351.2 Rev. 2.0	11/07/2017	11/21/2017	Adrian Shelby	11/22/2017	Tanya Welborn	1943585, 1943586, 1943587, 1943588, 1943589
EPA 353.2 Rev. 2.0	11/07/2017			11/15/2017	Beverly Y. Sanders	1943587
	11/07/2017			11/20/2017	Beverly Y. Sanders	1943585, 1943586, 1943588, 1943589
EPA 365.1 Rev. 2.0	11/07/2017	11/08/2017	Sima Feizi	11/13/2017	Lipi Saha	1943585, 1943586, 1943587, 1943588, 1943589
EPA 365.1 Rev. 2.0 dissolved	11/07/2017			11/07/2017 14:39	Megan Treadwell	1943593
	11/07/2017			11/07/2017 15:03	Megan Treadwell	1943590
	11/07/2017			11/07/2017 15:04	Megan Treadwell	1943591
	11/07/2017			11/07/2017 15:05	Megan Treadwell	1943592
	11/07/2017			11/07/2017 15:06	Megan Treadwell	1943594
EPA 8321B	11/07/2017	11/13/2017	Juyoung Kim	11/14/2017	Juyoung Kim	1943612, 1943613
SM 2120 B	11/07/2017			11/07/2017 16:23	Tanya Welborn	1943580, 1943581
	11/07/2017			11/07/2017 16:24	Tanya Welborn	1943582
	11/07/2017			11/07/2017 16:25	Tanya Welborn	1943583
	11/07/2017			11/07/2017 16:29	Tanya Welborn	1943584
SM 2320 B-97	11/07/2017			11/10/2017	Dale L. Simmons	1943580, 1943581, 1943582, 1943583, 1943584
SM 2540 C-97	11/07/2017			11/08/2017	Yijie Li	1943580, 1943581, 1943582, 1943583, 1943584
SM 2540 D-97	11/07/2017			11/08/2017	Yijie Li	1943580, 1943581, 1943582, 1943583, 1943584
SM 4500 F-C-97	11/07/2017			11/10/2017	Dale L. Simmons	1943580, 1943581, 1943582, 1943583, 1943584
SM 5310 B-00	11/07/2017			11/15/2017	Ping Hua	1943585, 1943586, 1943587, 1943588, 1943589
USGS O-2060-01	11/07/2017	11/09/2017	Hoor Shaik	11/11/2017	Julie Michelle Frank	1943612, 1943613
	11/07/2017	11/09/2017	Hoor Shaik	11/14/2017	Julie Michelle Frank	1943612, 1943613