

Chemical Analysis Report

SW-DIST-2022-10-14-02

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

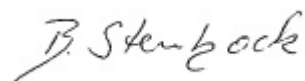
Event Description: **Run 19 Sarasota**
Request ID: **RQ-2022-10-10-65**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Ben Paswater

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 31-OCT-2022 18:15



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 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 by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Indian Creek WBID @ Tiny Ditch

Collection Date/Time: 10/13/2022 13:30

Field ID: G3SW0110

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362618	EPA 8270E	Aldrin	0.71	U	ng/L	P420962	
		Alpha-BHC	0.11	U	ng/L	P420962	
		Alpha-Chlordane	0.22	U	ng/L	P420962	
		PCB-1016	2.2	U	ng/L	P420962	
		Beta-BHC	0.17	I	ng/L	P420962	
		PCB-1221	2.2	U	ng/L	P420962	
		Beta-Cyfluthrin	1.4	U	ng/L	P420962	
		PCB-1232	2.2	U	ng/L	P420962	
		Bifenthrin	0.54	U	ng/L	P420962	
		PCB-1242	2.2	U	ng/L	P420962	
		Carbophenothion	0.98	U	ng/L	P420962	
		PCB-1248	2.2	U	ng/L	P420962	
		Chlorothalonil	1.4	U	ng/L	P420962	
		PCB-1254	2.2	U	ng/L	P420962	
		Cis-Nonachlor	0.22	U	ng/L	P420962	
		PCB-1260	2.2	U	ng/L	P420962	
		Cypermethrin	1.6	U	ng/L	P420962	
		Dacthal	0.16	U	ng/L	P420962	
		DDD-p,p'	0.27	U	ng/L	P420962	
		DDE-p,p'	0.22	U	ng/L	P420962	
		DDT-p,p'	0.27	U	ng/L	P420962	
		Delta-BHC	0.44	U	ng/L	P420962	
		Deltamethrin	1.4	U	ng/L	P420962	
		Dichlobenil	0.27	U	ng/L	P420962	
		Dicofol	1.4	U	ng/L	P420962	
		Dieldrin	0.44	U	ng/L	P420962	
		Endosulfan I	0.44	U	ng/L	P420962	
		Endosulfan II	0.44	U	ng/L	P420962	
		Endosulfan Sulfate	0.33	U	ng/L	P420962	
		Endrin	0.44	U	ng/L	P420962	
		Endrin Aldehyde	0.82	U	ng/L	P420962	
		Endrin Ketone	0.44	U	ng/L	P420962	
		Esfenvalerate	0.82	U	ng/L	P420962	
		Ethalfuralin	0.16	U	ng/L	P420962	
		Fenpropathrin	0.27	U	ng/L	P420962	
		Gamma-BHC	0.37	I	ng/L	P420962	
		Gamma-Chlordane	0.22	U	ng/L	P420962	
		Heptachlor	0.22	U	ng/L	P420962	
		Heptachlor Epoxide	0.27	U	ng/L	P420962	
		Hexachlorobenzene**	1.1	U	ng/L	P420962	
		Kepone	5.4	U	ng/L	P420962	
		Lambda-Cyhalothrin	0.82	U	ng/L	P420962	
		Methoprene	0.82	U	ng/L	P420962	
		Methoxychlor	0.33	U	ng/L	P420962	

Field ID: G3SW0110

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362618	EPA 8270E	MGK-264	0.22	U	ng/L	P420962	
		Mirex	0.38	U	ng/L	P420962	
		Oxychlordane	0.33	U	ng/L	P420962	
		Permethrin	1.7	U	ng/L	P420962	
		Phenothrin	1.5	I	ng/L	P420962	
		Piperonyl Butoxide	14		ng/L	P420962	
		Prallethrin	2.2	U	ng/L	P420962	
		Tau-Fluvalinate	0.27	U	ng/L	P420962	
		Tetramethrin	0.82	U	ng/L	P420962	
		Trans-Nonachlor	0.22	U	ng/L	P420962	
		Triclosan Methyl	0.16	U	ng/L	P420962	
		Trifluralin	0.22	U	ng/L	P420962	
	EPA 8276	Chlordane	2.7	U	ng/L	P420962	
		Toxaphene	16	U	ng/L	P420962	
2362619	EPA 200.7 Rev. 4.4	Calcium	19.0		mg/L	P420973	
		Iron	1.45E+03		ug/L	P420973	
		Magnesium	5.55		mg/L	P420973	
		Potassium	2.6		mg/L	P420973	
		Sodium	16.9		mg/L	P420973	
		Strontium	129		ug/L	P420973	
		Tin	3.0	U	ug/L	P420973	
		Titanium	6.2		ug/L	P420973	
		Vanadium	2.2	I	ug/L	P420973	
		Zinc	5.7	I	ug/L	P420973	
	EPA 200.8 Rev. 5.4	Aluminum	436		ug/L	P420973	
		Antimony	0.11	I	ug/L	P420973	
		Arsenic	3.27		ug/L	P420973	
		Barium	11.5		ug/L	P420973	
		Beryllium	0.052		ug/L	P420973	
		Boron	31.2		ug/L	P420973	
		Cadmium	0.020	U	ug/L	P420973	
		Chromium	2.1		ug/L	P420973	
		Cobalt	0.674		ug/L	P420973	
		Copper	1.02		ug/L	P420973	
		Lead	0.35	I	ug/L	P420973	
		Manganese	59.5		ug/L	P420973	
		Molybdenum	0.23	I	ug/L	P420973	
		Nickel	1.4	I	ug/L	P420973	
		Selenium	0.38	I	ug/L	P420973	
		Silver	0.010	U	ug/L	P420973	
		Thallium	0.10	U	ug/L	P420973	
	SM 2340 B-2011	Hardness	70.2		mg/L	P420973	

Ref. Method and Comment:

EPA 8270E: MS accuracy for kepone not assessed due to high content of this parameter in the sample spiked.

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P420973

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
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420973

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 8270E

Batch ID: P420962

Component	Result	Code	Units
Aldrin	0.65	U	ng/L
Aldrin	0.65	U	ng/L
Alpha-BHC	0.10	U	ng/L
Alpha-BHC	0.10	U	ng/L
Alpha-Chlordane	0.20	U	ng/L
Alpha-Chlordane	0.20	U	ng/L
Beta-BHC	0.10	U	ng/L
Beta-BHC	0.10	U	ng/L
Beta-Cyfluthrin	1.2	U	ng/L
Beta-Cyfluthrin	1.2	U	ng/L
Bifenthrin	0.50	U	ng/L
Bifenthrin	0.50	U	ng/L
Carbophenothion	0.90	U	ng/L
Carbophenothion	0.90	U	ng/L
Chlorothalonil	1.2	U	ng/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 8270E

Batch ID: P420962

Component	Result	Code	Units
Chlorothalonil	1.2	U	ng/L
Cis-Nonachlor	0.20	U	ng/L
Cis-Nonachlor	0.20	U	ng/L
Cypermethrin	1.5	U	ng/L
Cypermethrin	1.5	U	ng/L
Dacthal	0.15	U	ng/L
Dacthal	0.15	U	ng/L
DDD-p,p'	0.25	U	ng/L
DDD-p,p'	0.25	U	ng/L
DDE-p,p'	0.20	U	ng/L
DDE-p,p'	0.20	U	ng/L
DDT-p,p'	0.25	U	ng/L
DDT-p,p'	0.25	U	ng/L
Delta-BHC	0.40	U	ng/L
Delta-BHC	0.40	U	ng/L
Deltamethrin	1.2	U	ng/L
Deltamethrin	1.2	U	ng/L
Dichlobenil	0.25	U	ng/L
Dichlobenil	0.25	U	ng/L
Dicofol	1.2	U	ng/L
Dicofol	1.2	U	ng/L
Dieldrin	0.40	U	ng/L
Dieldrin	0.40	U	ng/L
Endosulfan I	0.40	U	ng/L
Endosulfan I	0.40	U	ng/L
Endosulfan II	0.40	U	ng/L
Endosulfan II	0.40	U	ng/L
Endosulfan Sulfate	0.30	U	ng/L
Endosulfan Sulfate	0.30	U	ng/L
Endrin	0.40	U	ng/L
Endrin	0.40	U	ng/L
Endrin Aldehyde	0.75	U	ng/L
Endrin Aldehyde	0.75	U	ng/L
Endrin Ketone	0.40	U	ng/L
Endrin Ketone	0.40	U	ng/L
Esfenvalerate	0.75	U	ng/L
Esfenvalerate	0.75	U	ng/L
Ethalfuralin	0.15	U	ng/L
Ethalfuralin	0.15	U	ng/L
Fenpropathrin	0.25	U	ng/L
Fenpropathrin	0.25	U	ng/L
Gamma-BHC	0.12	U	ng/L
Gamma-BHC	0.12	U	ng/L
Gamma-Chlordane	0.20	U	ng/L
Gamma-Chlordane	0.20	U	ng/L
Heptachlor	0.20	U	ng/L
Heptachlor	0.20	U	ng/L
Heptachlor Epoxide	0.25	U	ng/L
Heptachlor Epoxide	0.25	U	ng/L
Hexachlorobenzene	1.0	U	ng/L
Hexachlorobenzene	1.0	U	ng/L
Kepone	5.0	U	ng/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8270E

Batch ID: P420962

Component	Result	Code	Units
Kepone	5.0	U	ng/L
Lambda-Cyhalothrin	0.75	U	ng/L
Lambda-Cyhalothrin	0.75	U	ng/L
Methoprene	0.75	U	ng/L
Methoprene	0.75	U	ng/L
Methoxychlor	0.30	U	ng/L
Methoxychlor	0.30	U	ng/L
MGK-264	0.20	U	ng/L
MGK-264	0.20	U	ng/L
Mirex	0.35	U	ng/L
Mirex	0.35	U	ng/L
Oxychlordane	0.30	U	ng/L
Oxychlordane	0.30	U	ng/L
PCB-1016	2.0	U	ng/L
PCB-1016	2.0	U	ng/L
PCB-1221	2.0	U	ng/L
PCB-1221	2.0	U	ng/L
PCB-1232	2.0	U	ng/L
PCB-1232	2.0	U	ng/L
PCB-1242	2.0	U	ng/L
PCB-1242	2.0	U	ng/L
PCB-1248	2.0	U	ng/L
PCB-1248	2.0	U	ng/L
PCB-1254	2.0	U	ng/L
PCB-1254	2.0	U	ng/L
PCB-1260	2.0	U	ng/L
PCB-1260	2.0	U	ng/L
Permethrin	1.6	U	ng/L
Permethrin	1.6	U	ng/L
Phenothrin	0.90	U	ng/L
Phenothrin	0.90	U	ng/L
Piperonyl Butoxide	0.15	U	ng/L
Piperonyl Butoxide	0.15	U	ng/L
Prallethrin	2.0	U	ng/L
Prallethrin	2.0	U	ng/L
Tau-Fluvalinate	0.25	U	ng/L
Tau-Fluvalinate	0.25	U	ng/L
Tetramethrin	0.75	U	ng/L
Tetramethrin	0.75	U	ng/L
Trans-Nonachlor	0.20	U	ng/L
Trans-Nonachlor	0.20	U	ng/L
Triclosan Methyl	0.15	U	ng/L
Triclosan Methyl	0.15	U	ng/L
Trifluralin	0.20	U	ng/L
Trifluralin	0.20	U	ng/L

Reference Method: EPA 8276

Batch ID: P420962

Component	Result	Code	Units
Chlordane	2.5	U	ng/L
Chlordane	2.5	U	ng/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8276
Batch ID: P420962

Component	Result	Code	Units
Toxaphene	15	U	ng/L
Toxaphene	15	U	ng/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P420973

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	107		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	106		P	85 - 115
Sodium	105		P	85 - 115
Strontium	105		P	85 - 115
Tin	104		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420973

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.4		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	101		P	85 - 115
Barium	104		P	85 - 115
Beryllium	92.5		P	85 - 115
Boron	100		P	85 - 115
Cadmium	98.4		P	85 - 115
Chromium	99.6		P	85 - 115
Cobalt	99.1		P	85 - 115
Copper	99.0		P	85 - 115
Lead	95.1		P	85 - 115
Manganese	101		P	85 - 115
Molybdenum	98.7		P	85 - 115
Nickel	98.4		P	85 - 115
Selenium	97.2		P	85 - 115
Silver	101		P	85 - 115
Thallium	94.7		P	85 - 115

Reference Method: EPA 8270E

Batch ID: P420962

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aldrin	56.4		P	10 - 92.0
Alpha-BHC	89.6		P	75 - 107
Alpha-Chlordane	73.4		P	50 - 108
Beta-BHC	102		P	36 - 138
Beta-Cyfluthrin	69.7		P	20 - 161
Bifenthrin	43.1		P	10 - 119
Carbophenothion	51.2		P	19 - 94.0
Chlorothalonil	76.1		P	26 - 186
Cis-Nonachlor	68.1		P	42 - 119
Cypermethrin	74.8		P	22 - 150
Dacthal	87.6		P	72 - 119
DDD-p,p'	68.2		P	45 - 107
DDE-p,p'	73.7		P	48 - 106
DDT-p,p'	72.8		P	48 - 110
Delta-BHC	113		P	54 - 140

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8270E
Batch ID: P420962

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Deltamethrin	85.0		P	22 - 189
Dichlobenil	81.0		P	36 - 117
Dicofol	83.7		P	46 - 155
Dieldrin	76.5		P	54 - 110
Endosulfan I	82.8		P	59 - 105
Endosulfan II	94.1		P	51 - 118
Endosulfan Sulfate	83.7		P	57 - 121
Endrin	78.8		P	10 - 120
Endrin Aldehyde	78.7		P	34 - 118
Endrin Ketone	87.7		P	69 - 177
Esfenvalerate	68.1		P	23 - 168
Ethalfuralin	74.7		P	49 - 99.0
Fenpropathrin	65.7		P	34 - 117
Gamma-BHC	97.9		P	72 - 117
Gamma-Chlordane	71.2		P	43 - 106
Heptachlor	61.6		P	41 - 98.0
Heptachlor Epoxide	78.5		P	57 - 106
Hexachlorobenzene	69.4		P	36 - 99.0
Kepone	67.6		P	16 - 215
Lambda-Cyhalothrin	54.0		P	21 - 177
Methoprene	51.2		P	10 - 119
Methoxychlor	77.8		P	60 - 112
MGK-264	97.5		P	26 - 122
Mirex	58.5		P	10 - 169
Oxychlordane	76.7		P	43 - 105
PCB-1016	75.9		P	48 - 112
PCB-1260	87.0		P	44 - 118
Permethrin	70.2		P	24 - 148
Phenothrin	52.9		P	10 - 106
Piperonyl Butoxide	101		P	10 - 139
Prallethrin	77.4		P	17 - 109
Tau-Fluvalinate	47.5		P	13 - 131
Tetramethrin	101		P	10 - 132
Trans-Nonachlor	69.4		P	44 - 106
Triclosan Methyl	77.5		P	59 - 109
Trifluralin	72.4		P	44 - 101

Reference Method: EPA 8276
Batch ID: P420962

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlordane	84.4		P	61 - 116
Toxaphene	93.8		P	48 - 124

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P420973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362298	Calcium	101		P	80 - 120
2362298	Iron	108	108	P/P	80 - 120
2362298	Magnesium	104	115	P/P	80 - 120
2362298	Potassium	103	103	P/P	80 - 120
2362298	Sodium	103		P	80 - 120
2362298	Strontium	104	103	P/P	80 - 120
2362298	Tin	104	105	P/P	80 - 120
2362298	Titanium	104	103	P/P	80 - 120
2362298	Vanadium	105	104	P/P	80 - 120
2362298	Zinc	102	101	P/P	80 - 120
2362688	Calcium	104		P	80 - 120
2362688	Iron	104		P	80 - 120
2362688	Magnesium	105		P	80 - 120
2362688	Potassium	102		P	80 - 120
2362688	Sodium	106		P	80 - 120
2362688	Strontium	103		P	80 - 120
2362688	Tin	104		P	80 - 120
2362688	Titanium	101		P	80 - 120
2362688	Vanadium	101		P	80 - 120
2362688	Zinc	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362298	Aluminum	97.1	98.0	P/P	80 - 120
2362298	Antimony	102	103	P/P	80 - 120
2362298	Arsenic	100	102	P/P	80 - 120
2362298	Barium	103	104	P/P	80 - 120
2362298	Beryllium	88.9	86.7	P/P	80 - 120
2362298	Boron	104	107	P/P	80 - 120
2362298	Cadmium	96.4	99.4	P/P	80 - 120
2362298	Chromium	101	102	P/P	80 - 120
2362298	Cobalt	96.6	97.4	P/P	80 - 120
2362298	Copper	90.8	93.0	P/P	80 - 120
2362298	Lead	94.5	95.4	P/P	80 - 120
2362298	Manganese	99.7	100	P/P	80 - 120
2362298	Molybdenum	89.9	109	P/P	80 - 120
2362298	Nickel	94.4	96.3	P/P	80 - 120
2362298	Selenium	93.7	95.2	P/P	80 - 120
2362298	Silver	99.7	100	P/P	80 - 120
2362298	Thallium	95.4	98.9	P/P	80 - 120
2362688	Aluminum	99.5		P	80 - 120
2362688	Antimony	103		P	80 - 120
2362688	Arsenic	102		P	80 - 120
2362688	Barium	105		P	80 - 120
2362688	Beryllium	88.2		P	80 - 120
2362688	Boron	105		P	80 - 120
2362688	Cadmium	102		P	80 - 120
2362688	Chromium	100		P	80 - 120
2362688	Cobalt	98.4		P	80 - 120
2362688	Copper	98.5		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362688	Lead	96.7		P	80 - 120
2362688	Manganese	101		P	80 - 120
2362688	Molybdenum	98.9		P	80 - 120
2362688	Nickel	97.9		P	80 - 120
2362688	Selenium	95.6		P	80 - 120
2362688	Silver	102		P	80 - 120
2362688	Thallium	94.1		P	80 - 120

Reference Method: EPA 8270E

Batch ID: P420962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362637	PCB-1016	80.6	68.8	P/P	46 - 111
2362637	PCB-1260	90.1	79.0	P/P	45 - 114
2362970	Aldrin	61.8	65.6	P/P	20 - 82.0
2362970	Alpha-BHC	87.5	90.1	P/P	71 - 109
2362970	Alpha-Chlordane	71.0	69.1	P/P	42 - 106
2362970	Beta-BHC	86.1	86.5	P/P	69 - 180
2362970	Beta-Cyfluthrin	80.3	81.1	P/P	18 - 175
2362970	Bifenthrin	71.6	80.7	P/P	21 - 128
2362970	Carbophenothion	57.2	55.8	P/P	10 - 126
2362970	Chlorothalonil	63.8	60.1	P/P	10 - 300
2362970	Cis-Nonachlor	59.7	58.1	P/P	34 - 106
2362970	Cypermethrin	86.6	86.9	P/P	22 - 158
2362970	Dacthal	81.2	79.9	P/P	54 - 116
2362970	DDD-p,p'	57.0	55.2	P/P	34 - 107
2362970	DDE-p,p'	71.0	69.9	P/P	33 - 110
2362970	DDT-p,p'	72.3	78.1	P/P	50 - 122
2362970	Delta-BHC	102	110	P/P	77 - 193
2362970	Deltamethrin	103	102	P/P	10 - 195
2362970	Dichlobenil	79.1	64.8	P/P	25 - 113
2362970	Dicofol	87.9	92.3	P/P	38 - 247
2362970	Dieldrin	71.7	71.2	P/P	45 - 118
2362970	Endosulfan I	78.2	77.2	P/P	51 - 106
2362970	Endosulfan II	85.0	82.8	P/P	37 - 122
2362970	Endosulfan Sulfate	70.3	63.2	P/P	43 - 132
2362970	Endrin	74.9	74.3	P/P	29 - 101
2362970	Endrin Aldehyde	61.0	53.1	P/P	19 - 110
2362970	Endrin Ketone	73.6	72.6	P/P	60 - 140
2362970	Esfenvalerate	83.3	86.9	P/P	26 - 199
2362970	Ethalfuralin	81.2	83.1	P/P	45 - 99.0
2362970	Fenpropathrin	72.2	74.2	P/P	35 - 120
2362970	Gamma-BHC	95.6	98.0	P/P	63 - 128
2362970	Gamma-Chlordane	72.1	71.7	P/P	40 - 104
2362970	Heptachlor	68.8	66.1	P/P	36 - 97.0
2362970	Heptachlor Epoxide	80.6	78.5	P/P	49 - 184
2362970	Hexachlorobenzene	75.1	76.6	P/P	39 - 96.0
2362970	Lambda-Cyhalothrin	78.5	79.6	P/P	21 - 193
2362970	Methoprene	71.5	75.5	P/P	20 - 106
2362970	Methoxychlor	85.2	90.0	P/P	53 - 118
2362970	MGK-264	86.6	82.3	P/P	40 - 118
2362970	Mirex	65.7	63.6	P/P	26 - 92.0

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 8270E

Batch ID: P420962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362970	Oxychlordane	75.9	80.2	P/P	44 - 99.0
2362970	Permethrin	83.5	87.1	P/P	33 - 182
2362970	Phenothrin	69.2	72.4	P/P	10 - 129
2362970	Piperonyl Butoxide	97.3	94.1	P/P	10 - 211
2362970	Prallethrin	71.0	72.8	P/P	24 - 113
2362970	Tau-Fluvalinate	77.0	85.7	P/P	14 - 149
2362970	Tetramethrin	112	122	P/P	17 - 151
2362970	Trans-Nonachlor	68.5	69.9	P/P	42 - 102
2362970	Triclosan Methyl	70.9	70.8	P/P	48 - 108
2362970	Trifluralin	75.6	77.6	P/P	47 - 96.0

Reference Method: EPA 8276

Batch ID: P420962

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362637	Chlordane	84.4	67.6	P/P	53 - 126
2362637	Toxaphene	126	142	P/P	56 - 211

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P420973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362298	Calcium	0.844	Spike	P	0 - 20
2362298	Iron	0.442	Spike	P	0 - 20
2362298	Magnesium	1.43	Spike	P	0 - 20
2362298	Potassium	0.217	Spike	P	0 - 20
2362298	Sodium	0.475	Spike	P	0 - 20
2362298	Strontium	0.188	Spike	P	0 - 20
2362298	Tin	1.37	Spike	P	0 - 20
2362298	Titanium	0.951	Spike	P	0 - 20
2362298	Vanadium	0.962	Spike	P	0 - 20
2362298	Zinc	0.559	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362298	Aluminum	0.910	Spike	P	0 - 20
2362298	Antimony	1.48	Spike	P	0 - 20
2362298	Arsenic	1.09	Spike	P	0 - 20
2362298	Barium	0.932	Spike	P	0 - 20
2362298	Beryllium	2.50	Spike	P	0 - 20
2362298	Boron	1.97	Spike	P	0 - 20
2362298	Cadmium	0.845	Spike	P	0 - 20
2362298	Chromium	0.979	Spike	P	0 - 20
2362298	Cobalt	0.817	Spike	P	0 - 20
2362298	Copper	1.83	Spike	P	0 - 20
2362298	Lead	0.894	Spike	P	0 - 20
2362298	Manganese	0.396	Spike	P	0 - 20
2362298	Molybdenum	1.45	Spike	P	0 - 20
2362298	Nickel	1.71	Spike	P	0 - 20
2362298	Selenium	1.57	Spike	P	0 - 20
2362298	Silver	0.299	Spike	P	0 - 20
2362298	Thallium	3.45	Spike	P	0 - 20

Reference Method: EPA 8270E

Batch ID: P420962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362637	PCB-1016	15.8	Spike	P	0 - 32
2362637	PCB-1260	13.2	Spike	P	0 - 31
2362970	Aldrin	5.92	Spike	P	0 - 41
2362970	Alpha-BHC	3.01	Spike	P	0 - 25
2362970	Alpha-Chlordane	2.68	Spike	P	0 - 33
2362970	Beta-BHC	0.383	Spike	P	0 - 36
2362970	Beta-Cyfluthrin	0.968	Spike	P	0 - 42
2362970	Bifenthrin	12.0	Spike	P	0 - 53
2362970	Carbophenothion	2.40	Spike	P	0 - 49
2362970	Chlorothalonil	5.88	Spike	P	0 - 71
2362970	Cis-Nonachlor	2.74	Spike	P	0 - 29
2362970	Cypermethrin	0.384	Spike	P	0 - 40

Quality Assurance Report Precision

Reference Method: EPA 8270E
Batch ID: P420962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362970	Dacthal	1.67	Spike	P	0 - 26
2362970	DDD-p,p'	3.30	Spike	P	0 - 39
2362970	DDE-p,p'	1.69	Spike	P	0 - 33
2362970	DDT-p,p'	7.71	Spike	P	0 - 40
2362970	Delta-BHC	8.36	Spike	P	0 - 37
2362970	Deltamethrin	0.988	Spike	P	0 - 100
2362970	Dichlobenil	19.8	Spike	P	0 - 40
2362970	Dicofol	4.87	Spike	P	0 - 31
2362970	Dieldrin	0.519	Spike	P	0 - 27
2362970	Endosulfan I	1.28	Spike	P	0 - 23
2362970	Endosulfan II	2.60	Spike	P	0 - 28
2362970	Endosulfan Sulfate	10.7	Spike	P	0 - 38
2362970	Endrin	0.720	Spike	P	0 - 63
2362970	Endrin Aldehyde	13.8	Spike	P	0 - 60
2362970	Endrin Ketone	1.36	Spike	P	0 - 37
2362970	Esfenvalerate	4.25	Spike	P	0 - 52
2362970	Ethalfuralin	2.38	Spike	P	0 - 23
2362970	Fenpropathrin	2.65	Spike	P	0 - 32
2362970	Gamma-BHC	2.51	Spike	P	0 - 17
2362970	Gamma-Chlordane	0.550	Spike	P	0 - 40
2362970	Heptachlor	4.03	Spike	P	0 - 29
2362970	Heptachlor Epoxide	2.64	Spike	P	0 - 25
2362970	Hexachlorobenzene	2.01	Spike	P	0 - 36
2362970	Kepone	38.4	Spike	P	0 - 93
2362970	Lambda-Cyhalothrin	1.44	Spike	P	0 - 55
2362970	Methoprene	5.50	Spike	P	0 - 53
2362970	Methoxychlor	5.47	Spike	P	0 - 29
2362970	MGK-264	4.65	Spike	P	0 - 35
2362970	Mirex	3.34	Spike	P	0 - 46
2362970	Oxychlordane	5.50	Spike	P	0 - 29
2362970	Permethrin	4.19	Spike	P	0 - 44
2362970	Phenothrin	4.46	Spike	P	0 - 56
2362970	Piperonyl Butoxide	3.39	Spike	P	0 - 100
2362970	Prallethrin	2.51	Spike	P	0 - 42
2362970	Tau-Fluvalinate	10.6	Spike	P	0 - 54
2362970	Tetramethrin	8.85	Spike	P	0 - 51
2362970	Trans-Nonachlor	2.10	Spike	P	0 - 37
2362970	Triclosan Methyl	0.172	Spike	P	0 - 31
2362970	Trifluralin	2.55	Spike	P	0 - 30

Reference Method: EPA 8276
Batch ID: P420962

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362637	Chlordane	22.1	Spike	P	0 - 25
2362637	Toxaphene	11.5	Spike	P	0 - 26

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2362618

Field Sample ID: G3SW0110

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8270E	Decachlorobiphenyl	43.0	P	29 - 130
EPA 8270E	Decachlorobiphenyl	41.1	P	30 - 118
EPA 8270E	Tetrachloro-m-xylene	38.9	P	29 - 104
EPA 8270E	Tetrachloro-m-xylene	32.9	P	30 - 97.0
EPA 8276	Decachlorobiphenyl	36.5	P	30 - 101
EPA 8276	PCNB	79.6	P	48 - 121

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115376

Included Lab Sample IDs: 2362619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.7	99.3	P/P	90 - 110
Antimony	100	100	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Barium	100	101	P/P	90 - 110
Beryllium	95.1	94.7	P/P	90 - 110
Boron	100	101	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	98.2	99.3	P/P	90 - 110
Cobalt	97.4	98.2	P/P	90 - 110
Copper	96.6	97.5	P/P	90 - 110
Lead	94.6	94.5	P/P	90 - 110
Manganese	97.5	99.0	P/P	90 - 110
Molybdenum	99.6	99.7	P/P	90 - 110
Nickel	97.3	97.9	P/P	90 - 110
Selenium	100	102	P/P	90 - 110
Silver	99.2	99.9	P/P	90 - 110
Thallium	100	97.5	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115377

Included Lab Sample IDs: 2362619

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115404

Included Lab Sample IDs: 2362619

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	96.6	99.7	P/P	95 - 105

Reference Method: EPA 8276

Run ID: A115471

Included Lab Sample IDs: 2362618

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chlordane	98.2		P	80 - 120
Toxaphene	103		P	80 - 120

Quality Assurance Report Calibration Verification

Reference Method: EPA 8270E
Run ID: A115532
Included Lab Sample IDs: 2362618

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aldrin	101		P	80 - 120
Alpha-BHC	99.5		P	80 - 120
Alpha-Chlordane	106		P	80 - 120
Beta-BHC	96.8		P	80 - 120
Beta-Cyfluthrin	98.6		P	80 - 120
Bifenthrin	95.6		P	80 - 120
Carbophenothion	101		P	80 - 120
Chlorothalonil	87.8		P	80 - 120
Cis-Nonachlor	101		P	80 - 120
Cypermethrin	101		P	80 - 120
Dacthal	99.5		P	80 - 120
DDD-p,p'	100		P	80 - 120
DDE-p,p'	102		P	80 - 120
DDT-p,p'	99.2		P	80 - 120
Delta-BHC	92.5		P	80 - 120
Deltamethrin	97.6		P	80 - 120
Dichlobenil	98.5		P	80 - 120
Dicofol	99.8		P	80 - 120
Dieldrin	102		P	80 - 120
Endosulfan I	104		P	80 - 120
Endosulfan II	99.7		P	80 - 120
Endosulfan Sulfate	94.4		P	80 - 120
Endrin	103		P	80 - 120
Endrin Aldehyde	99.4		P	80 - 120
Endrin Ketone	98.0		P	80 - 120
Esfenvalerate	99.3		P	80 - 120
Ethalfuralin	104		P	80 - 120
Fenpropathrin	99.5		P	80 - 120
Gamma-BHC	98.6		P	80 - 120
Gamma-Chlordane	102		P	80 - 120
Heptachlor	100		P	80 - 120
Heptachlor Epoxide	101		P	80 - 120
Hexachlorobenzene	97.7		P	80 - 120
Kepone	84.6		P	80 - 120
Lambda-Cyhalothrin	98.9		P	80 - 120
Methoprene	103		P	80 - 120
Methoxychlor	97.1		P	80 - 120
MGK-264	97.1		P	80 - 120
Mirex	105		P	80 - 120
Oxychlordane	99.8		P	80 - 120
Permethrin	101		P	80 - 120
Phenothrin	97.3		P	80 - 120
Piperonyl Butoxide	95.1		P	80 - 120
Prallethrin	93.5		P	80 - 120
Tau-Fluvalinate	95.1		P	80 - 120
Tetramethrin	93.2		P	80 - 120
Trans-Nonachlor	103		P	80 - 120
Triclosan Methyl	99.8		P	80 - 120
Trifluralin	102		P	80 - 120

Quality Assurance Report

Calibration Verification

Reference Method: EPA 8270E
Run ID: A115588
Included Lab Sample IDs: 2362618

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
PCB-1016	101		P	80 - 120
PCB-1260	96.6		P	80 - 120

* 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 SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Calcium	106	101	104			0.844
	Iron	107	108	108	104		0.442
	Magnesium	102	104	115	105		1.43
	Potassium	106	103	103	102		0.217
	Sodium	105	103	106			0.475
	Strontium	105	104	103	103		0.188
	Tin	104	104	105	104		1.37
	Titanium	102	104	103	101		0.951
	Vanadium	101	105	104	101		0.962
	Zinc	101	102	101	101		0.559
EPA 200.8 Rev. 5.4	Aluminum	97.4	97.1	98.0	99.5		0.910
	Antimony	101	102	103	103		1.48
	Arsenic	101	100	102	102		1.09
	Barium	104	103	104	105		0.932
	Beryllium	92.5	88.9	86.7	88.2		2.50
	Boron	100	104	107	105		1.97
	Cadmium	98.4	96.4	99.4	102		0.845
	Chromium	99.6	101	102	100		0.979
	Cobalt	99.1	96.6	97.4	98.4		0.817
	Copper	99.0	90.8	93.0	98.5		1.83
	Lead	95.1	94.5	95.4	96.7		0.894
	Manganese	101	99.7	100	101		0.396
	Molybdenum	98.7	89.9	109	98.9		1.45
	Nickel	98.4	94.4	96.3	97.9		1.71
	Selenium	97.2	93.7	95.2	95.6		1.57
	Silver	101	99.7	100	102		0.299
	Thallium	94.7	95.4	98.9	94.1		3.45
EPA 8270E	Aldrin	56.4	61.8	65.6			5.92
	Alpha-BHC	89.6	87.5	90.1			3.01
	Alpha-Chlordane	73.4	71.0	69.1			2.68
	Beta-BHC	102	86.1	86.5			0.383
	Beta-Cyfluthrin	69.7	80.3	81.1			0.968
	Bifenthrin	43.1	71.6	80.7			12.0
	Carbophenothion	51.2	57.2	55.8			2.40
	Chlorothalonil	76.1	63.8	60.1			5.88
	Cis-Nonachlor	68.1	59.7	58.1			2.74
	Cypermethrin	74.8	86.6	86.9			0.384
	Dacthal	87.6	81.2	79.9			1.67
	DDD-p,p'	68.2	57.0	55.2			3.30
	DDE-p,p'	73.7	71.0	69.9			1.69
	DDT-p,p'	72.8	72.3	78.1			7.71
	Delta-BHC	113	102	110			8.36
	Deltamethrin	85.0	103	102			0.988
	Dichlobenil	81.0	79.1	64.8			19.8
	Dicofol	83.7	87.9	92.3			4.87
	Dieldrin	76.5	71.7	71.2			0.519
	Endosulfan I	82.8	78.2	77.2			1.28
	Endosulfan II	94.1	85.0	82.8			2.60
	Endosulfan Sulfate	83.7	70.3	63.2			10.7
	Endrin	78.8	74.9	74.3			0.720
	Endrin Aldehyde	78.7	61.0	53.1			13.8
	Endrin Ketone	87.7	73.6	72.6			1.36
	Esfenvalerate	68.1	83.3	86.9			4.25
	Ethalfuralin	74.7	81.2	83.1			2.38

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision SMP	MS
			LCS			
EPA 8270E	Fenpropathrin	65.7	72.2	74.2		2.65
	Gamma-BHC	97.9	95.6	98.0		2.51
	Gamma-Chlordane	71.2	72.1	71.7		0.550
	Heptachlor	61.6	68.8	66.1		4.03
	Heptachlor Epoxide	78.5	80.6	78.5		2.64
	Hexachlorobenzene	69.4	75.1	76.6		2.01
	Kepone	67.6				38.4
	Lambda-Cyhalothrin	54.0	78.5	79.6		1.44
	Methoprene	51.2	71.5	75.5		5.50
	Methoxychlor	77.8	85.2	90.0		5.47
	MGK-264	97.5	86.6	82.3		4.65
	Mirex	58.5	65.7	63.6		3.34
	Oxychlordane	76.7	75.9	80.2		5.50
	PCB-1016	75.9	80.6	68.8		15.8
	PCB-1260	87.0	90.1	79.0		13.2
	Permethrin	70.2	83.5	87.1		4.19
	Phenothrin	52.9	69.2	72.4		4.46
	Piperonyl Butoxide	101	97.3	94.1		3.39
	Prallethrin	77.4	71.0	72.8		2.51
	Tau-Fluvalinate	47.5	77.0	85.7		10.6
	Tetramethrin	101	112	122		8.85
	Trans-Nonachlor	69.4	68.5	69.9		2.10
	Triclosan Methyl	77.5	70.9	70.8		0.172
	Trifluralin	72.4	75.6	77.6		2.55
EPA 8276	Chlordane	84.4	84.4	67.6		22.1
	Toxaphene	93.8	126	142		11.5

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2362619
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2362619
EPA 8270E	Organochlorine pesticides, pyrethroids and tracers in water matrices by GC/MS/MS	2362618
EPA 8270E	PCBs in water matrices by GC/MS/MS	2362618
EPA 8276	Organochlorine pesticides in water matrices by GC/MS with Negative Chemical Ionization	2362618
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2362619

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	10/14/2022	10/17/2022 11:55	George D Taylor	10/18/2022 17:12	McKinley C Carter	2362619
	10/14/2022	10/17/2022 11:55	George D Taylor	10/19/2022 13:19	McKinley C Carter	2362619
EPA 200.8 Rev. 5.4	10/14/2022	10/17/2022 11:55	George D Taylor	10/18/2022 21:25	Megan Whitefoot	2362619
EPA 8270E	10/14/2022	10/19/2022 08:30	Rasheda Ghaffari	10/21/2022 21:01	Vandana T. Nagar	2362618
	10/14/2022	10/19/2022 08:30	Rasheda Ghaffari	10/24/2022 02:04	Julie Wi	2362618
EPA 8276	10/14/2022	10/19/2022 08:30	Rasheda Ghaffari	10/22/2022 16:43	Arthur Maknenko	2362618
SM 2340 B-2011	10/14/2022			10/18/2022 17:12	McKinley C Carter	2362619