DATA VALIDATION REPORT

PORT OF FRIDAY HARBOR

Prepared for:

Leon Environmental
8047 Burke Avenue North
Seattle, WA 98103

Prepared by:

EcoChem, Inc.
500 Union Street, Suite 1010
Seattle, Washington 98101

EcoChem Project: C29901-1

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Approved for Release:

Christine Ransom
Senior Project Chemist
EcoChem, Inc.

PROJECT NARRATIVE

Basis for Data Validation

This report summarizes the results of full and summary validation (EPA Stage 4 and 2B) performed on sediment and quality control (QC) sample data for Port of Friday Harbor. A list of all samples is provided in the Sample Index.

Samples were analyzed by Analytical Resources, LLC, Tukwila, Washington and Friedman and Bruya, Inc, Seattle, Washington. The analytical method and EcoChem project chemists are noted below.

ANALYSIS	METHOD OF ANALYSIS	PRIMARY REVIEW	SECONDARY REVIEW
Dioxin	1613B	E. Clayton	A. Bodkin
TBT	SW8270E-SIM		
Metals	SW6020		C. Ransom
Mercury	1631		
Pesticides	SW8081B	I. Hooper	A. Bodkin
PCB	SW8082A		
SVOC	SW8270E		

The data were reviewed using guidance and quality control criteria documented in the analytical methods and *In-Water Sampling and Analysis Plan, Port of Friday Harbor* (Leon Environmental, July 2022); *National Functional Guidelines for Organic Data Review* (USEPA 2020); *National Functional Guidelines for Inorganic Data Review* (USEPA 2020); and *National Functional Guidelines for High Resolution Superfund Methods Data Review (USEPA 2020)*.

EcoChem's goal in assigning data assessment qualifiers is to assist in proper data interpretation. If values are estimated (J or UJ), data may be used for site evaluation and risk assessment purposes but reasons for data qualification should be taken into consideration when interpreting sample concentrations. If values are assigned a DNR flag (do-not-report) or are rejected (R), the data should not be used for any site evaluation purposes. If values have no data qualifier assigned, then the data meet the data quality objectives as stated in the documents and methods referenced above.

Data qualifier definitions, reason codes, and validation criteria are included as Appendix A. A Qualified Data Summary Table is included in Appendix B. Data Validation Worksheets and the associated communication records will be kept on file at EcoChem, Inc. A qualified laboratory electronic data deliverable (EDD) was also submitted with this report.

Sample Index
Port of Friday Harbor - Friedman and Bruya

F&B SDG	SAMPLE ID	F&B LAB ID	SVOC	PEST	PCB	Metals	Mercury
303373	SED-01C:0-1	303373-14		✓			
303373	SED-01G:0-10	303373-13		✓			
303373	SED-03C:0-1	303373-23	✓	✓			
303373	SED-03G:0-10	303373-09	✓	✓			
303373	SED-05C:0-1	303373-18	✓	✓			
303373	SED-05G:0-10	303373-22	✓	✓			
303388	SED-07C:0-1	303388-01	✓				
303373	SED-07G:0-10	303373-01	✓				
303388	SED-08C:0-1	303388-03	✓	✓	✓		
303388	SED-09C:0-1	303388-07	✓	✓	✓	✓	✓
303388	SED-09C:1-3	303388-08	✓	✓	✓	✓	✓
303388	SED-10C:0-1	303388-26	✓	✓	✓	✓	✓
303388	SED-10C:1-3	303388-27	✓	✓	✓	✓	✓
303388	SED-11C:0-1	303388-30	✓	✓	✓	✓	✓
303388	SED-11C:1-3	303388-31	✓	✓	✓	✓	✓
303373	SED-11G:0-10	303373-02	✓	✓	✓	✓	✓
303388	SED-12C:0-1	303388-11			✓		
303373	SED-14C:0-1	303373-27	✓	✓	✓	✓	✓
303373	SED-14C:1-3	303373-28	✓	✓	✓		
303373	SED-14G:0-10	303373-03	✓	✓	✓	✓	✓
303373	SED-18G:0-10	303373-11		✓			
303373	SED-19G:0-10	303373-12		✓			
303373	SED-20G:0-10	303373-10		✓			
303373	SED-23G:0-10	303373-06		✓	✓		
303373	SED-24G:0-10	303373-05		✓	✓		
303388	SED-25C:0-1	303388-17	✓	✓	✓	✓	✓
303388	SED-25C:1-3	303388-18	✓		✓	✓	✓
303388	SED-26C:0-1	303388-13	✓	✓	✓	✓	✓
303388	SED-26C:1-3	303388-14	✓		✓	✓	✓
303388	SED-27C:0-1	303388-21			✓		✓
303388	SED-DUP3C	303388-34		✓			
303373	SED-DUPC	303373-31	✓		✓	✓	✓

Sample Index
Port of Friday Harbor - Analytical Resources Laboratory

ARL SDG	SAMPLE ID	ARL LAB ID	Dioxin	TBT
23C0619	SED-07C:0-1	23C0619-01		✓
23J0690	SED-07C:0-1	23J0690-01	✓	
23C0619	SED-07C:1-3	23C0619-02		✓
23C0618	SED-07G:0-10	23C0618-01		✓
23C0619	SED-08C:0-1	23C0619-03	✓	✓
23C0619	SED-08C:1-3	23C0619-04		✓
23J0690	SED-08C:1-3	23J0690-02	✓	
23C0619	SED-09C:0-1	23C0619-05	✓	✓
23C0619	SED-09C:1-3	23C0619-06	✓	✓
23C0619	SED-10C:0-1	23C0619-12	✓	✓
23C0619	SED-10C:1-3	23C0619-13		✓
23C0619	SED-11C:0-1	23C0619-14	✓	
23J0690	SED-11C:0-1	23J0690-03		✓
23C0619	SED-11C:1-3	23C0619-15	✓	
23C0619	SED-12C:0-1	23C0619-07	✓	
23C0618	SED-14C:0-1	23C0618-11		✓
23J0690	SED-14C:0-1	23J0690-04	✓	
23C0618	SED-14C:1-3	23C0618-12		✓
23C0618	SED-14G:0-10	23C0618-03		✓
23C0618	SED-15G:0-10	23C0618-04		✓
23C0619	SED-25C:0-1	23C0619-10	✓	✓
23C0619	SED-25C:1-3	23C0619-11		✓
23C0619	SED-26C:0-1	23C0619-08	✓	✓
23C0619	SED-26C:1-3	23C0619-09		✓
23J0690	SED-26C:1-3	23J0690-07	✓	
23J0690	SED-26C:3-5	23J0690-05		✓
23J0690	SED-27C:0-1	23J0690-06	✓	✓
23C0618	SED-DUPC	23C0618-13		✓

DATA VALIDATION REPORT
Port of Friday Harbor
Dioxin/Furan Compounds by EPA 1613B

This report documents the review of analytical data from the analyses of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Analytical Resources, LLC, Tukwila, Washington. Refer to the Sample Index for a complete list of samples.

SDG	Number of Samples and Matrix	Validation Level
23C0619	10 Sediment	Stage 4
23J0690	5 Sediment	Stage 2B

DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes, and all anomalies were discussed in the case narrative.

EDD TO HARDCOPY VERIFICATION

All sample IDs were reported in the electronic data deliverable (EDD) were verified (100% verification) by comparing the EDD to the hardcopy laboratory data package. Ten percent (10%) of the sample and laboratory QC results were also verified.

SDG 23J0690: Sample SED-26:3-5 (collected 3/22/23 at 10:38) was incorrectly listed as Sample SED-26:1-3 on the COC. This error was confirmed by the client via an email that was included in the PDF data package. The sample ID was corrected in the EDD during validation.

TECHNICAL DATA VALIDATION

The quality control (QC) requirements that were reviewed are listed in the following table.

1	Sample Receipt, Preservation, and Holding Times	✓	Ongoing Precision and Recovery (OPR)
✓	System Performance and Resolution Checks	✓	Certified Reference Material
✓	Initial Calibration (ICAL)	1	Field Duplicates
✓	Calibration Verification (CCAL)	✓	Target Analyte List
2	Laboratory Blanks	✓	Reporting Limits
1	Field Blanks	2	Compound Identification
✓	Labeled Compound Recovery	2	Compound Quantitation
1	Matrix Spike/Matrix Spike Duplicates (MS/MSD)	1	Calculation Verification (Stage 4 only)

✓Method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.
1 Quality control results are discussed below, but no data were qualified.
2 Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.

Sample Receipt, Preservation, and Holding Times

The validation guidance documents state that the cooler temperatures should be within an advisory temperature range of 2° to 6°C. With the exception noted below, the laboratory received the sample coolers within the advisory temperature range.

SDG 23C0619: The sample cooler temperature was greater than the upper control limit at 8.3°C. This outlier did not impact data quality; no data were qualified.

Laboratory Blanks

Method blanks extracted with the field samples were evaluated for impact of any laboratory contaminant on the reported sample results. Action levels were established at two times (2x) and five times (5x) the concentration reported in the method blank. The following criteria were used to qualify samples based on method blank contamination:

- Sample <RL and <5x action level, results qualified as not detected (U-7)
- Sample >RL and less than 2x action level, results qualified as not detected (U-7)
- Sample >RL and between the 2x and 5x action levels, results estimated (J-7H)
- Sample > 5x action level or ND, no action.

SDG 23C0619: For extraction batch BLD0089, 1,2,3,4,6,7,8-HpCDD and OCDD were detected. Results less than the action levels were qualified as not detected (U-7).

SDG 23J0690: For extraction batch BLK0112, 1,2,3,4,6,7,8-HpCDF, OCDF, 1,2,3,4,6,7,8-HpCDD, and OCDD were detected. All field sample results were greater than the action levels; no data were qualified.

Field Blanks

No field blank samples were submitted.

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) analyses were not performed. Accuracy was assessed using labeled compound recoveries and ongoing precision and recovery (OPR) samples. Ongoing laboratory precision is demonstrated by acceptable recoveries of the OPR. Precision within the batch could not be assessed.

Field Duplicates

No field duplicates were submitted.

Compound Identification

The laboratory uses the RTX-Dioxin2 column which has unique isomer separation for 2,3,7,8-TCDF, eliminating the need for a confirmation analysis on a second column.

The laboratory reported an EMPC or "estimated maximum possible concentration" when a peak was detected but did not meet ion ratio identification criteria as required by the method. This indicates a potential matrix interference. These EMPC values were estimated (J-25).

The laboratory assigned "X" flags to several of the reported results to indicate that diphenyl ether interference was present, which may result in a high bias to the reported result. All results that were "X" flagged by the laboratory were estimated (J-23H).

Compound Quantitation

SDG 23C0619: The results for OCDD in two samples exceeded the calibrated linear range of the instrument. These results were estimated (J-20).

Calculation Verification

SDG 23C0619: Calculation verifications were performed for this sample delivery group (SDG). No calculation or transcription errors were found.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory performed an acceptable modification of the specified analytical method. Accuracy was acceptable, as demonstrated by the labeled compound and OPR recoveries. Ongoing laboratory precision is demonstrated by acceptable OPR recoveries.

One result was qualified as not detected due to method blank contamination. Data were qualified as estimated to indicate that EMPC values represent estimated maximum possible concentrations. Other data were estimated due to calibration range exceedances and diphenyl ether interferences.

All data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
PORT OF FRIDAY HARBOR
Semi-Volatile Organic Compounds (SVOCs) by Method SW8270E

This report documents the review of analytical data from the analysis of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Friedman and Bruya, Inc., Seattle, Washington. Refer to the Sample Index for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
303373	10 Sediment	EPA Stage 2B
303388	12 Sediment	EPA Stage 2B

DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes, and all anomalies were discussed in the case narrative.

EDD TO HARDCOPY VERIFICATION

All sample IDs reported in the electronic data deliverable (EDD) were verified (100%) by comparing the EDD to the hardcopy laboratory data package. Sample results and laboratory quality control sample results were also verified (10%).

TECHNICAL DATA VALIDATION

The quality control (QC) requirements that were reviewed are listed in the following table:

✓	Sample Receipt, Preservation, and Holding Times	✓	Matrix Spike/Matrix Spike Duplicates (MS/MSD)
✓	Initial Calibration (ICAL)	2	Internal Standards
2	Continuing Calibration (CCAL)	2	Field Duplicates
✓	Laboratory Blanks	✓	Target Analyte List
1	Field Blanks	1	Reporting Limits
1	Surrogate Compounds	2	Reported Results
1	Laboratory Control Samples (LCS)	✓	Compound Identification

✓ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.
[1] Quality control results are discussed below, but no data were qualified.
[2] Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.

Continuing Calibration

SDG 303373: For the continuing calibration (CCAL) analyzed on 3/27/23 at 16:48, the percent difference (%D) value for di-n-octyl phthalate was outside the control limit, indicating a potential low bias. Di-n-octyl phthalate results for the associated samples were reported from other analyses; no qualifiers were assigned.

SDGs 303373, 303388: For the CCALs analyzed on 3/28/23 at 08:45 and 3/30/23 at 09:36, the %D values for benzoic acid were outside the control limit, indicating a potential low bias. Benzoic acid results for the associated samples were reported from other analyses; no qualifiers were assigned.

For the CCAL analyzed on 3/29/23 at 11:44, the %D value for benzoic acid was outside the control limit, indicating a potential low bias. Benzoic acid results for the associated samples were estimated (UJ-5BL).

For the CCAL analyzed on 4/26/23 at 09:22, the %D value for di-n-butyl phthalate was outside the control limit, indicating a potential low bias. Di-n-butyl phthalate results for the associated samples were estimated (UJ-5BL).

Field Blanks

Field blanks were not collected with these samples.

Surrogate Compounds

SDG 303373: For the method blank, the percent recovery (%R) value for 2-fluorophenol was less than the lower control limit. No qualifiers were assigned based on laboratory QC surrogate outliers.

Laboratory Control Samples

SDG 303388: For the laboratory control sample (LCS), the %R value for bis(2-ethylhexyl)phthalate was greater than the upper control limit. There were no positive results for this compound in the associated samples; no qualifiers were assigned.

Internal Standards

SDG 303373: For Sample SED-DUPC, the response for perylene-d12 was less than the lower control limit. The sample was re-analyzed at a dilution, resulting in acceptable internal standard results. Compounds that were associated with internal standard perylene-d12 were reported from both analyses. The initial results were qualified as do-not-report (DNR-19). The results from the dilution should be used.

For Samples SED-07G:0-10, SED-11G:0-10, SED-05C:0-1, SED-05G:0-10, and SED-03C:0-1, the responses for perylene-d12 were less than the lower control limits. Results for the compounds associated with this internal standard were estimated (J/UJ-19).

SDG 303388: For Sample SED-26C:0-1, the response for perylene-d12 was less than the lower control limit. Results for the compounds associated with this internal standard were estimated (J/UJ-19).

Field Duplicates

For sediment samples, the relative percent difference (RPD) control limit is 50% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 2x the RL.

SDG 303373: One set of field duplicates, SED-14C:0-1 and SED-DUPC, were submitted. The difference value for acenaphthene was greater than the control limit, and the RPD value for fluorene, naphthalene and phenanthrene were greater than the control limits. Results for these compounds for the duplicate samples were estimated (J-9B).

Reporting Limits

The following compounds were reported as ND at reporting limits less than the low calibration standard: benzyl alcohol, 2-methylphenol, 2,4-dimethylphenol, 1,2,4-trichlorobenzene, dimethyl phthalate, hexachlorobenzene, and butylbenzyl phthalate. The results for these compounds should be considered estimates and were qualified (J/UJ-14).

Reported Results

SDG 303373: For Sample SED-03G:0-10, hexachloroethane was reported from two analyses. Hexachloroethane was not detected in either analysis. The result with the lower reporting limit should be used. The result from the diluted analysis was qualified as do-not-report (DNR-11).

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical method. With the noted exceptions, accuracy was acceptable as demonstrated by the surrogate, LCS, and MS/MSD %R values, and precision was acceptable as demonstrated by the MS/MSD and field duplicate RPD values.

Data were estimated based on CCAL %D outliers, internal standard recovery outliers, reporting limits less than the low calibration standard, and field duplicate precision outliers.

Data were qualified as do-not-report (DNR) to indicate which result of multiple results should not be used. Data qualified DNR should not be used.

All other data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
PORT OF FRIDAY HARBOR
Organochlorine Pesticides by SW8081B

This report documents the review of analytical data from the analysis of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Friedman and Bruya, Inc., Seattle, Washington. Refer to the Sample Index for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
303373	18 Sediment	EPA Stage 2B
303388	10 Sediment	EPA Stage 2B

DATA PACKAGE COMPLETENESS

With the noted exceptions, the laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes, and all anomalies were discussed in the case narrative.

The summary forms for some initial calibrations (ICAL), continuing calibrations (CCAL), instrument degradation checks, and batch QC data summaries were missing from the PDFs submitted by the laboratory. The laboratory was contacted and submitted the missing documentation.

The target compound list in the Sampling and Analysis Plan (SAP) included total chlordane which is defined as the sum of cis-chlordane, trans-chlordane, cis-nonachlor, trans-nonachlor, and oxychlordane. The laboratory only analyzed for cis-chlordane and trans-chlordane; these are the dominant components in technical chlordane.

EDD TO HARDCOPY VERIFICATION

All sample IDs reported in the electronic data deliverable (EDD) were verified (100%) by comparing the EDD to the hardcopy laboratory data package. Sample results and laboratory quality control sample results were also verified (10%).

TECHNICAL DATA VALIDATION

The quality control (QC) requirements that were reviewed are listed in the following table:

✓	Sample Receipt, Preservation, and Holding Times	2	Matrix Spike/Matrix Spike Duplicates (MS/MSD)
✓	Initial Calibration (ICAL)	1	Field Duplicates
2	Continuing Calibration (CCAL)	✓	Target Analyte List
✓	Laboratory Blanks	✓	Reporting Limits
1	Field Blanks	2	Reported Results
2	Surrogate Compounds	✓	Compound Identification
1	Laboratory Control Samples (LCS)		

✓ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.
[1] Quality control results are discussed below, but no data were qualified.
[2] Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.

Continuing Calibration

A continuing calibration verification (CCAL) standard was analyzed at the required frequency. With the noted exceptions, the percent difference (%D) values were within the required control limits of ±20%. When the CCAL %D values indicate a potential low bias, associated results were estimated (J/UJ-5BL). Only the associated positive results were estimated (J-5BH) if the %D value indicates a potential high bias.

All samples were analyzed using dual column confirmation. All sample results were reported from the primary column (column 1). No qualifiers were assigned for CCAL %D outliers on the confirmation column (column 2).

For several CCALs, there were %D value outliers for surrogate compounds. No qualifiers were assigned to surrogate compound results based on CCAL surrogate %D outliers.

The following CCAL outliers resulted in qualification of associated samples:

SDG	Instrument	CCAL Date	Compound	Potential Bias	Action
303373	GC7	3/28/23 @ 16:54	Heptachlor	Low	UJ-5BL
			4,4'-DDT	Low	UJ-5BL
			Methoxychlor	Low	UJ-5BL
		3/28/23 @ 17:15	Toxaphene	Low	UJ-5BL
	GC9	3/29/23 @ 19:46	Heptachlor	Low	UJ-5BL
			4,4'-DDT	Low	UJ-5BL
		3/29/23 @ 20:07	Toxaphene	Low	UJ-5BL

SDG	INSTRUMENT	CCAL DATE	COMPOUND	POTENTIAL BIAS	ACTION
303373	GC9	3/30/23 @ 00:01	Gamma-BHC	Low	UJ-5BL
			Beta-BHC	Low	UJ-5BL
			Heptachlor	Low	UJ-5BL
			4,4'-DDT	Low	UJ-5BL
			Methoxychlor	Low	UJ-5BL
		3/30/23 @ 00:23	Toxaphene	Low	UJ-5BL
303388	GC7	3/29/23 @ 18:03	4,4'-DDT	Low	UJ-5BL
			Methoxychlor	Low	UJ-5BL
		3/29/23 @ 20:29	4,4'-DDT	Low	UJ-5BL
			Methoxychlor	Low	UJ-5BL
		4/6/23 @ 23:36	4,4'-DDT	Low	UJ-5BL
			Methoxychlor	Low	UJ-5BL
		4/6/23 @ 23:56	Toxaphene	Low	UJ-5BL
		4/7/23 @ 01:19	Heptachlor	Low	UJ-5BL
			4,4'-DDT	Low	UJ-5BL
			Methoxychlor	Low	UJ-5BL
		4/7/23 @ 01:39	Toxaphene	Low	UJ-5BL

Field Blanks

Field blanks were not collected with these samples.

Laboratory Control Samples

SDG 303383: The laboratory control sample duplicate (LCSD) percent recovery (%R) value for toxaphene was greater than the upper control limit, indicating a potential high bias. The laboratory control sample (LCS) %R value was acceptable. Toxaphene was not detected in the associated samples; no qualifiers were assigned.

Surrogate Compounds

SDG 303373: For Sample SED-05C:0-1, the %R value for decachlorobiphenyl was less than the lower control limit. All results were estimated (J/UJ-13L).

Matrix Spike/Matrix Spike Duplicates (MS/MSD)

Matrix spike/matrix spike duplicate (MS/MSD) samples were analyzed at the appropriate frequency. No action is taken unless both the MS and MSD percent recovery (%R) values are outside the control limits. Precision is evaluated using the relative percent difference (RPD) values calculated between the MS and MSD results. Any RPD values outside the control limits indicate uncertainty in the measured results for the sample. Qualifiers were only issued to the parent sample.

When the MS/MSD %R values indicate a potential low bias, associated results are estimated (J/UJ-8L). Only the associated positive results are estimated (J-8H) if the %R values indicate a potential high bias. Associated positive results are estimated (J-9A) if the RPD values indicate uncertainty.

SDG 303373: Sample SED-11G:0-10 was used for the MS/MSD analyses. The MSD %R values for delta-BHC, 4,4'-DDT, methoxychlor, and endosulfan sulfate were less than the lower control limits. The corresponding MS %R values were acceptable. No qualifiers were assigned based on the single outliers. Several RPD outliers were noted. No target compounds were detected in the parent sample; no qualifiers were assigned based on the RPD outliers. The MS/MSD %R values for toxaphene were less than the lower control limits, indicating a potential low bias. The toxaphene result for the parent sample was estimated (UJ-8L).

SDG 303388: An MS/MSD was not performed with these samples. Accuracy and precision were evaluated using the LCS/LCSD analyses.

Field Duplicates

For sediment samples, the RPD control limit is 50% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and duplicate must be less than 2x the RL.

SDG 303373: One set of field duplicates, SED-14C:0-1 and SED-DUPC, were submitted. No target compounds were detected in either sample. Field precision was acceptable.

Reported Results

SDG 303373: Several samples were re-analyzed at dilutions due to CCAL %D value outliers. Similar CCAL outliers were noted for the re-analysis. For one or more compounds in each of these samples, both sets of data were reported. The reporting limits for the re-analyses were higher; therefore, the initial analysis results should be used. All results from the re-analyses were flagged do-not-report (DNR-11).

For Sample SED-21G:0-10, results for all compounds were reported from the diluted analysis. Results for a subset of compounds were reported from the initial analysis. Results for compounds reported from both analyses were flagged as do-not-report (DNR-11) in the diluted analysis. All other compounds were reported from the diluted analysis with elevated reporting limits.

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical method. With the noted exceptions, accuracy was acceptable as demonstrated by the surrogate, LCS/LCSD, and MS/MSD %R values. Precision was acceptable as demonstrated by the LCS/LCSD, MS/MSD, and field duplicate RPD values.

Data were qualified based on CCAL %D outliers as well as surrogate and MS/MSD recovery outliers.

Data were flagged as do-not-report (DNR) to indicate which result of multiple results should not be used.

Data qualified DNR should not be used. All other data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
PORT OF FRIDAY HARBOR
PCB Aroclors by SW8082A

This report documents the review of analytical data from the analysis of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Friedman and Bruya, Inc., Seattle, Washington. Refer to the Sample Index for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
303373	7 Sediment	EPA Stage 2B
303388	13 Sediment	EPA Stage 2B

DATA PACKAGE COMPLETENESS

With the noted exceptions, the laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes, and all anomalies were discussed in the case narrative.

EDD TO HARDCOPY VERIFICATION

All sample IDs reported in the electronic data deliverable (EDD) were verified (100%) by comparing the EDD to the hardcopy laboratory data package. Sample results and laboratory quality control sample results were also verified (10%).

TECHNICAL DATA VALIDATION

The quality control (QC) requirements that were reviewed are listed in the following table:

1	Sample Receipt, Preservation, and Holding Times	2	Matrix Spike/Matrix Spike Duplicates (MS/MSD)
✓	Initial Calibration (ICAL)	1	Field Duplicates
✓	Continuing Calibration (CCAL)	✓	Target Analyte List
✓	Laboratory Blanks	✓	Reporting Limits
1	Field Blanks	2	Reported Results
✓	Surrogate Compounds	2	Compound Identification
✓	Laboratory Control Samples (LCS)		

✓ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.
[1] Quality control results are discussed below, but no data were qualified.
[2] Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.

Sample Receipt, Preservation, and Holding Times

SDG 303388: Sample SED-27C:0-1 was pulled from archive and extracted 194 days from sample collection, within the 1-year holding time for samples stored frozen.

Field Blanks

Field blanks were not collected with these samples.

Matrix Spike/Matrix Spike Duplicates (MS/MSD)

Matrix spike/matrix spike duplicate (MS/MSD) samples were analyzed at the appropriate frequency. No action is taken unless both the MS and MSD percent recovery (%R) values are outside the control limits. Precision is evaluated using the relative percent difference (RPD) values calculated between the MS and MSD results. Any RPD values outside the control limits indicate uncertainty in the measured results for the sample. Qualifiers were only issued to the parent sample.

When the MS/MSD %R values indicate a potential low bias, associated results are estimated (J/UJ-8L). Only the associated positive results are estimated (J-8H) if the %R values indicate a potential high bias. Associated positive results are estimated (J-9A) if the RPD values indicate uncertainty.

SDGs 303373, 303388: For the extraction batch from 3/24/23, Sample SED-11G:0-10 from SDG 303373 was used for the MS/MSD analyses. The %R values for Aroclor 1016 were greater than the upper control limits, indicating a potential high bias. Aroclor 1016 was not detected in the parent sample; no qualifiers were assigned. The %R values for Aroclor 1260 were greater than the upper control limits, indicating a potential high bias. The Aroclor 1260 result for the parent sample was estimated (J-8H).

Field Duplicates

For sediment samples, the RPD control limit is 50% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 2x the RL.

SDG 303373: One set of field duplicates, SED-14C:0-1 and SED-DUPC, were submitted. Field precision was acceptable.

Reported Results

SDG 303388: For 1x analysis of Sample SED-10C:0-1, the results for Aroclors 1248 and 1254 exceeded the instrument calibration range and were flagged by the laboratory; E-flagged in the EDD and ve-flagged in the PDF. The sample was re-analyzed at a dilution. Both sets of Aroclor 1248 and 1254 results were reported. The initial results were qualified as do-not-report (DNR-20); results from the diluted analysis should be used.

For 1x analysis of Sample SED-26C:0-1, the result for Aroclors 1254 exceeded the instrument calibration range and was flagged by the laboratory; E-flagged in the EDD and ve-flagged in the PDF. The sample was re-analyzed at a dilution. Both of the Aroclor 1254 results were reported. The initial result was qualified as do-not-report (DNR-20); the result from the diluted analysis should be reported.

Compound Identification

All samples were analyzed using dual column confirmation. When RPD values were between 40% and 60%, the results were estimated (J-3). When the RPD values were greater than 60%, the results were qualified as tentatively identified (NJ-3). With the noted exceptions, the dual column RPD values were less than 40%.

SDG 303388: For Sample SED-27C:0-1, the dual column RPD value for Aroclor 1260 was 47.3%. The result was estimated (J-3).

Overall Assessment

As was determined by this evaluation, the laboratory followed the specified analytical method. With the noted exceptions, accuracy was acceptable as demonstrated by the surrogate, LCS, and MS/MSD %R values. Precision was acceptable as demonstrated by the MS/MSD and field duplicate relative percent difference values.

Data were qualified based on MS/MSD recovery outliers and dual column precision outliers.

Data were qualified as do-not-report (DNR) to indicate which result of multiple results should not be used. Data qualified DNR should not be used.

All other data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Port of Friday Harbor
Tributyltins - Method SW8270E-SIM

This report documents the review of analytical data from the analyses of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Analytical Resources, LLC, Tukwila, Washington. Refer to the Sample Index for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
23C0618	6 Sediment	Stage 2B
23C0619	12 Sediment	Stage 2B
23J0690	3 Sediment	Stage 2B

DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes, and all anomalies were discussed in the case narrative.

EDD TO HARDCOPY VERIFICATION

All sample IDs were reported in the electronic data deliverable (EDD) were verified (100% verification) by comparing the EDD to the hardcopy laboratory data package. Ten percent (10%) of the sample and laboratory QC results were also verified.

SDG 23J0690: Sample SED-26:3-5 (collected 3/22/23 at 10:38) was incorrectly listed as Sample SED-26:1-3 on the COC. This error was confirmed by the client via an email that was included in the PDF data package. The laboratory reported this sample as follows:

TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

1	Sample Preservation and Holding Times	1	Matrix Spikes/Matrix Spike Duplicates (MS/MSD)
✓	GC/MS Instrument Performance (Tune)	✓	Internal Standards
✓	Initial Calibration (ICAL)	2	Field Duplicates
✓	Continuing Calibration (CCAL)	✓	Target Analyte List
✓	Laboratory Blanks	✓	Reporting Limits
1	Field Blanks	✓	Reported Results
✓	Surrogate Compounds	✓	Compound Identification
2	Laboratory Control / Laboratory Control Duplicate Samples (LCS/LCSD)		

✓ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.
1 Quality control outliers are discussed below, but no data were qualified.
2 Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.

Sample Preservation and Holding Times

The validation guidance documents state that the cooler temperatures should be within an advisory temperature range of 2° to 6°C. With the noted exception, the laboratory received the sample coolers within the advisory temperature range.

SDG 23C0619: The sample cooler temperature was greater than the upper control limit at 8.3°C. This outlier did not impact data quality; no data were qualified.

Field Blanks

No field blanks were submitted.

Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) were analyzed at the required frequency of one per batch of 20 or fewer samples. Accuracy is evaluated using the percent recovery (%R0 values. Precision is evaluated using the relative percent difference (RPD) values calculated between the LCS and LCSD results. Any RPD values outside the control limits indicate uncertainty in the measured results for the sample. Qualifiers are issued to all samples in the extraction batch.

When the LCS/LCSD %R values indicate a potential low bias, associated results are estimated (J/UJ-10L). Only the associated positive results are estimated (J-10H) if the %R values indicate a potential high bias. Associated positive results are estimated (J-9A) if the RPD values indicate uncertainty.

SDG 23J0690: For extraction batch, BLK0004, the RPD values for tributyltin and dibutyltin were greater than the control limit of 30%. All detected results were estimated (J-9A).

Matrix Spike/Matrix Spike Duplicates

SDGs 23C0618, 23J0690: Matrix spike/matrix spike duplicate (MS/MSD) samples were not analyzed. Accuracy and precision were evaluated from the LCS/LCSD.

Field Duplicates

For sediment samples, the RPD control limit is 50% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the difference between the sample and replicate must be less than 2x the RL.

SDG 23C0618: Samples SED-14C:0-1 and SED-DUPC were submitted as field duplicates. The RPD values for dibutyltin and tributyltin were greater than the control limit; the parent and field duplicate results were estimated (J-9B).

SDGs 23C0619, 23J0690: No field duplicates were submitted.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. With the noted exceptions, accuracy was acceptable, as demonstrated by the surrogate, LCS/LCSD, and MS/MSD percent recovery values. Precision was also acceptable as demonstrated by the LCS/LCSD, MS/MSD, and field duplicate RPD values.

Results were estimated due to LCS/LCSD and field duplicate precision outliers.

All data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Leon Environmental – Port of Friday Harbor
Total Metals by SW 6020B
Total Mercury by EPA 1631

This report documents the review of analytical data from the analyses of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Friedman and Bruya, Seattle, Washington. Refer to the Sample Index for a complete list of samples.

SDG	Number of Samples and Matrix	Validation Level
303373	4 Sediment	EPA Stage 2B
303388	11 Sediment	EPA Stage 2B

DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes, and all anomalies were discussed in the case narrative.

EDD TO HARDCOPY VERIFICATION

All sample IDs and results reported in the electronic data deliverable (EDD) were verified (100% verification) by comparing the EDD to the hardcopy laboratory data package. Ten percent (10%) of the laboratory QC results were also verified.

The cadmium reporting limits in the EDD did not match the laboratory report. The laboratory was contacted and submitted a revised EDD.

SDG 303388: The mercury reporting limit for Sample SED-27C:0-1 did not match the laboratory report. The laboratory was contacted and submitted a revised EDD

TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

2	Sample Receipt, Preservation, and Holding Times	✓	Laboratory Control Samples (LCS)
✓	ICP-MS Tune	2	Matrix Spike/Matrix Spike Duplicates (MS/MSD)
✓	Initial Calibration	✓	ICP-MS Internal standards
✓	Calibration Verification	✓	Interference Check Samples
✓	CRDL Standards	2	Field Duplicates
✓	Laboratory Blanks	✓	Reporting Limits
1	Field Blanks	✓	Reported Results

✓ Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.
1 Quality control outliers are discussed below, but no data were qualified.
2 Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.

Sample Receipt, Preservation, and Holding Times

SDG 303388: Sample SED-27C:0-1 was analyzed for mercury after the 28-day holding; the mercury result was estimated (J-1).

Field Blanks

No field blanks were submitted.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) samples were analyzed at the appropriate frequency. The MS/MSD recovery limits are 80%-120%. When the MS/MSD %R values indicate a potential low bias, associated results are estimated (J/UJ-8L). Only the associated positive results are estimated (J-8H) if the %R values indicate a potential high bias. No action is taken unless both the MS and MSD percent recovery (%R) values are outside the control limits. Precision is evaluated using the relative percent difference (RPD) values calculated between the MS and MSD results. The RPD control limit is 20% Associated positive results are estimated (J-9A) if the RPD value indicates uncertainty.

SDG 303373: A batch QC sample was used for the MS/MSD analyses. The following outliers were noted:

Analyte	MS %R	MSD %R	RPD	Qualifier
Lead	OK	60	27	J-9A
Zinc	OK	73	OK	None, single outlier
Mercury	OK	OK	28	J-9A

Field Duplicates

The RPD control limit is 50% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the difference between the sample and replicate must be less than 2x the RL.

SDG 303373: Samples SED-14C:0-1 and SED-DUPC were submitted as field duplicates. The RPD value for copper was greater than the control limit; the copper results for these two samples were estimated (J-9B).

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical methods. With the exceptions noted above, accuracy was acceptable as demonstrated by the LCS and MS/MSD %R values and precision was acceptable as demonstrated by the MS/MSD and field duplicate RPD values.

Results were estimated based on an exceeded holding time, MS/MSD RPD outliers, and a field duplicate RPD outlier.

All data, as qualified, are acceptable for use.

ECOCHEM
Data Quality

APPENDIX A

DATA QUALIFIER DEFINITIONS
REASON CODES
AND CRITERIA TABLES

DATA VALIDATION QUALIFIER CODES
Based on National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents the approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The following is an EcoChem qualifier that may also be assigned during the data review process:

DNR	Do not report; a more appropriate result is reported from another analysis or dilution.

DATA QUALIFIER REASON CODES

Group	Code	Reason for Qualification
Sample Handling	1	Improper Sample Handling or Sample Preservation (i.e., headspace, cooler temperature, pH, summa canister pressure); Exceeded Holding Times
Instrument Performance	24	Instrument Performance (i.e., tune, resolution, retention time window, endrin breakdown, lock-mass)
	5A	Initial Calibration (RF, %RSD, r^2)
	5B	Calibration Verification (CCV, CCAL; RF, %D, %R) Use bias flags (H,L)[1] where appropriate
	5C	Initial Calibration Verification (ICV %D, %R) Use bias flags (H,L)[1] where appropriate
Blank Contamination	6	Field Blank Contamination (Equipment Rinsate, Trip Blank, etc.)
	7	Lab Blank Contamination (i.e., method blank, instrument blank, etc.) Use low bias flag (L)[1] for negative instrument blanks
Precision and Accuracy	8	Matrix Spike (MS and/or MSD) Recoveries Use bias flags (H,L)[1] where appropriate
	9A	Precision (Lab QC replicates: LCS/LCSD, MS/MSD, Lab Replicate)
	9B	Precision (Field QC replicates)
	10	Laboratory Control Sample Recoveries (a.k.a. Blank Spikes) Use bias flags (H,L)[1] where appropriate
	12	Reference Material Use bias flags (H,L)[1] where appropriate
	13	Surrogate Spike Recoveries (a.k.a. labeled compounds, recovery standards) Use bias flags (H,L)[1] where appropriate
Interferences	16	ICP/ICP-MS Serial Dilution Percent Difference
	17	ICP/ICP-MS Interference Check Standard Recovery Use bias flags (H,L)[1] where appropriate
	19	Internal Standard Performance (i.e., area, retention time, recovery)
	22	Elevated Detection Limit due to Interference (i.e., chemical and/or matrix)
	23	Bias from Matrix Interference (i.e. diphenyl ether, PCB/pesticides)
Identification and Quantitation	2	Chromatographic pattern in sample does not match pattern of calibration standard
	3	2nd column confirmation (RPD or %D)
	4	Tentatively Identified Compound (TIC) (associated with NJ only)
	20	Calibration Range or Linear Range Exceeded
	25	Compound Identification (i.e., ion ratio, retention time, relative abundance, etc.)
	27	Alkylated PAH compound not calibrated (C1-C4 homologs) - calculated using response from parent compounds
	28	Multiple PCB Aroclors reported in sample (overlapping patterns)
Miscellaneous	11	A more appropriate result is reported (multiple reported analyses i.e., dilutions, re-extractions, etc. Associated with "R" and "DNR" only)
	14	Other (See DV report for details)

[1] **H = high bias indicated**
L = low bias indicated

Dioxin/Furan Analysis by HRMS
(Based on NFG 2016 & NFG 2020[1] and Methods EPA 1613B[3] and SW-846 8290A[2])

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling		**red = NFG**		
Cooler/Storage Temperature Preservation	Cooler temps: All 0-6°C Store at laboratory: Waters/Seds/Soils ≤ 6°C & in the dark Tissues <-10°C & in the dark Store extracts at <-10°C in the dark Preservation Aqueous: If residual Cl_2 is present, 80 mg Thiosulfate per L must be added. If pH is not 7 - 9, it must be adjusted to 7 - 9	If not properly stored or preserved: J(pos)/R(ND) if thiosulfate not added if Cl_2 present; J(pos)/UJ(ND) if pH not adjusted J(pos)/UJ(ND) if cooler temp > 20°C (EcoChem PJ) J(pos)/UJ(ND) if not stored at required temp at laboratory	1	EcoChem PJ, see TM-05 Other guidance (DMMP, QAPP) may require samples to be frozen at -20°C
Holding Time	**If properly stored,** **Extraction (all matrices):** 1 year from collection **Analysis (all matrices)**: 1 year from extraction	If HT exceeded: J(pos)/UJ(ND); (or R for non-detects for gross exceedance - PJ)	1	EcoChem PJ, see TM-05 Gross exceedance = > 1 year 2020 NFG Other progams or project guidance documents may have overriding holding time requirements (e.g. SW8290 is 30 days/90 days)
Instrument Performance		**red = NFG**		
Mass Resolution (PFK)(Tuning) (Static Resolving Power Check)	**PFK (Perfluorokerosene)** Analyzed prior to ICAL and at the beg/end of each 12 hr. shift. ≥10,000 resolving power at low and high mass in each descriptor group (e.g. m/z 304.9824 & m/z 380.9760 in Function) Lock-mass: for each discriptor, exact m/z within 5 ppm of theoretical m/z (Table 8 of Method 1613B) (e.g. 380.9760 ± 0.0019 amu or 319.8645±0.0016).	R(pos)/No qualifier(ND) all analytes in all samples associated with the tune if < 10,000 or not demonstrated. PJ if exact mass not within 5 ppm of theoretical mass	24	Notify PM See Figure 2 from Method 8290A for peak profile showing correct zeroing of detector (acceptable tune is demonstrated when peak profile w/in 200 ppm window at 5% peak height) Note: Laboratory can choose other peaks to monitor
Windows Defining Mix (WDM)	Should contain first and last eluting isomers in each homologous series. Analyze after PFK, before ICAL, and at beginning of each 12 hour period. Peaks for first and last eluters must be within established retention time windows for each selector group (chlorination level)	If not performed at required frequency but calibration OK, qualify only homologue totals: J(pos)/R(ND) If failed and issues with detecting 2,3,7,8-substituted analytes, R(pos)/R(ND) If peaks are not completely within windows (clipped) then: - If natives are ok, J(pos)/UJ(ND) homologs (Totals) - If natives are affected, R all results for that selector group	24	Notify PM Objective is to establish switching times between homologue groups ***NFG:*** WDM and ISC can be combined into one mixture (Column Performance Solution or CPS)
Isomer Specificity Check (ISC)	Must be analyzed before ICAL and CCAL Evaluate using measurements on SICPs Valley ≤ 25% (valley = (x/y)*100%)[6] Resolution must be demonstrated for closest eluting peaks to 2378-TCDD or 2378-TCDF	If resolution criteria not met but calibration is OK, J (pos) tetra - hexa and HpCDF congeners (no action for ND) If resolution criteria not met and calibration standards indicate problem in resolving 2,3,7,8-substituted analytes, R(pos)/R(ND)	24	**EcoChem PJ, see TM-05, Rev. 2**; NFG has specific criteria for DB-5 and DB-225 columns ***NFG:*** WDM and ISC can be combined into one mixture (Column Performance Solution or CPS)
Initial Calibration **Sensitivity**	S/N ratio > 10 for all native and labeled compounds Minimum levels in Method 1613B, Table 2 must be met.	J(pos)/R(ND) Method requires instrument adjustment and re-analysis	5A	Discuss with PM ***NFG PJ:*** if only lowest standard impacted, drop standard and raise the RL
Initial Calibration **Selectivity**	**Ion Abundance Ratio** Method 1613B: Table 8 (required m/z to monitor) Table 9 (QC limits) Method 8290A: Table 8	J(pos)/R(ND)	5A	**EcoChem PJ, see TM-05, Rev. 2** Discuss with PM

Dioxin/Furan Analysis by HRMS
(Based on NFG 2016 & NFG 2020[1] and Methods EPA 1613B[3] and SW-846 8290A[2])

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Instrument Performance (continued)				
Initial Calibration (Minimum 5 stds.) **Stability**	Method 1613B: %RSD < 20% for native compounds %RSD <35% for labeled compounds Method 8290A: %RSD < 20% for native compounds %RSD < 30% for labeled compounds	J(pos)/UJ(ND) natives if %RSD > 20% for native No action for labeled	5A	
	Lock Mass in Method 1613B Table 8 shall not vary by more than ±20% (> 20% indicates presense of coeluting interferences.)	Notify PM Method requires new ICAL		Notify PM Method requires new ICAL
	RT for native and labeled is within RTW (Method 1613B, Table 2) and RT between Cal Stds are consistent. Absolute RT of $^{13}C_{12}$-1234-TCDD >25 min on DB-5 & >15 min on DB-225	Narrate, no action R(pos)/R(ND) for large shifts		**EcoChem PJ, see TM-05, Rev. 2**
Continuing Calibration (Prior to each 12 hr. shift) **Sensitivity**	S/N ratio for CCAL standard > 10	If <10, elevate Det. Limit or R(ND)	5B	
Continuing Calibration (Prior to each 12 hr. shift) **Selectivity**	**Ion Abundance Ratio** Method 1613B: Table 8 (required m/z to monitor) Table 9 (QC limits) Method 8290A: Table 8	J(pos) natives in all samples associated with CCAL. No action for labeled congener ion ratio outliers.	25	**EcoChem PJ, see TM-05, Rev. 2** Project may have different qualifiers (e.g. UJ < RL)
Continuing Calibration (Prior to each 12 hr. shift) **Stability**	Beginning of every 12-hour shift (beginning and end for Method 8290A) %D+/-20% for native compounds %D +/-30% for labeled compounds **(Must meet limits in Table 6, Method 1613B)** If %D in the closing CCAL are within 25%/35%, the mean RF from the two CCAL may be used to calculate samples **(Section 8.3.2.4 of 8290**)	**Labeled compounds:** Narrate, no action. **Native compounds:** ***1613:*** J(pos)/UJ(ND)if %D is outside Table 6 limits J(pos)/R(ND) if %D is +/-75% of Table 6 limits ***8290:*** J(pos)/UJ(ND) if %D = 20% - 75% J(pos)/R(ND) if %D > 75%	5B (H,L)[4]	
	Absolute RT of $^{13}C_{12}$-1234-TCDD and $^{13}C_{12}$-123789-HxCDD should be +/- 15 seconds of ICAL RRT for all other compounds must meet criteria listed in Table 2 Method 1613.	Narrate, no action	5B	**EcoChem PJ, see TM-05, Rev. 2**
Blank Contamination				
Method Blank (MB)	MB: One per matrix per batch of (of ≤ 20 samples) No detected compounds > RL	If sample result < RL U(pos) if sample result is < 5x blank conc If sample result > RL U(pos) if result is < 2x blank conc J(pos) if result is > 2x blank conc but ≤ 5x blank conc EMPC values in blank treated as positive result unless project criteria overrides (see comments section)	7 or 7H	Use either U-7 or J-7H / U-6 or J-6H Hierarchy of blank review: #1 - Review MB, qualify as needed #2 - Review FB , qualify as needed Project criteria for EMPC may override this criteria. For example, if project criteria requires U-25 for EMPC < RL, then treat EMPC < RL in blank as non-detect
Field Blank (FB)	FB: frequency as per QAPP No detected compounds > RL		6 or 6H	

Dioxin/Furan Analysis by HRMS
(Based on NFG 2016 & NFG 2020[1] and Methods EPA 1613B[3] and SW-846 8290A[2])

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Precision and Accuracy				
MS/MSD (recovery)	**MS/MSD not typically required for HRMS analyses.** If lab analyzes MS/MSD then one set per matrix per batch (of ≤ 20 samples) Use most current laboratory control limits	J(pos) if both %R > UCL - high bias J(pos)/UJ(ND) if both %R < LCL - low bias J(pos)/R(ND) if both %R < 10% - very low bias J(pos)/UJ(ND) if one > UCL & one < LCL, with no bias **PJ if only one %R outlier**	8 (H,L)[4]	No action if only one spike %R is outside criteria. No action if parent concentration is > 4x the amount spiked. Qualify parent sample only unless other QC indicates systematic problems.
MS/MSD (RPD)	**MS/MSD not typically required for HRMS analyses.** If lab analyzes MS/MSD then one set per matrix per batch (of ≤ 20 samples) Use most current laboratory control limits	J(pos) in parent sample if RPD > CL	9A	Qualify parent sample only. Evaluate all results, even if spike concentration < 4x parent
Precision and Accuracy (continued)		**red = NFG**		
LCS (or OPR)	One per lab batch (of ≤ 20 samples) Use most current laboratory control limits **or** Limits from Table 6 of 1613B	J(pos) if %R > UCL - high bias J(pos)/UJ(ND) if %R < LCL - low bias J(pos)/R(ND) if %R < 10% - very low bias PJ if not prepared with samples	10 (H,L)[4]	Qualify all associated samples.
LCS/LCSD (RPD)	**LCSD not typically required for HRMS analyses** (OPR demonstrates on-going laboratory precision) One set per matrix and batch of 20 samples RPD < 35%	J(pos) assoc. compound in all samples if RPD > CL	9A	Qualify all associated samples.
Lab Duplicate (RPD)	**Lab Dup not typically required for HRMS analyses** (OPR demonstrates on-going laboratory precision) One per lab batch (of ≤ 20 samples) Use most current laboratory control limits	J(pos)/UJ(ND) if RPD > CL	9A	Qualify parent sample
Labeled Compounds (Internal Standards and cleanup standards)	Added to all samples %R = 40% - 135% in all samples 8290 %R must meet limits in Table 7 Method 1613B	J(pos) if %R > UCL - high bias J(pos)/UJ(ND) if %R < LCL - low bias J(pos)/R(ND) if %R < 10% - very low bias R(pos)/R(ND) if not added	13 (H,L)[4]	
	Ion Abundance Ratio Method 1613B: Table 8 (required m/z to monitor) Table 9 (QC limits) Method 8290A: Table 8	Ion Abundance Ratio: Out for sample/OK for CAL Stds: J(pos)/UJ(ND) Out for sample and CAL Stds: J(pos)/R(ND)	13	
Field Duplicates	Solids: RPD <50% OR difference < 2X RL (for results < 5X RL) Aqueous: RPD <35% OR difference < 1X RL (for results < 5X RL)	Narrate and qualify if required by project Qualify Totals values if associated with outliers (TEQ, if reported, are not evaluated or qualified)	9B	Project control limits may override EcoChem PJ limits

Dioxin/Furan Analysis by HRMS
(Based on NFG 2016 & NFG 2020[1] and Methods EPA 1613B[3] and SW-846 8290A[2])

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Compound Quantitation/Identification		**red = NFG**		
Signal/Noise	All ions for each isomer must maximize within +/- 2 seconds. S/N ratio >2.5 (labeled/internal stds >10)	Narrate in report; qualify if necessary J(pos) for ion ratio outliers.	25	**EcoChem PJ, see TM-05, Rev. 2** Stage 4 Data package should have SICP[5] for two target analyte channels, labeled standards, diphenyl ether trace, and lock-mass trace.
Retention Times	RRTs w/in limits in Table 2 of 1613B Quantitation ions maximize within the same 2 seconds	If RRT outside of limits: NJ(pos) or U(pos) at EDL If Quantitation ions don't maximize in the same 2 seconds: NJ(pos) or U(pos) at reported concentration	24	
EMPC (estimated maximum possible concentration)	Ion ratios must meet criteria listed in Table 8 Method 8290, or Table 9 of 1613B If quantitation identification criteria (ion abundance ratio) are not met, laboratory should report an EMPC value.	If laboratory correctly reported an EMPC value, qualify the native compound and total homolog groups as J(pos) to indicate that the value is an estimated maximum possible concentration. If laboratory reports EMPC as ND, notify PM.	25	**See TM-18** Use QAPP/SOW criteria if different
Interferences	Interferences from chlorodiphenyl ether compounds	**Stage 4 DV:** If raw abundance > 10% of target compound raw abundance UJ(pos) If raw abundance ≤ 10% of target compound raw abundance J(pos) **Stage 2A, 2B DV:** J(pos)	23H[4]	**See TM-16**
		If laboratory did not monitor PCDPE interference ions, J(pos)/UJ(ND) all target and total furan results and discuss non-conformance in report.	14	
	Lock masses baseline must not deviate +/- 20% Exact m/z within 5 ppm of theoretical m/z from values in Table 8 of 1613B	**For associated analytes (deflection at same RT as target analyte)** J(pos) if present; Reject (R) if deflection > 50%	14L[4] 14	**See TM-17** No bias for rejected data
Second Column Confirmation	If laboratory uses DB-5 column, all 2,3,7,8-TCDF hits must be confirmed on a DB-225 (or equiv) column. All QC criteria must also be met for the confirmation analysis.	Report the DB-225 value. DNR the DB-5 value If not performed use PJ.	11	**EcoChem PJ, see TM-05, Rev. 2**
Calculation Check	Check 10% of field & QC sample results	Contact laboratory for resolution and/or corrective action	na	Full data validation only.
Electronic Data Deliverable (EDD)				
Verification of EDD to hardcopy data	EcoChem verify @ 10% unless problems noted; then increase level up to 100% for next several packages.	Depending on scope of problem, correct at EcoChem (minor issues) to resubmittal by laboratory (major issues).	na	EcoChem Project Manager and/or Database Administrator will work with lab to provide long-term corrective action.
Dilutions, Re-extractions and/or Reanalyses	Report only one result per analyte	Use "DNR" to flag results that will not be reported.	11	

[1] National Functional Guidelines for High Resolution Superfund Methods Data Review, April 2016 & November 2020

[2] Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS), USEPA SW-846, Method 8290A, February 2007

[3] EPA Method 1613, Rev.B, Tetra-through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGS/HRMS, October 1994

[4] NFG 2020 suggests using "+ / -" to indicate bias; EcoChem has chosen "H" = high bias indicated; "L" = low bias indicated.

[5] SICPs = Selected Ion Current Profiles

[6] x = height from valley of least resolved adjacent isomer to baseline; y = peak height of the shorter for the adjacent peaks

Semivolatile Organic Compounds by Gas Chromatography-Mass Spectroscopy (GC-MS)
(Based on NFG 2017, 2020 and SW-846 Method 8270E)

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
For all QC Elements, project limits from QAPP/SAP/ ork Plan may supersede method limits described in this criteria table.				
Sample Handling				
Cooler/Storage Temperature Preservation	≤ 6°C sediment/tissues may require storage at -20°C	If PJ is to qualify: J (pos)/UJ (ND)	1	Use PJ for temp outliers; see **TM-20** No action necessary if sample arrive at lab same day collected
Holding Time	Aqueous: Extraction 7 days from collection Solid: Extraction 14 days from collection Extraction Holding Time may be extended to 1 year for frozen sediments/tissues Analysis (all matrices): 40 days from extraction	J (pos)/UJ (ND) if HT exceeded J (pos)/R (ND) if gross exceedance (exceeded by >2x HT)	1	Alert PM for gross exceedance situation
Instrument Performance				
Tuning	DFTPP prior to ICAL, should meet criteria in Table 3 of method (not required at start of 12 hour sequence if CCV acceptable)	R (pos/ND) all analytes in all samples if tune not analyzed Use PJ if ion ratio criteria not met	24	
Initial Calibration **Sensitivity**	RRF ≥ 0.05 except: RRF ≥ 0.01 poor responders * If alt cal model used (e.g. quadratic), low std calculate to be within 50% of true value	If PJ is to qualify: J (pos)/UJ (ND)	5A	**TM-06** PJ - no action if response is stable (ICAL RSD and CCAL %D acceptable) NFG has analyte specific RFF requirements, but allows PJ for qualification, method does not specify min RRF
Initial Calibration **Stability**	Minimum 5 standards %RSD ≤ 20.0% **or** co-efficient of determination (r^2) > 0.99	J (pos) if %RSD > limit **or** r^2 value <0.99	5A	
Initial Calibration Verification Check	Prepared from second source; analyze after each ICAL Percent recovery limits = 70-130%	J (pos) %R > UCL J (pos)/UJ (ND) %R < LCL	5C (H,L)[1]	QAPP may have overriding accuracy limits.
Continuing Calibration **Sensitivity**	Prior to sample analysis and every 12 hours RRF ≥ 0.05 except: RRF ≥ 0.01 poor responders	If PJ is to qualify: J (pos)/UJ (ND)	5B	see ICAL RRF guidance NFG requires closing CCAL; evaluate if present
Continuing Calibration **Stability**	%D ≤ 20%	J (pos) - %D outside control limit and high bias J (pos)/UJ (ND) - %D outside control limit and low bias	5B (H,L)[1]	QAPP may have overriding limits. Evaluate RRF or concentration to determine bias. NFG says to UJ ND regardless of bias (bias not addressed)
Continuing Calibration **degradation**	Low level CCAL Std %D 50%-150%	J (pos) if %D > 150% J (pos)/UJ (ND) if %D < 50%	5B (H,L)[1]	NFG does not address low level CCAL
Internal Standards	Added to all samples Acceptable Range: IS area: 50% to 200% of assoc CCAL or midpoint ICAL or average ICAL RT: within 30 seconds of CC RT	J (pos) if > 200% J (pos)/UJ (ND) if < 50% J (pos)/R (ND) if < 25% If RT >30 seconds use **PJ**	19	Qualify compounds quantified using particular internal standard

Semivolatile Organic Compounds by Gas Chromatography-Mass Spectroscopy (GC-MS)
(Based on NFG 2017, 2020 and SW-846 Method 8270E)

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Blank Contamination				
Method Blank (MB)	MB: One per matrix per batch (≤ 20 samples)	If sample result < RL U(pos) if sample result is < 5x blank conc If sample result > RL U(pos) if result is < 2x blank conc J(pos) if result is > 2x blank conc but ≤ 5x blank conc R(pos) TIC using 10x rule	7 or 7H	If blank is >RL and samples not >10X blank or ND, lab should re-extract Alert PM if MB > RL and lab did not perform necessary re-extraction Use either U-7 or J-7H / U-6 or J-6H **Hierarchy of blank review:** **#1 - Review MB, qualify as needed #2 - Review FB , qualify as needed** **FB may need to be converted to same units as field samples** NFG specifies elevating to CRQL for sample results < CRQL or J results > CRQL
Field Blank (FB)	No detected compounds > MDL		6 or 6H	
Precision and Accuracy				
Surrogates	Minimum of 3 acid & 3 base/neutral (B/N) compounds added to all samples (for full TL list) Within laboratory control limits	1 outlier allowed per fraction if 3 used, If qualification needed: J (pos) if %R > UCL J (pos)/UJ (ND) if %R < LCL J (pos)/R (ND) if %R < 10%	13 (H,L)[1]	Qualify all compounds in associated fraction Do not qualify if only 1 acid and/or 1 B/N surrogate is out, unless <10%. If 1 surrogate outlier < 10% then J (pos)/R (ND) unless LCL is 10% or less, then PJ for non-detects
LCS/LCSD (recovery)	One per matrix per batch (of ≤ 20 samples) LCSD not required by NFG or method Use method acceptance criteria/laboratory limits	J (pos) if %R > UCL J (pos)/UJ (ND) if %R < LCL J (pos)/R (ND)%R < 10%	10 (H,L)[1]	If LCS/LCSD analyzed, qualify if only one %R is outside of control limits. PJ: if UCL is < 100% and %R is > UCL but less than 100%, don't qualify for high bias QAPP may have overriding accuracy limits. Qualify all samples in extraction batch
LCS/LCSD (RPD)	If LCSD analyzed RPD < lab limits	J (pos)	9A	Qualify all samples in extraction batch. QAPP may have overriding precision limits.
MS/MSD (recovery)	Not required by method, but recommended One per matrix per batch (of ≤ 20 samples) Use laboratory limits	J (pos) %R > UCL J (pos)/UJ (ND) if both %R < LCL J (pos)/R (ND) if both %R < 10% J (pos)/UJ (ND) if one > UCL & one < LCL, with no bias	8 (H,L)[1]	No action if only one spike %R is outside criteria, unless one is <10% (if < 10%, J(pos)/UJ(ND)) If LCL is 10%; J(pos)/UJ(ND) for %R = 5% - 10% No action if parent concentration is >4x the amount spiked. Qualify parent sample only. QAPP may have overriding accuracy limits
MS/MSD (RPD)	One per matrix per batch (of ≤ 20 samples) Use laboratory limits	J (pos) in parent sample if RPD > CL	9A	Qualify parent sample only QAPP may have overriding precision control limits RPD is still evaluated, even if sample > 4x spike added
Reference Material (RM, SRM, or CRM)	EcoChem Default: Result ±20% of the 95% confidence interval of the true value (NIST SRM) or within manufacturers specified limits (other RMs)	J (pos)/UJ (ND) if < LCL J (pos) if > UCL	12 (H,L)[1]	QAPP may have overriding accuracy limits. Limits not applicable for non-certified analytes (NIST SRM) Limits not applicable if TV < RL
Field Duplicates	**EcoChem Default** Solids: RPD < 50% OR difference < 2X RL (for results < 5X RL) Aqueous: RPD < 35% OR difference < 1X RL (for results < 5X RL)	J (pos)/UJ (ND) Qualify only parent and field duplicate samples	9B	See **TM-24** QAPP may have overriding limits Use MDL for ND (rather than zero) when calculating difference Use lower RL to evaluate for results < 5x RL NFG does not have requirements for field duplicate evaluation

Semivolatile Organic Compounds by Gas Chromatography-Mass Spectroscopy (GC-MS)
(Based on NFG 2017, 2020 and SW-846 Method 8270E)

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Compound Identification, Quantitation, and Calculation				
Retention times and relative ion intensities	RRT within 0.06 of standard RRT or RT drift within ± 10 seconds. Ion relative intensity within 30% of standard	U (pos) if identification criteria not met	25	
TICs	Major ions (>10%) in reference must be present in sample; intensities agree within 20%; check identification	NJ the TIC unless	4	TICs are no longer commonly reported
Calibration Range	Results greater than highest calibration standard	Qualify J (pos)	20	If result from dilution analysis is not reported.
Dilutions, Re-extractions, and Reanalyses	Report only one result per analyte	Use "DNR" to flag results that will not be reported.	11	**TM-04** EcoChem Policy for Rejection/Selection Process for Multiple Results Note: If result is DNR-flagged for specific QC issue, use reason code for that issue

National Functional Guidelines for Organic Superfund Methods Data Review, January 2017
National Functional Guidelines for Organic Superfund Methods Data Review, November 2020
Method SW846 8270E Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), Revision 6, June 2018.

(pos): Positive Result(s)
(ND): Non-detects

[1]NFG suggests using "+ / -" to indicate bias; EcoChem has chosen "H" = high bias indicated; "L" = low bias indicated.

* Common "Poor Responder" compounds include acetophenone, atrazine, benzaldehyde, 1,1-biphenyl, bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, carbazole, 4-chloroaniline, di-n-butyl phthalate, 3,3-dichlorobenzidine, diethyl phthalate, dimethyl phthalate, 4,6-dinitro-2-methylphenol, 2,4-dinitrophenol, di-n-octyl phthalate, hexachlorobutadiene, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline, n-nitroso-di-n-phenylamine, 2,2'-oxybis-(1-chloropropane), 1,2,4,5-tetrachlorobenzene, 2,3,4,6-tetrachlorophenol. See method for additional poor responders that are not typically included in a standard TCL.

PCB Aroclors by GC
(Based on Organic NFG 2017/2020 and SW-846 Method 8082A) - DRAFT

QC Element	Acceptance Criteria (NFG)	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling					
Cooler/Storage Temperature Preservation	0-6°C Tissue/sediments (may be frozen -20°C)	NFG (1) Method (2)	**If required by project:** J (pos)/UJ (ND) if greater than 6° C	1	Use Professional Judgment (PJ) to qualify for temperature outlier. Current SW846 criterion is ≤ 6° C (3)
Holding Time	**Extraction Aqueous:** 7 days from collection **Extraction Solid:** 14 days from collection **Exraction Tissue/Sediment (frozen):** 1 year **Analysis (all matrices)**: 40 days from extraction	NFG (1) Method (2)	**If required by project:** J (pos)/UJ (ND) if ext/analyzed > HT	1	Use PJ to qualify for holding times Current SW846 does not have an extraction holding time limit, but recommends one year.(3)
Instrument Performance					
Retention Times	Surrogates: TCMX (± 0.05); DCB (± 0.10) Aroclors (± 0.07)	NFG (1)	NJ (pos)/R (ND) results for analytes with RT shifts	24	
Initial Calibration	Minimum 5 point with RSD ≤ 20% OR correlation coefficient (r-value) ≥ 0.995 OR Minimum 6-point with co-efficient of determination (r2-value) ≥ 0.99	NFG (1) Method (4)	J (pos) if %RSD greater than 20% OR r-value < 0.995 OR r^2-value < 0.99	5A	Refer to TM-01 for additional information. Use bias flags (H,L)(5) where appropriate
Initial Calibration Verification (ICV)	No NFG criteria. Project specific.	Project	J (pos) if > UCL J (pos)/UJ (ND) if < LCL	5B	Use bias flags (H,L) where appropriate
Continuing Calibration (Prior to each 12 hr. shift)	%D ± 20%	Method (2)	If > 20% (high bias): J (pos) If <20% (low bias: J (pos)/UJ (ND)	5B	Refer to TM-01 for additional information. Use bias flags (H,L) where appropriate
Blank Contamination					
Method Blank (MB)	MB: One per matrix per batch of (of ≤ 20 samples) No detected compounds > RL	NFG (1) Method (2)	U (pos) if result is less than appropriate 5X action level.	7	**Hierarchy of blank review:** **#1 - Review MB and IB, qualify as needed** **#2 - Review FB , qualify as needed** Note: Actions as per NFG 1999 Note: IB not required by method
Field Blank (FB)	FB: frequency as per QAPP No detected compounds > RL	NFG (1) Method (2)	U (pos) if result is less than appropriate 5X action level.	6	
Instrument Blanks (IB)	Analyzed at the beginning and end of every 12 hour sequence No analyte > CRQL	NFG (1)	U (pos) if result is less than appropriate 5X action level.	7	
Precision and Accuracy					
MS/MSD (recovery)	One set per matrix per batch (of ≤ 20 samples) AR1016 and AR1260: %R = 29% - 135%, or project limits	NFG (1) Method (2) EcoChem Standard Policy	Qualify parent only unless other QC indicates systematic problems. J (pos) if both %R > upper control limit (UCL) J (pos)/UJ (ND) if both %R < lower control limit (LCL) J (pos)/R (ND) if both %R < 10%	8	No action if only one spike %R is outside criteria. No action if native analyte conc. > 5x the amount spiked. Use bias flags (H,L) where appropriate. Actions apply to all Aroclors in parent sample.

PCB Aroclors by GC
(Based on Organic NFG 2017/2020 and SW-846 Method 8082A) - DRAFT

QC Element	Acceptance Criteria (NFG)	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Precision and Accuracy					
MS/MSD (RPD)	One set per matrix per batch (of ≤ 20 samples) AR1016: RPD < 15%, AR1260: RPD < 20% or project limits	NFG [1] Method [2]	Qualify parent only unless other QC indicates systematic problems. J (pos) if RPD > control limit	9	No action if parent is ND.
LCS	One per lab batch (of ≤ 20 samples) AR1016 and AR1260: %R = 50% - 150%, or project limits	NFG [1] EcoChem Standard Policy	J (pos) if %R > UCL J (pos)/UJ (ND) if %R < LCL J (pos)/R (ND) if %R < 10%	10	Use bias flags (H,L) where appropriate. Actions apply to all Aroclors in associated samples.
LCS/LCSD (RPD)	if analyzed use MS/MSD RPD criteria	NFG [1]	J (pos) assoc. compound in all samples	9	LCSD not required by method or NFG
Surrogates	TCMX and DCBP added to every sample %R = 30% - 150% or project limits	NFG [1] Method [2]	J (pos) if either %R > UCL J (pos)/UJ (ND) if either %R < LCL J (pos)/R (ND) if either %R < 10%	13	If %R < 10% (sample dilution is a factor), use PJ Use bias flags (H,L) where appropriate
Internal Standards (if used)	Acceptable Range: IS area = 50% to 200% of CCAL area RT within 30 seconds of CC RT	Method [2]	J (pos) if area > 200% J (pos)/UJ (ND) if area < 50% J (pos)/R (ND) if area < 25% RT > 30 seconds, narrate	19	
Field Duplicates	**Solids:** RPD < 50% OR difference < 2X RL (for results < 5X RL) **Aqueous:** RPD < 35% OR difference < 1X RL (for results < 5X RL)	EcoChem Standard Policy	J (pos)/UJ (ND) Qualify only parent and field duplicate samples	9	QAPP may have overriding limits
Compound Identification/Quantification					
Quantitation/ Identification	Between two columns: RPD < 40% or %D < 25% Within Retention Time Windows on both columns.	NFG [1] Method [2]	J (pos) if RPD = 40% - 60% (25% - 60% for %D) NJ (pos) if > 60% R (pos) if RTW criterion not met	3	See TM-08 for additional info.
Calibration Range	on column concentration < high calibration standard	NFG [1] Method [2]	J (pos) if conc > high standard and sample was not diluted	20	
Dilutions, Re-extractions and/or Reanalyses	Report only one result per analyte	Standard reporting policy	Use "DNR" to flag results that will not be reported.	11	TM-04 Rev. 1 for additional info.
Sample Clean-up					
GPC/Sulfur/ Florisil/Acid	No criteria - cleanups are optional	NFG [1] Method [2]	Use Professional Judgment	14	special cleanups may be required for project cleanup standards may be associated with GPC/florisil cleanups

[1] National Functional Guidelines for Organic Data Review, January 2017 & November 2020

[2] Polychlorinated Biphenyls (PCBs) by Gas Chromatography USEPA Method SW846 8082A, Feb 2007, Rev. 1

[3] SW846, Chapter 4, Organic Analytes

[4] Determinative Chromatographic Separations , Method 8000C , March 2003, Rev.3

[5] "H" = high bias indicated; "L" = low bias indicated

(pos): Positive Result

(ND): Not detected

Pesticides by GC
(Based on Organic NFG 2017 and SW-846 Method 8081B)

QC Element	Acceptance Criteria (NFG)	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling					
Cooler/Storage Temperature Preservation	0-6°C Tissue/sediments (may be frozen -20°C)	NFG [2] Method [3]	J (pos)/UJ (ND) if greater than 6° C	1	Use Professional Judgment (PJ) to qualify for temperature outlier.
Holding Time	*Extraction Aqueous:* 7 days from collection *Extraction Solid:* 14 days from collection *Exraction Tissue/Sediment (frozen):* 1 year *Analysis (all matrices):* 40 days from extraction	NFG [2] Method [3]	J (pos)/UJ (ND) if ext/analyzed > HT J (pos)/R (ND) if gross exceedance (> 2x HT)	1	Gross exceedance > 2x HT, as per NFG 1999
Instrument Performance					
Resolution Check	Beginning of ICAL sequence Within RTW and resolution > 60%	NFG [2]	NJ (pos)/R (ND) results	14	CLP criterion; might not be submitted with SW846 data package
Retention Times	Surrogates: TCMX (± 0.05); DCB (± 0.10) Target analytes: within RTW	NFG [2] Method [3]	NJ (pos)/R (ND) results for analytes with RT shifts	24	Use PJ based on examination of raw data
Breakdown (PEM)	DDT Breakdown: ≤ 20% Endrin Breakdown: ≤ 20% Combined Breakdown: ≤ 30% Compounds within RTW, Resolution >90%	NFG [2] Method [3]	If 4,4'-DDT is detected: J (pos) 4,4'-DDT, 4,4'-DDD and 4,4'-DDE If 4,4'-DDT is ND and either 4,4'-DDD or 4,4'-DDE are detected: R (ND) 4,4'-DDT, NJ (pos) DDD and DDE If Endrin is detected: J (pos) Endrin, Endrin Aldehyde and Endrin Ketone If Endrin is ND and either EA or EK are detected: R (ND) Endrin, NJ (pos) EA and EK	5A	Method 8081B breakdown criterion: ≤ 15%. For combined breakdown outliers, apply qualifiers considering the degree of individual breakdown.
Initial Calibration	Single Component Compounds: RSD ≤ 20% alpha-BHC and delta-BHC: RSD ≤ 25% toxaphene and surrogates: RSD ≤ 30% **or** correlation coefficient (r-value) ≥ 0.995 OR Minimum 6-point with coefficient of determination (r^2-value) ≥ 0.99	NFG [2] Method [4]	J (pos) if %RSD greater than control limit **or** r-value < 0.995 **or** r^2-value < 0.99	5A	Refer to TM-01 for additional information.
Initial Calibration Verification (ICV)	No NFG criteria Project specific	Project QAPP	J (pos) if > UCL J (pos)/UJ (ND) if < LCL	5B	Use bias flags (H,L) [6] where appropriate

Pesticides by GC
(Based on Organic NFG 2017 and SW-846 Method 8081B)

QC Element	Acceptance Criteria (NFG)	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Instrument Performance (continued)					
Continuing Calibration	CS3 (midpoint cal std) %D ± 20% Analyzed prior to each 12 hour shift	Method (3)	If > 20% (high bias): J (pos) If <20% (low bias: J (pos)/UJ (ND)	5B	lab may run alternating PEM/CS3Refer to TM-01 for additional information. Use bias flags (H,L)(6) where appropriate
Blank Contamination					
Method Blank (MB)	One per matrix per batch (of ≤ 20 samples) No detected compounds > RL	NFG (1) Method (3)	U (pos) if result is less than appropriate 5X action level.	7	**Hierarchy of blank review:** #1 - Review MB and IB, qualify as needed #2 - Review FB , qualify as needed **Note: Actions as per NFG 1999** Note: IB not required by method
Field Blank (FB)	FB: frequency as per QAPP No detected compounds > RL	NFG (1) Method (3)	U (pos) if result is less than appropriate 5X action level.	6	
Instrument Blanks (IB)	Analyzed at the beginning and end of every 12 hour sequence No analyte > CRQL	NFG (1)	U (pos) if result is less than appropriate 5X action level.	7	
Precision and Accuracy					
MS/MSD (recovery)	One set per matrix per batch (of ≤ 20 samples) Method or project acceptance limits	NFG (2) Method (3)	Qualify parent only unless other QC indicates systematic problems. J (pos) if both %R > upper control limit (UCL) J (pos)/UJ (ND) if both %R < lower control limit (LCL) J (pos)/R (ND) if both %R < 10%	8	No action if only one spike %R is outside criteria No action if native analyte conc. > 5x the amount spiked Use bias flags (H,L) (6) where appropriate
MS/MSD (RPD)	One set per matrix per batch (of ≤ 20 samples) Method or project acceptance limits	NFG (2) Method (3)	Qualify parent only unless other QC indicates systematic problems. J (pos) if RPD > control limit	9	No action if parent is ND
LCS	One per lab batch (of ≤ 20 samples) Method or project acceptance limits	NFG (2)	J (pos) if %R > UCL J (pos)/UJ (ND) if %R < LCL J (pos)/R (ND) if %R < 10%	10	Qualify all associated samples. Use bias flags (H,L) (6) where appropriate
LCS/LCSD (RPD)	if analyzed use MS/MSD RPD criteria	NFG (2)	J (pos) assoc. compound in all samples	9	LCSD not required by method or NFG
Surrogates	TCMX and DCBP added to every sample %R = 30% - 150% **or** project limits	NFG (2) Method (3)	J (pos) if either %R > UCL J (pos)/UJ (ND) if either %R < LCL J (pos)/R (ND) if either %R < 10%	13	If %R < 10% (dilution is a factor), use PJ Use bias flags (H,L) (6) where appropriate

Pesticides by GC
(Based on Organic NFG 2017 and SW-846 Method 8081B)

QC Element	Acceptance Criteria (NFG)	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Precision and Accuracy (continued)					
Internal Standards (if used)	Acceptable Range: IS area = 50% to 200% of CCAL area RT within 30 seconds of CC RT	Method [3]	J (pos) if area > 200% J (pos)/UJ (ND) if area < 50% J (pos)/R (ND) if area < 25% RT > 30 seconds, narrate	19	
Field Duplicates	**Solids:** RPD < 50% **or** difference < 2X RL (for results < 5X RL) **Aqueous:** RPD < 35% **or** difference < 1X RL (for results < 5X RL)	EcoChem standard practice	J (pos)/UJ (ND) Qualify only parent and field duplicate samples	9	Use project limits if specified
Compound Identification/Quantification					
Quantitation/ Identification	Between two columns: RPD < 40% or %D < 25% Within Retention Time Windows on both columns.	NFG [2] Method [3]	J (pos) if RPD = 40% - 60% (25% - 60% for %D) NJ (pos) if > 60% R (pos) if RTW criterion not met	3	See TM-08 for additional info
Calibration Range	On-column concentration < high calibration standard	NFG [2] Method [3]	J (pos) if conc > high standard and sample was not diluted	20	
Dilutions Re-extractions and/or Reanalyses	Report only one result per analyte	Standard reporting policy	Use "DNR" to flag results that will not be reported.	11	TM-04 for additional info
Sample Clean-up					
GPC/Sulfur/ Florisil	GPC or Florisil cleanup stndards 80% - 120%	NFG [2]	J (pos) if %R > UCL J (pos)/UJ (ND) if %R < LCL J (pos)/R (ND) if %R < 10%	14	Cleanups are optional under SW846 Use bias flags (H,L) [6] where appropriate

[2] National Functional Guidelines for Organic Superfund Methods Data Review, January, 2017

[3] Organochlorine Pesticides by Gas Chromatography USEPA Method SW846 8081B, Feb 2007, Rev. 2

[4] SW846, Chapter 4, Organic Analytes

[5] Determinative Chromatographic Separations , Method 8000C , March 2003, Rev.3

[6] NFG suggests using "+ / -" to indicate bias; EcoChem has chosen "H" = high bias indicated; "L" = low bias indicated.

Metals by ICP-MS
(Based on Inorganic NFG 2017 and SW-846 6020B)

QC Element	EcoChem Acceptance Criteria	Source of Criteria	EcoChem Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling					
Cooler / Storage Temperature Preservation	**Solid:** Cooler temperature ≤ 6° C **Aqueous:** Nitric Acid to pH < 2 **Dissolved Metals:** 0.45 µm filter, preserve to pH < 2 after filtration	NFG (1) Method (2)	Cooler Temps: **If required by project** J (pos)/UJ (ND) if greater than 6° C Aqueous: J (pos)/UJ (ND) if pH > 2	1	Use PJ to qualify for temperature outlier. No quals for pH if samples preserved by lab upon receipt and within 1 day of collection.
Holding Time	All matrices: 180 days from date sampled Frozen soils, sediments, tissues (-20°C) - HT extended to 1 year	NFG (1) Method (2) EcoChem standard policy	J (pos)/UJ (ND) if holding time exceeded	1	Use PJ for gross exceedences (>2x HT)
Instrument Performance					
Tune	Analyzed prior to ICAL Mass Cal < 0.1 amu difference from target mass Peak Resolution < 0.9 amu @ 10% peak height	NFG (1) Method (2)	J(pos)/UJ(ND) if tune criteria not met	5A	Use **PJ** to evaluate tune. Alternate Resolution critteria may apply based on instrument specs (i.e <0.75 amu at 5% peak height)
Initial Calibration (ICAL)	Based on instrument requirements, blank + 1 standard minimum requirement for calibration If more than 1 standard used, r ≥ 0.995	NFG (1) Method (2)	J (pos)/UJ (ND) if r < 0.995	5A	
Initial Calibration Verification (ICV)	Independent source analyzed immediately after calibration %R within ± 10% of true value	NFG (1) Method (2)	R (pos/ND) if %R < 75% J (pos)/UJ (ND) if %R 75% - 89% J (pos) if %R >111%	5A (H,L)[3]	Qualify all samples in run
Reporting Limit (RL) Standard Low Level ICV/CCV	concentration at RL %R = 80%-120%	Method (2)	J (pos) < 2x RL / R (ND) if %R <50% J (pos) < 2x RL / UJ (ND) if %R 50 - 79% J (pos) < 2x RL if %R > 120%	5A (H,L)[3]	for ICVL, qualify all samples in run for CCVL, qualify bracketed samples
Continuing Calibration Verification (CCV)	Immediately following ICV/ICB, then every two hours or ten samples, and at end of run. %R within ± 10% of true value	NFG (1) Method (2)	R (pos/ND) if %R < 75% J (pos)/UJ (ND) if %R 75% - 89% J (pos) if %R >111%	5B (H,L)[3]	Qualify samples bracketed by CCV outliers
Interference Check Samples (ICSA / ICSAB)	ICSAB %R 80% - 120% for all spiked elements | ICSA | < MDL for all unspiked elements	NFG (1) Method (2)	For samples with interfereing elements> ICS levels: **ICSAB**: J(pos)/R (ND) if %R < 50% J (pos)/UJ (ND) if %R = 50% - 79% J (pos) if %R > 120% **ICSA:** J (pos)< 2x RL/UJ (ND) for ICSA <Neg MDL J (pos) < 2x RL for ICSA >MDL	17 (H,L)[3]	Method may only require ICSA (or SIC) Use **PJ** and molecular interferences to evaluate ICSA to determine if bias is present. Due to low levels of some target analytes in the supplier stock solutions, there may be a true value for some unspike analytes in the ICSA Refer to **TM-14** for additional information.
Spectral Interference Check (SIC)	Interferents: Al, Ca, Fe, Mg, Na P, K, S, C, Cl, Mo, Ti daily SIC - unspiked analytes < +/- 2x LOQ	NFG (1) Method (2)	For samples with Interfering elements > SIC levels: J (pos)< 2x SIC/UJ (ND) for SIC <Neg 2x LOQ J (pos) < 2x SIC for SIC > 2x LOQ	17 (H,L)[3]	Use **PJ** and molecular interferences (Table 1 in method) to evaluate SIC to determine if bias is present. Refer to **TM-14** for additional information.

Metals by ICP-MS
(Based on Inorganic NFG 2017 and SW-846 6020B)

QC Element	EcoChem Acceptance Criteria	Source of Criteria	EcoChem Action for Non-Conformance	Reason Code	Discussion and Comments
Blank Contamination					
Method Blank (MB)	One per matrix per batch of (of ≤ 20 samples) Blank conc < MDL	NFG [1] Method [2]	U (pos) if result is < 5X method blank concentration	7	Refer to **TM-02** for additional information. Blank Evaluation based on NFG 1994
Instrument Blanks (ICB/CCB)	After each ICV & CCV | blank concentration | < MDL	NFG [1] Method [2]	Action level is 5x absolute value of blank conc. For positive blanks: U (pos) results < action level For negative blanks: J (pos)/UJ (ND) results < action level	Pos Blks: 7 Neg Blks: 7L[3]	Use blanks bracketing samples for Qualification Refer to **TM-02** for additional information. **Hierarchy of blank review:** **#1 - Review MB, quaify as needed** **#2 - Review IB , qualify as needed** **#3 - Review FB , qualify as needed**
Field Blank (FB)	Blank conc < MDL	EcoChem standard policy	U (pos) if result is < 5x action level, as per analyte.	6	Qualify in associated field samples only. Refer to **TM-02** for additional information.
Precision and Accuracy					
Internal Standards (IS)	Added to all samples. All analytes must be associated with an internal standard %R > 30% compared to cal blank IS	NFG [1] Method [2]	J(pos)/UJ(ND) all analytes associated with IS outlier	19	NFG criteria 65%-125%
LCS (recovery)	One per matrix per batch (of ≤ 20 samples); LCSD not required %R between 80-120%	Method [2]	J (pos)/R (ND) if %R <50% J (pos)/UJ (ND) if %R 50% - 79% J (pos) if %R > 120%	10 (H,L)[3]	Qualify all samples in batch QAPP may have overriding accuracy limits. NFG Limits 70% -130%
LCS/LCSD (RPD)	LCSD not required, if analyzed: RPD ≤ 20%	Method [2]	J (pos)/UJ (ND) if RPD > 20%	9	Qualify all samples in batch QAPP may have overriding precision limits.
MS/MSD (recovery)	One per matrix per batch (of ≤ 20 samples); MSD not required %R between 75-125%	NFG [1] Method [2]	J (pos) if %R > 125% J (pos)/UJ (ND) if %R <75% J (pos)/R (ND) if %R < 30%, unless post digestion spike analyzed, J (pos)/UJ (ND) if post digestion spike %R OK	8 (H,L)[3]	No action if only one spike %R is outside criteria. NA if parent concentration >4x the amount spiked. Qualify all samples in batch. QAPP may have overriding accuracy limits.
MS/MSD (RPD)	MSD not required, if analyzed: RPD ≤ 20%	NFG [1] Method [2]	J (pos)/UJ (ND) if RPD > 20%	9	QAPP may have overriding precision limits.
Post Digestion Spikes	If MS is outside 75-125%, post-spike should be analyzed %R 75%-125%	NFG [1] Method [2]	Only used to support MS qualification decisions	NA	No qualifiers assigned based solely on this element.
Laboratory Duplicate	One per matrix per batch (of ≤ 20 samples) RPD ≤ 20% for results ≥ 5x RL Solids: difference < 2X RL for results < 5X RL Aqueous: difference < 1X RL for results < 5X RL	NFG [1] Method [2]	J (pos)/UJ (ND) if RPD > 20% or if difference > control limit	9	Qualify all samples in batch. QAPP may have overriding precision limits.

Metals by ICP-MS
(Based on Inorganic NFG 2017 and SW-846 6020B)

QC Element	EcoChem Acceptance Criteria	Source of Criteria	EcoChem Action for Non-Conformance	Reason Code	Discussion and Comments
Reference Material (RM, SRM, or CRM)	Result ±20% of the 95% confidence interval of the true value for analytes	EcoChem standard policy	J (pos)/UJ (ND) if < LCL J (pos) if > UCL	12 (H,L)[3]	QAPP may have overriding accuracy limits. Some manufacturers may have different RM control limits
Serial Dilution	Analyze one sample per matrix at a 5x dilution %D <20% for original sample conc. > 25X LLOQ (RL)	Method [(2)]	J(pos)/UJ(ND) if %D > 20%	16	Note: make sure comparing like units for soils samples Qualify all samples in batch. NFG stil uses 10% D for results >50x MDL
Field Duplicate	Solids: RPD <50% OR difference < 2X RL (for results < 5X RL) Aqueous: RPD <35% OR difference < 1X RL (for results < 5X RL)	EcoChem standard policy	Narrate and qualify if required by project **(EcoChem PJ)** Qualify only field duplicate samples J(pos)/UJ(ND)	9	QAPP may have overriding precision limits.
Compound Quantitation					
Total and Dissolved Comparison	Total > Dissolved	EcoChem standard policy	J (pos)/UJ (ND) if Dissolved > Total and results fall outside of standard duplicate precision criteria	14	
Calibration Range	Results < instrument linear range	NFG [(1)] Method [(2)]	if result exceeds linear range and sample was not diluted J (pos)	20	
Dilutions, Re-extractions and/or Reanalyses	Report only one result per analyte	EcoChem standard policy	Use "DNR" to flag results that will not be reported.	11	**TM-04** EcoChem Policy for Rejection/Selection Process for Multiple Results

[1] National Functional Guidelines for Inorganic Superfund Data Review (2017)

[2] Method SW846 6020B Inductively Coupled Plasma-Mass Spectrometry (ICP-MS), Revision 2, July 2014.

[3] "H" = high bias indicated; "L" = low bias indicated

[4] SW846, Chapter 3, Inorganic Analytes

(pos): Positive Result

(ND): Not detected

Mercury by CVAA
(Based on Inorganic NFG 2017 and SW846 7470A & 7471B)

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling					
Cooler / Storage Temperature Preservation	**Solid:** Cooler temperature 0-6°C **Aqueous:** Nitric Acid to pH < 2 **Dissolved Metals:** 0.45 µm filter, preserve to pH < 2 after filtration	NFG (1) Method (2)	Cooler Temps: **If required by project** J (pos)/UJ (ND) if greater than 6° C Aqueous: J (pos)/UJ (ND) if pH > 2	1	Use **PJ** to qualify for temperature outlier. Current SW846 criterion is ≤ 6° C (4) No quals for pH if samples preserved by lab immediately upon receipt and within 1 day of collection.
Holding Time	28 days from date sampled Frozen solids and tissues HT extended to 6 months	NFG (1) Method (2) EcoChem standard policy	J (pos)/UJ (ND) if HT exceeded	1	
Instrument Performance					
Initial Calibration (ICAL)	Daily Calibration Blank + 5 standards, one ≤ RL Correlation coefficient (r) ≥ 0.995	NFG (1) Method (2)	J (pos)/UJ (ND) if r < 0.995	5A (H,L)[3]	
Initial Calibration Verification (ICV)	Independent source analyzed immediately after ICAL %R within ± 15% of true value	NFG (1) Method (2)	R(pos/ND) if %R <70% J(pos)/UJ(ND) if %R = 70-84% J(pos) if %R = > 116%	5A (H,L)[3]	Qualify all samples in run
Reporting Limit (RL) Standard	Conc = RL %R = 70-130%	Method (2)	J (pos) < 2x RL / R (ND) if %R <50% J (pos) < 2x RL / UJ (ND) if %R 50 - 69% J (pos) < 2x RL if %R > 130%	5A (H,L)[3]	Qualify all samples in run
Continuing Calibration Verification (CCV)	At beginning of run, every ten samples, and again after last sample. %R within ± 15% of true value	NFG (1) Method (2)	R(pos/ND) if %R <70% J(pos)/UJ(ND) if %R = 70-84% J(pos) if %R = > 116%	5B (H,L)[3]	Qualify samples bracketed by CCV outliers
Blank Contamination					
Method Blank (MB)	One per matrix per batch of (of ≤ 20 samples) Blank conc < MDL	NFG (1) Method (2)	U (pos) if result is < 5X method blank concentration	7	Refer to **TM-02** for additional information. Blank Evaluation based on NFG 1994
Instrument Blanks (ICB/CCB)	After each ICV & CCV | blank concentration | < MDL	NFG (1) Method (2)	Action level is 5x absolute value of blank conc. For positive blanks: U (pos) results < action level For negative blanks: J (pos)/UJ (ND) results < action level	Pos Blanks: 7 Neg Blanks: 7L[3]	Use blanks bracketing samples for Qualification Refer to **TM-02** for additional information. **Hierarchy of blank review:** **#1 - Review MB, quaify as needed** **#2 - Review IB , qualify as needed** **#3 - Review FB , qualify as needed**

Mercury by CVAA
(Based on Inorganic NFG 2017 and SW846 7470A & 7471B)

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Field Blank (FB)	Blank conc < MDL	EcoChem standard policy	U (pos) if result is < 5x action level, as per analyte.	6	Qualify in associated field samples only. Refer to **TM-02** for additional information.
Precision and Accuracy					
Laboratroy Control Sample (recovery)	One per matrix per batch (of ≤ 20 samples); LCSD not required %R between 80-120%	Method [2] EcoChem standard policy	J (pos)/R (ND) if %R <50% J (pos)/UJ (ND) if %R 50% - 79% J (pos) if %R > 120%	10 (H,L)[3]	No action if only one spike %R is outside criteria. Qualify all samples in batch QAPP may have overriding accuracy limits.
LCS/LCSD (RPD)	LCSD not required, if analyzed: RPD ≤ 20%	Method [2]	J (pos)/UJ (ND) if RPD > 20%	9	Qualify all samples in batch QAPP may have overriding precision limits.
Matris Spike/Matrix Spike Duplicate MS/MSD (recovery)	One per matrix per batch (of ≤ 20 samples); MSD not required %R between 75-125%	NFG [1] Method [2] EcoChem standard policy	J (pos) if %R > 125% J (pos)/UJ (ND) if %R <75% J (pos)/R (ND) if %R < 30%	8 (H,L)[3]	No action if only one spike %R is outside criteria. NA if parent concentration >4x the amount spiked. Qualify all samples in batch. QAPP may have overriding accuracy limits.
MS/MSD (RPD)	MSD not required, if analyzed: RPD ≤ 20%	NFG [1] Method [2]	J (pos)/UJ (ND) if RPD > 20%	9	QAPP may have overriding precision limits.
Laboratory Duplicate	One per matrix per batch (of ≤ 20 samples) RPD ≤ 20% for results ≥ 5x RL Solids: difference < 2X RL for results < 5X RL Aqueous: difference < 1X RL for results < 5X RL	NFG [1] Method [2]	J (pos)/UJ (ND) if RPD > 20% or if difference > control limit	9	Qualify all samples in batch. QAPP may have overriding precision limits.
Reference Material (RM, SRM, or CRM)	Result ±20% of the 95% confidence interval of the true value for analytes	EcoChem standard policy	J (pos)/UJ (ND) if < LCL J (pos) if > UCL	12 (H,L)[3]	QAPP may have overriding accuracy limits. Some manufacturers may have different RM control limits

Mercury by CVAA
(Based on Inorganic NFG 2017 and SW846 7470A & 7471B)

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Field Duplicate	Solids: RPD <50% (for results ≥ 5x RL) OR difference < 2X RL (for results < 5X RL) Aqueous: RPD <35% (for results ≥ 5x RL) OR difference < 1X RL (for results < 5X RL)	EcoChem standard policy	Qualify only parent and field duplicate samples J (pos)/UJ (ND)	9	QAPP may have overriding precision limits. Client/QAPP may not require qualification based on field precision.
Compound Quantitation					
Total and Dissolved Comparison	Total > Dissolved	EcoChem standard policy	J (pos)/UJ (ND) if Dissolved > Total and results fall outside of standard duplicate precision criteria	14	
Calibration Range	Results < instrument linear range	NFG [1] Method [2]	if result exceeds linear range and sample was not diluted J (pos)	20	
Dilutions, Re-extractions and/or Reanalyses	Report only one result per analyte	EcoChem standard policy	Use "DNR" to flag results that will not be reported.	11	**TM-04** EcoChem Policy for Rejection/Selection Process for Multiple Results

[1] National Functional Guidelines for Inorganic Superfund Data Review, January 2017.

[2] Method SW846 7470A Mercury in Liquid Waste (Manual Cold-Vapor Technique), Revision 1, September 1994.
Method SW846 7471B Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique), Revision 2, February 2007.

[3] "H" = high bias indicated; "L" = low bias indicated

[4] SW846, Chapter 3, Inorganic Analytes

(pos): Positive Result

(ND): Not Detected

ECOCHEM
Data Quality

APPENDIX B

QUALIFIED DATA SUMMARY TABLE

Qualified Data Summary Table
Port of Friday Harbor

SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
23C0619	SED-08C:0-1	EPA1613B	1,2,3,4,7,8,9-HpCDF	3.22	ng/Kg	NUJ	J	25
23C0619	SED-08C:0-1	EPA1613B	1,2,3,4,7,8-HxCDF	3.98	ng/Kg	NUJ	J	25
23C0619	SED-08C:0-1	EPA1613B	1,2,3,6,7,8-HxCDF	2.70	ng/Kg	NUJ	J	25
23C0619	SED-08C:0-1	EPA1613B	1,2,3,7,8,9-HxCDF	1.61	ng/Kg	NUJ	J	25
23C0619	SED-08C:0-1	EPA1613B	1,2,3,7,8-PeCDF	3.06	ng/Kg	NUJ	J	25
23C0619	SED-08C:0-1	EPA1613B	2,3,7,8-TCDD	0.323	ng/Kg	NUJ,J	J	25
23C0619	SED-08C:0-1	EPA1613B	2,3,7,8-TCDF	2.85	ng/Kg	J	J	23H
23C0619	SED-08C:0-1	EPA1613B	OCDD	7300	ng/Kg	E,B	J	20
23J0690	SED-07C:0-1	EPA1613B	1,2,3,7,8,9-HxCDD	0.789	ng/Kg	NUJ,J	J	25
23C0619	SED-09C:0-1	EPA1613B	2,3,4,7,8-PeCDF	1.58	ng/Kg	NUJ	J	25
23J0690	SED-07C:0-1	EPA1613B	2,3,7,8-TCDF	0.656	ng/Kg	NUJ,J	J	23H,25
23C0619	SED-09C:0-1	EPA1613B	2,3,7,8-TCDD	0.239	ng/Kg	NUJ,J	J	25
23C0619	SED-09C:0-1	EPA1613B	2,3,7,8-TCDF	0.933	ng/Kg	J	J	23H
23C0619	SED-09C:1-3	EPA1613B	1,2,3,4,6,7,8-HpCDD	2.31	ng/Kg	NUJ,J,B	UJ	7,25
23C0619	SED-09C:1-3	EPA1613B	1,2,3,4,6,7,8-HpCDF	0.178	ng/Kg	NUJ,J	J	25
23C0619	SED-12C:0-1	EPA1613B	1,2,3,7,8,9-HxCDD	0.107	ng/Kg	NUJ,J	J	25
23C0619	SED-26C:0-1	EPA1613B	1,2,3,7,8,9-HxCDF	1.57	ng/Kg	NUJ	J	25
303373	SED-07G:0-10	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-07G:0-10	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303373	SED-07G:0-10	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-07G:0-10	SW8270E	Benzo(a)pyrene	0.065	mg/kg		J	19
303373	SED-07G:0-10	SW8270E	Benzo(b)fluoranthene	0.18	mg/kg		J	19
303373	SED-07G:0-10	SW8270E	Benzo(k)fluoranthene	0.066	mg/kg		J	19
303373	SED-07G:0-10	SW8270E	Benzo(ghi)perylene	0.013	mg/kg		J	19
303373	SED-07G:0-10	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303373	SED-07G:0-10	SW8270E	Dibenzo(a,h)anthracene	0.0043	mg/kg		J	19
303373	SED-07G:0-10	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303373	SED-07G:0-10	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14

Qualified Data Summary Table
Port of Friday Harbor

SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303373	SED-07G:0-10	SW8270E	Dimethyl phthalate	0.071	mg/kg	U	UJ	14
303373	SED-07G:0-10	SW8270E	Di-n-octyl phthalate	0.1	mg/kg	U	UJ	19
303373	SED-07G:0-10	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303373	SED-07G:0-10	SW8270E	Indeno(1,2,3-cd)pyrene	0.018	mg/kg		J	19
303373	SED-07G:0-10	SW8270E	Di-n-butyl phthalate	0.1	mg/kg	E	UJ	5BL
303373	SED-11G:0-10	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-11G:0-10	SW8270E	Benzo(a)pyrene	0.18	mg/kg		J	19
303373	SED-11G:0-10	SW8270E	Benzo(ghi)perylene	0.04	mg/kg		J	19
303373	SED-11G:0-10	SW8270E	Benzo(b)fluoranthene	0.46	mg/kg		J	19
303373	SED-11G:0-10	SW8270E	Benzo(k)fluoranthene	0.15	mg/kg		J	19
303373	SED-11G:0-10	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303373	SED-11G:0-10	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303373	SED-11G:0-10	SW8270E	Dibenzo(a,h)anthracene	0.012	mg/kg		J	19
303373	SED-11G:0-10	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303373	SED-11G:0-10	SW8270E	Dimethyl phthalate	0.071	mg/kg	U	UJ	14
303373	SED-11G:0-10	SW8270E	Di-n-butyl phthalate	0.1	mg/kg	E	UJ	5BL
303373	SED-11G:0-10	SW8270E	Di-n-octyl phthalate	0.1	mg/kg	U	UJ	19
303373	SED-11G:0-10	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303373	SED-11G:0-10	SW8270E	Indeno(1,2,3-cd)pyrene	0.051	mg/kg		J	19
23C0619	SED-26C:0-1	EPA1613B	2,3,7,8-TCDF	3.10	ng/Kg	J	J	23H
23C0619	SED-26C:0-1	EPA1613B	OCDD	8660	ng/Kg	E,B	J	20
23J0690	SED-08C:1-3	EPA1613B	1,2,3,6,7,8-HxCDF	0.869	ng/Kg	NUJ,J	J	25
23J0690	SED-08C:1-3	EPA1613B	1,2,3,7,8,9-HxCDF	0.475	ng/Kg	NUJ,J	J	25
23J0690	SED-08C:1-3	EPA1613B	1,2,3,7,8-PeCDD	0.319	ng/Kg	NUJ,J	J	25
23J0690	SED-08C:1-3	EPA1613B	1,2,3,7,8-PeCDF	0.609	ng/Kg	NUJ,J	J	25
23C0619	SED-25C:0-1	EPA1613B	1,2,3,4,7,8,9-HpCDF	0.575	ng/Kg	NUJ,J	J	25
23J0690	SED-08C:1-3	EPA1613B	2,3,4,7,8-PeCDF	0.936	ng/Kg	NUJ,J	J	25
23J0690	SED-08C:1-3	EPA1613B	2,3,7,8-TCDF	0.910	ng/Kg	NUJ,J	J	23H,25

Qualified Data Summary Table
Port of Friday Harbor

SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
23C0619	SED-25C:0-1	EPA1613B	1,2,3,4,7,8-HxCDD	0.619	ng/Kg	NUJ,J	J	25
23C0619	SED-25C:0-1	EPA1613B	1,2,3,6,7,8-HxCDF	0.376	ng/Kg	NUJ,J	J	25
23C0619	SED-25C:0-1	EPA1613B	1,2,3,7,8,9-HxCDF	0.193	ng/Kg	NUJ,J	J	25
23C0619	SED-25C:0-1	EPA1613B	1,2,3,7,8-PeCDD	0.720	ng/Kg	NUJ,J	J	25
23C0619	SED-25C:0-1	EPA1613B	2,3,4,7,8-PeCDF	0.154	ng/Kg	NUJ,J	J	25
23C0619	SED-25C:0-1	EPA1613B	2,3,7,8-TCDD	0.206	ng/Kg	NUJ,J	J	25
23C0619	SED-25C:0-1	EPA1613B	2,3,7,8-TCDF	0.373	ng/Kg	J	J	23H
303373	SED-11G:0-10	SW8081	4,4'-DDT	0.0035	mg/kg	U	UJ	5BL
303373	SED-11G:0-10	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303373	SED-11G:0-10	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-14G:0-10	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-14G:0-10	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303373	SED-14G:0-10	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-14G:0-10	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303373	SED-14G:0-10	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303373	SED-14G:0-10	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303373	SED-14G:0-10	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303373	SED-14G:0-10	SW8270E	Dimethyl phthalate	0.071	mg/kg	U	UJ	14
303373	SED-14G:0-10	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8270E	Dimethyl phthalate	0.071	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8270E	Hexachloroethane	0.05	mg/kg	U	DNR	11

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303373	SED-05C:0-1	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-11G:0-10	SW8081	Heptachlor	0.0005	mg/kg	U	UJ	5BL
303373	SED-11G:0-10	SW8081	Methoxychlor	0.005	mg/kg	U	UJ	5BL
303373	SED-11G:0-10	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL,8L
303373	SED-14G:0-10	SW8081	4,4'-DDT	0.005	mg/kg	E	DNR	11
303373	SED-14G:0-10	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-14G:0-10	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-14G:0-10	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-14G:0-10	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303373	SED-24G:0-10	SW8081	4,4'-DDT	0.01	mg/kg	E	DNR	11
303373	SED-24G:0-10	SW8081	Endosulfan Sulfate	0.01	mg/kg	U	DNR	11
303373	SED-24G:0-10	SW8081	Heptachlor	0.005	mg/kg	U	DNR	11
303373	SED-05C:0-1	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303373	SED-24G:0-10	SW8081	Methoxychlor	0.05	mg/kg	E	DNR	11
303373	SED-24G:0-10	SW8081	Toxaphene	0.5	mg/kg	E	UJ	5BL
303373	SED-24G:0-10	SW8081	Toxaphene	2.5	mg/kg	E	DNR	11
303373	SED-23G:0-10	SW8081	4,4'-DDT	0.01	mg/kg	E	DNR	11
303373	SED-23G:0-10	SW8081	Endosulfan Sulfate	0.01	mg/kg	U	DNR	11
303373	SED-23G:0-10	SW8081	Heptachlor	0.005	mg/kg	U	DNR	11
303373	SED-23G:0-10	SW8081	Methoxychlor	0.05	mg/kg	E	DNR	11
303373	SED-23G:0-10	SW8081	Toxaphene	0.5	mg/kg	E	UJ	5BL
303373	SED-23G:0-10	SW8081	Toxaphene	2.5	mg/kg	E	DNR	11
303373	SED-05C:0-1	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303373	SED-05C:0-1	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-05C:0-1	SW8270E	Benzo(a)pyrene	0.066	mg/kg		J	19
303373	SED-05C:0-1	SW8270E	Benzo(b)fluoranthene	0.18	mg/kg		J	19
303373	SED-05C:0-1	SW8270E	Benzo(k)fluoranthene	0.069	mg/kg		J	19
303373	SED-05C:0-1	SW8270E	Benzo(ghi)perylene	0.012	mg/kg		J	19

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303373	SED-05C:0-1	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303373	SED-05C:0-1	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303373	SED-05C:0-1	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303373	SED-05C:0-1	SW8270E	Dimethyl phthalate	0.071	mg/kg	U	UJ	14
303373	SED-05C:0-1	SW8270E	Dibenzo(a,h)anthracene	0.0041	mg/kg		J	19
303373	SED-05C:0-1	SW8270E	Di-n-butyl phthalate	0.1	mg/kg	E	UJ	5BL
303373	SED-05C:0-1	SW8270E	Di-n-octyl phthalate	0.1	mg/kg	U	UJ	19
303373	SED-05C:0-1	SW8270E	Indeno(1,2,3-cd)pyrene	0.016	mg/kg		J	19
303373	SED-05G:0-10	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-05G:0-10	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303373	SED-05G:0-10	SW8270E	Benzo(a)pyrene	0.082	mg/kg		J	19
303373	SED-05G:0-10	SW8270E	Benzo(b)fluoranthene	0.26	mg/kg		J	19
303373	SED-05G:0-10	SW8270E	Benzo(k)fluoranthene	0.084	mg/kg		J	19
303373	SED-05G:0-10	SW8270E	Benzo(ghi)perylene	0.016	mg/kg		J	19
303373	SED-22G:0-10	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-21G:0-10	SW8081	4,4'-DDT	0.01	mg/kg	E	DNR	11
303373	SED-21G:0-10	SW8081	Endosulfan Sulfate	0.01	mg/kg	U	DNR	11
303373	SED-21G:0-10	SW8081	Heptachlor	0.005	mg/kg	U	DNR	11
303373	SED-21G:0-10	SW8081	Methoxychlor	0.05	mg/kg	E	DNR	11
303373	SED-21G:0-10	SW8081	Toxaphene	0.5	mg/kg	E	UJ	5BL
303373	SED-21G:0-10	SW8081	Toxaphene	2.5	mg/kg	E	DNR	11
303373	SED-03G:0-10	SW8081	4,4'-DDT	0.005	mg/kg	E	DNR	11
303373	SED-03G:0-10	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11
303373	SED-03G:0-10	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-03G:0-10	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-05G:0-10	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303373	SED-05G:0-10	SW8270E	Dibenzo(a,h)anthracene	0.005	mg/kg		J	19
303373	SED-05G:0-10	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303373	SED-05G:0-10	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303373	SED-05G:0-10	SW8270E	Dimethyl phthalate	0.071	mg/kg	U	UJ	14
303373	SED-05G:0-10	SW8270E	Di-n-butyl phthalate	0.1	mg/kg	E	UJ	5BL
303373	SED-05G:0-10	SW8270E	Di-n-octyl phthalate	0.1	mg/kg	U	UJ	19
303373	SED-05G:0-10	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303373	SED-05G:0-10	SW8270E	Indeno(1,2,3-cd)pyrene	0.021	mg/kg		J	19
303373	SED-05G:0-10	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-03C:0-1	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-03C:0-1	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303373	SED-03C:0-1	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-03C:0-1	SW8270E	Benzo(a)pyrene	0.16	mg/kg		J	19
303373	SED-03C:0-1	SW8270E	Benzo(b)fluoranthene	0.42	mg/kg		J	19
303373	SED-03C:0-1	SW8270E	Benzo(ghi)perylene	0.022	mg/kg		J	19
303373	SED-03C:0-1	SW8270E	Benzo(k)fluoranthene	0.16	mg/kg		J	19
303373	SED-03C:0-1	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303373	SED-03G:0-10	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303373	SED-03C:0-1	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303373	SED-03C:0-1	SW8270E	Dibenzo(a,h)anthracene	0.0082	mg/kg		J	19
303373	SED-03C:0-1	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303373	SED-03C:0-1	SW8270E	Dimethyl phthalate	0.071	mg/kg	U	UJ	14
303373	SED-03C:0-1	SW8270E	Di-n-butyl phthalate	0.1	mg/kg	E	UJ	5BL
303373	SED-03C:0-1	SW8270E	Di-n-octyl phthalate	0.1	mg/kg	U	UJ	19
303373	SED-03C:0-1	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303373	SED-03C:0-1	SW8270E	Indeno(1,2,3-cd)pyrene	0.03	mg/kg		J	19
303373	SED-14C:0-1	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-20G:0-10	SW8081	4,4'-DDT	0.005	mg/kg	E	DNR	11
303373	SED-14C:0-1	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303373	SED-14C:0-1	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-14C:0-1	SW8270E	Acenaphthene	0.0051	mg/kg		J	9B
303373	SED-14C:0-1	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303373	SED-14C:0-1	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303373	SED-14C:0-1	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303373	SED-14C:0-1	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303373	SED-14C:0-1	SW8270E	Dimethyl phthalate	0.071	mg/kg	U	UJ	14
303373	SED-14C:0-1	SW8270E	Fluorene	0.0076	mg/kg		J	9B
303373	SED-14C:0-1	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303373	SED-14C:0-1	SW8270E	Phenanthrene	0.087	mg/kg		J	9B
303373	SED-14C:1-3	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-14C:1-3	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303373	SED-14C:1-3	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-14C:1-3	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303373	SED-14C:1-3	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303373	SED-14C:1-3	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303373	SED-14C:1-3	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303373	SED-14C:1-3	SW8270E	Dimethyl phthalate	0.071	mg/kg	U	UJ	14
303373	SED-14C:1-3	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303373	SED-14C-DUP	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-14C-DUP	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303373	SED-14C-DUP	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-14C-DUP	SW8270E	Acenaphthene	0.019	mg/kg		J	9B
303373	SED-14C-DUP	SW8270E	Benzo(a)pyrene	0.068	mg/kg		DNR	19
303373	SED-14C-DUP	SW8270E	Benzo(b)fluoranthene	0.17	mg/kg		DNR	19
303373	SED-14C-DUP	SW8270E	Benzo(ghi)perylene	0.018	mg/kg		DNR	19
303373	SED-14C-DUP	SW8270E	Benzo(k)fluoranthene	0.051	mg/kg		DNR	19
303373	SED-14C-DUP	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303373	SED-14C-DUP	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303373	SED-14C-DUP	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303373	SED-14C-DUP	SW8270E	Dibenzo(a,h)anthracene	0.0055	mg/kg		DNR	19
303373	SED-14C-DUP	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303373	SED-14C-DUP	SW8270E	Dimethyl phthalate	0.071	mg/kg	U	UJ	14
303373	SED-14C-DUP	SW8270E	Di-n-octyl phthalate	0.1	mg/kg	U	DNR	19
303373	SED-14C-DUP	SW8270E	Fluorene	0.016	mg/kg		J	9B
303373	SED-14C-DUP	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303373	SED-20G:0-10	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11
303373	SED-14C-DUP	SW8270E	Indeno(1,2,3-cd)pyrene	0.022	mg/kg		DNR	19
303373	SED-20G:0-10	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-20G:0-10	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-20G:0-10	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-20G:0-10	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303373	SED-18G:0-10	SW8081	4,4'-DDT	0.005	mg/kg	E	DNR	11
303373	SED-18G:0-10	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11
303373	SED-18G:0-10	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-14C-DUP	SW8270E	Phenanthrene	0.049	mg/kg		J	9B
303388	SED-07C:0-1	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303388	SED-07C:0-1	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-07C:0-1	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-18G:0-10	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303388	SED-07C:0-1	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303388	SED-07C:0-1	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303388	SED-07C:0-1	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303388	SED-07C:0-1	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303388	SED-07C:0-1	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
23J0690	SED-11C:0-1	SW8270ESIM	Dibutyltin Ion	23.3	ug/Kg		J	9A

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303388	SED-08C:0-1	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303388	SED-08C:0-1	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-08C:0-1	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303388	SED-08C:0-1	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303388	SED-08C:0-1	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303373	SED-18G:0-10	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-18G:0-10	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303373	SED-14C:0-1	SW6020	Copper	31.4	mg/kg		J	9B
303373	SED-14C-DUP	SW6020	Copper	66.2	mg/kg		J	9B
303373	SED-01G:0-10	SW8081	4,4'-DDT	0.005	mg/kg	E	DNR	11
303373	SED-01G:0-10	SW8081	4,4'-DDT	0.001	mg/kg	E	UJ	5BL
303373	SED-01G:0-10	SW8081	beta-BHC	0.0025	mg/kg	U	DNR	11
303373	SED-01G:0-10	SW8081	beta-BHC	0.0005	mg/kg	E	UJ	5BL
303373	SED-01G:0-10	SW8081	Dieldrin	0.005	mg/kg	U	DNR	11
303373	SED-01G:0-10	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11
303373	SED-01G:0-10	SW8081	Endrin	0.005	mg/kg	U	DNR	11
303373	SED-01G:0-10	SW8081	gamma-BHC (Lindane)	0.0025	mg/kg	U	DNR	11
303373	SED-01G:0-10	SW8081	gamma-BHC (Lindane)	0.0005	mg/kg	E	UJ	5BL
303373	SED-01G:0-10	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-01G:0-10	SW8081	Heptachlor	0.0005	mg/kg	E	UJ	5BL
303373	SED-01G:0-10	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-01G:0-10	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303373	SED-01G:0-10	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-01G:0-10	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303388	SED-08C:0-1	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303388	SED-08C:0-1	SW8270E	Di-n-butyl phthalate	0.1	mg/kg	E	UJ	5BL
303388	SED-08C:0-1	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303388	SED-09C:0-1	SW8270E	1,2,4-Trichlorobenzene	0.005	mg/kg	U	UJ	14

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303388	SED-09C:0-1	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-09C:0-1	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303388	SED-09C:0-1	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303388	SED-09C:0-1	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303388	SED-09C:0-1	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303388	SED-09C:0-1	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
23J0690	SED-11C:0-1	SW8270ESIM	Tributyltin Ion	26.7	ug/Kg		J	9A
303373	SED-01C:0-1	SW8081	4,4'-DDT	0.005	mg/kg	E	DNR	11
303373	SED-01C:0-1	SW8081	4,4'-DDT	0.001	mg/kg	E	UJ	5BL
303373	SED-01C:0-1	SW8081	beta-BHC	0.0025	mg/kg	U	DNR	11
303373	SED-01C:0-1	SW8081	beta-BHC	0.0005	mg/kg	E	UJ	5BL
303373	SED-01C:0-1	SW8081	Dieldrin	0.005	mg/kg	U	DNR	11
303373	SED-01C:0-1	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11
303373	SED-01C:0-1	SW8081	Endrin	0.005	mg/kg	U	DNR	11
303373	SED-01C:0-1	SW8081	gamma-BHC (Lindane)	0.0025	mg/kg	U	DNR	11
303373	SED-01C:0-1	SW8081	gamma-BHC (Lindane)	0.0005	mg/kg	E	UJ	5BL
303373	SED-01C:0-1	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-01C:0-1	SW8081	Heptachlor	0.0005	mg/kg	E	UJ	5BL
303373	SED-01C:0-1	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-01C:0-1	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303373	SED-01C:0-1	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-01C:0-1	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303373	SED-05C:0-1	SW8081	4,4'-DDD	0.001	mg/kg	U	UJ	13L
303373	SED-05C:0-1	SW8081	4,4'-DDE	0.001	mg/kg	U	UJ	13L
303373	SED-05C:0-1	SW8081	4,4'-DDT	0.005	mg/kg	E	DNR	11
303373	SED-05C:0-1	SW8081	4,4'-DDT	0.001	mg/kg	E	UJ	5BL,13L
303373	SED-05C:0-1	SW8081	Aldrin	0.0017	mg/kg	U	UJ	13L
303373	SED-05C:0-1	SW8081	alpha-BHC	0.001	mg/kg		J	13L

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303373	SED-05C:0-1	SW8081	beta-BHC	0.0025	mg/kg	U	DNR	11
303373	SED-05C:0-1	SW8081	beta-BHC	0.0005	mg/kg	E	UJ	5BL,13L
303373	SED-05C:0-1	SW8081	cis-Chlordane	0.0005	mg/kg	U	UJ	13L
303388	SED-09C:0-1	SW8270E	Hexachlorobenzene	0.0049	mg/kg		J	14
303388	SED-09C:1-3	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303388	SED-09C:1-3	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-09C:1-3	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-05C:0-1	SW8081	delta-BHC	0.0007	mg/kg		J	13L
303373	SED-05C:0-1	SW8081	Dieldrin	0.005	mg/kg	U	DNR	11
303388	SED-09C:1-3	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303388	SED-09C:1-3	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303388	SED-09C:1-3	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303388	SED-09C:1-3	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303388	SED-09C:1-3	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303388	SED-26C:0-1	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303388	SED-26C:0-1	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-26C:0-1	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303388	SED-26C:0-1	SW8270E	Benzo(a)pyrene	0.26	mg/kg		J	19
303388	SED-26C:0-1	SW8270E	Benzo(ghi)perylene	0.051	mg/kg		J	19
303388	SED-26C:0-1	SW8270E	Benzo(b)fluoranthene	0.56	mg/kg		J	19
303388	SED-26C:0-1	SW8270E	Benzo(k)fluoranthene	0.2	mg/kg		J	19
303388	SED-26C:0-1	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303388	SED-26C:0-1	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303388	SED-26C:0-1	SW8270E	Dibenzo(a,h)anthracene	0.016	mg/kg		J	19
303388	SED-26C:0-1	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303388	SED-26C:0-1	SW8270E	Di-n-butyl phthalate	0.1	mg/kg	E	UJ	5BL
303388	SED-26C:0-1	SW8270E	Di-n-octyl phthalate	0.1	mg/kg	U	UJ	19
303388	SED-26C:0-1	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303388	SED-26C:0-1	SW8270E	Indeno(1,2,3-cd)pyrene	0.067	mg/kg		J	19
303373	SED-05C:0-1	SW8081	Dieldrin	0.001	mg/kg	E	UJ	13L
303373	SED-05C:0-1	SW8081	Endosulfan I	0.0025	mg/kg	U	DNR	11
303373	SED-05C:0-1	SW8081	Endosulfan I	0.0005	mg/kg	U	UJ	13L
303373	SED-05C:0-1	SW8081	Endosulfan II	0.001	mg/kg	U	UJ	13L
303373	SED-05C:0-1	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11
303373	SED-05C:0-1	SW8081	Endosulfan Sulfate	0.001	mg/kg	E	UJ	13L
303373	SED-05C:0-1	SW8081	Endrin	0.005	mg/kg	U	DNR	11
303373	SED-05C:0-1	SW8081	Endrin	0.001	mg/kg	E	UJ	13L
303373	SED-05C:0-1	SW8081	gamma-BHC (Lindane)	0.0025	mg/kg	U	DNR	11
303373	SED-05C:0-1	SW8081	gamma-BHC (Lindane)	0.0005	mg/kg	E	UJ	5BL,13L
303373	SED-05C:0-1	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-05C:0-1	SW8081	Heptachlor	0.0005	mg/kg	E	UJ	5BL,13L
303373	SED-05C:0-1	SW8081	Heptachlor Epoxide	0.001	mg/kg		J	13L
303373	SED-05C:0-1	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-05C:0-1	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL,13L
303373	SED-05C:0-1	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL,13L
303373	SED-05C:0-1	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303373	SED-05C:0-1	SW8081	trans-Chlordane	0.0017	mg/kg	U	UJ	13L
303373	SED-05G:0-10	SW8081	4,4'-DDT	0.005	mg/kg	E	DNR	11
303373	SED-05G:0-10	SW8081	4,4'-DDT	0.001	mg/kg	E	UJ	5BL
303373	SED-05G:0-10	SW8081	beta-BHC	0.0025	mg/kg	U	DNR	11
303373	SED-05G:0-10	SW8081	beta-BHC	0.0005	mg/kg	E	UJ	5BL
303373	SED-05G:0-10	SW8081	Dieldrin	0.005	mg/kg	U	DNR	11
303373	SED-05G:0-10	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11
303373	SED-05G:0-10	SW8081	Endrin	0.005	mg/kg	U	DNR	11
303373	SED-05G:0-10	SW8081	gamma-BHC (Lindane)	0.0025	mg/kg	U	DNR	11
303373	SED-05G:0-10	SW8081	gamma-BHC (Lindane)	0.0005	mg/kg	E	UJ	5BL

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303373	SED-05G:0-10	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-05G:0-10	SW8081	Heptachlor	0.0005	mg/kg	E	UJ	5BL
303373	SED-05G:0-10	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-05G:0-10	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303373	SED-05G:0-10	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-05G:0-10	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303373	SED-03C:0-1	SW8081	4,4'-DDT	0.005	mg/kg	E	DNR	11
303373	SED-03C:0-1	SW8081	4,4'-DDT	0.0017	mg/kg	E	UJ	5BL
303373	SED-03C:0-1	SW8081	beta-BHC	0.0025	mg/kg	U	DNR	11
303373	SED-03C:0-1	SW8081	beta-BHC	0.0005	mg/kg	E	UJ	5BL
303373	SED-03C:0-1	SW8081	Dieldrin	0.005	mg/kg	U	DNR	11
303388	SED-26C:1-3	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303373	SED-03C:0-1	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11
303373	SED-03C:0-1	SW8081	Endrin	0.005	mg/kg	U	DNR	11
303373	SED-03C:0-1	SW8081	gamma-BHC (Lindane)	0.0025	mg/kg	U	DNR	11
303373	SED-03C:0-1	SW8081	gamma-BHC (Lindane)	0.0005	mg/kg	E	UJ	5BL
303373	SED-03C:0-1	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-03C:0-1	SW8081	Heptachlor	0.0005	mg/kg	E	UJ	5BL
303373	SED-03C:0-1	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-03C:0-1	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303373	SED-03C:0-1	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-03C:0-1	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303373	SED-14C:0-1	SW8081	4,4'-DDT	0.005	mg/kg	E	DNR	11
303373	SED-14C:0-1	SW8081	4,4'-DDT	0.001	mg/kg	E	UJ	5BL
303373	SED-14C:0-1	SW8081	beta-BHC	0.0025	mg/kg	U	DNR	11
303373	SED-14C:0-1	SW8081	beta-BHC	0.0005	mg/kg	E	UJ	5BL
303373	SED-14C:0-1	SW8081	Dieldrin	0.005	mg/kg	U	DNR	11
303373	SED-14C:0-1	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303373	SED-14C:0-1	SW8081	Endrin	0.005	mg/kg	U	DNR	11
303373	SED-14C:0-1	SW8081	gamma-BHC (Lindane)	0.0025	mg/kg	U	DNR	11
303373	SED-14C:0-1	SW8081	gamma-BHC (Lindane)	0.0005	mg/kg	E	UJ	5BL
303373	SED-14C:0-1	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-14C:0-1	SW8081	Heptachlor	0.0005	mg/kg	E	UJ	5BL
303373	SED-14C:0-1	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-14C:0-1	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303373	SED-14C:0-1	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-14C:0-1	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303373	SED-14C:1-3	SW8081	4,4′-DDT	0.005	mg/kg	E	DNR	11
303373	SED-14C:1-3	SW8081	4,4′-DDT	0.001	mg/kg	E	UJ	5BL
303373	SED-14C:1-3	SW8081	beta-BHC	0.0025	mg/kg	U	DNR	11
303373	SED-14C:1-3	SW8081	beta-BHC	0.0005	mg/kg	E	UJ	5BL
303373	SED-14C:1-3	SW8081	Dieldrin	0.005	mg/kg	U	DNR	11
303373	SED-14C:1-3	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11
303373	SED-14C:1-3	SW8081	Endrin	0.005	mg/kg	U	DNR	11
303373	SED-14C:1-3	SW8081	gamma-BHC (Lindane)	0.0025	mg/kg	U	DNR	11
303373	SED-14C:1-3	SW8081	gamma-BHC (Lindane)	0.0005	mg/kg	E	UJ	5BL
303373	SED-14C:1-3	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-14C:1-3	SW8081	Heptachlor	0.0005	mg/kg	E	UJ	5BL
303373	SED-14C:1-3	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-14C:1-3	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303373	SED-14C:1-3	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-14C:1-3	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303388	SED-26C:1-3	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-26C:1-3	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303388	SED-26C:1-3	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303388	SED-26C:1-3	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303388	SED-26C:1-3	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303388	SED-26C:1-3	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303388	SED-26C:1-3	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303388	SED-25C:0-1	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303388	SED-25C:0-1	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-25C:0-1	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303373	SED-14C-DUP	SW8081	4,4′-DDT	0.005	mg/kg	E	DNR	11
303373	SED-14C-DUP	SW8081	4,4′-DDT	0.0012	mg/kg	E	UJ	5BL
303373	SED-14C-DUP	SW8081	beta-BHC	0.0025	mg/kg	U	DNR	11
303373	SED-14C-DUP	SW8081	beta-BHC	0.0005	mg/kg	E	UJ	5BL
303373	SED-14C-DUP	SW8081	Dieldrin	0.005	mg/kg	U	DNR	11
303373	SED-14C-DUP	SW8081	Endosulfan Sulfate	0.005	mg/kg	U	DNR	11
303373	SED-14C-DUP	SW8081	Endrin	0.005	mg/kg	U	DNR	11
303373	SED-14C-DUP	SW8081	gamma-BHC (Lindane)	0.0025	mg/kg	U	DNR	11
303373	SED-14C-DUP	SW8081	gamma-BHC (Lindane)	0.0005	mg/kg	E	UJ	5BL
303373	SED-14C-DUP	SW8081	Heptachlor	0.0025	mg/kg	U	DNR	11
303373	SED-14C-DUP	SW8081	Heptachlor	0.0005	mg/kg	E	UJ	5BL
303373	SED-14C-DUP	SW8081	Methoxychlor	0.025	mg/kg	E	DNR	11
303373	SED-14C-DUP	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303373	SED-14C-DUP	SW8081	Toxaphene	0.25	mg/kg	E	UJ	5BL
303373	SED-14C-DUP	SW8081	Toxaphene	1.25	mg/kg	E	DNR	11
303388	SED-08C:0-1	SW8081	4,4′-DDT	0.0015	mg/kg	E	UJ	5BL
303388	SED-08C:0-1	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303388	SED-09C:0-1	SW8081	4,4′-DDT	0.001	mg/kg	E	UJ	5BL
303388	SED-09C:0-1	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303388	SED-09C:1-3	SW8081	4,4′-DDT	0.001	mg/kg	E	UJ	5BL
303388	SED-09C:1-3	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303388	SED-26C:0-1	SW8081	4,4′-DDT	0.02	mg/kg	E	UJ	5BL

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303388	SED-26C:0-1	SW8081	Heptachlor	0.0005	mg/kg	E	UJ	5BL
303388	SED-25C:0-1	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303388	SED-25C:0-1	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303388	SED-25C:0-1	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303388	SED-25C:0-1	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303388	SED-25C:0-1	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303388	SED-25C:1-3	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303388	SED-25C:1-3	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-25C:1-3	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303388	SED-25C:1-3	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303388	SED-25C:1-3	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303388	SED-26C:0-1	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303388	SED-26C:0-1	SW8081	Toxaphene	0.21	mg/kg	E	UJ	5BL
303388	SED-25C:1-3	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303388	SED-25C:1-3	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303388	SED-25C:1-3	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303388	SED-10C:0-1	SW8270E	1,2,4-Trichlorobenzene	0.2	mg/kg	U	UJ	14
303388	SED-10C:0-1	SW8270E	2,4-Dimethylphenol	0.58	mg/kg	U	UJ	14
303388	SED-10C:0-1	SW8270E	2-Methylphenol	1.3	mg/kg	U	UJ	14
303388	SED-10C:0-1	SW8270E	Benzoic acid	10	mg/kg	E	UJ	5BL
303388	SED-10C:0-1	SW8270E	Benzyl alcohol	1.1	mg/kg	U	UJ	14
303388	SED-10C:0-1	SW8270E	Butylbenzyl phthalate	1.3	mg/kg	U	UJ	14
303373	SED-11G:0-10	SW6020	Lead	21.6	mg/kg		J	9A
303373	SED-14C:0-1	SW6020	Lead	14.2	mg/kg		J	9A
303373	SED-14G:0-10	SW6020	Lead	16.4	mg/kg		J	9A
303373	SED-14C-DUP	SW6020	Lead	13.7	mg/kg		J	9A
303373	SED-11G:0-10	EPA1631E	Mercury	0.25	mg/kg		J	9A
303373	SED-14C:0-1	EPA1631E	Mercury	0.093	mg/kg		J	9A

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303373	SED-14G:0-10	EPA1631E	Mercury	0.11	mg/kg		J	9A
303388	SED-27C:0-1	EPA1631E	Mercury	0.12	mg/kg		J	1
303373	SED-14C-DUP	EPA1631E	Mercury	0.094	mg/kg		J	9A
303388	SED-25C:0-1	SW8081	4,4'-DDT	0.001	mg/kg	E	UJ	5BL
303388	SED-25C:0-1	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303388	SED-10C:0-1	SW8081	4,4'-DDT	0.006	mg/kg	E	UJ	5BL
303388	SED-10C:0-1	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303388	SED-10C:1-3	SW8081	4,4'-DDT	0.001	mg/kg	E	UJ	5BL
303388	SED-10C:0-1	SW8270E	Diethyl phthalate	2	mg/kg	U	UJ	14
303388	SED-10C:0-1	SW8270E	Hexachlorobenzene	0.2	mg/kg	U	UJ	14
303388	SED-10C:1-3	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303388	SED-10C:1-3	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-10C:1-3	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303388	SED-10C:1-3	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303388	SED-10C:1-3	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303388	SED-10C:1-3	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303388	SED-10C:1-3	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
23C0619	SED-10C:0-1	EPA1613B	1,2,3,7,8,9-HxCDD	3.27	ng/Kg	NUJ	J	25
23C0619	SED-10C:0-1	EPA1613B	1,2,3,7,8-PeCDD	1.44	ng/Kg	NUJ	J	25
23C0619	SED-10C:0-1	EPA1613B	1,2,3,7,8-PeCDF	0.478	ng/Kg	NUJ,J	J	25
23C0619	SED-10C:0-1	EPA1613B	2,3,4,6,7,8-HxCDF	1.59	ng/Kg	NUJ	J	25
23C0619	SED-10C:0-1	EPA1613B	2,3,7,8-TCDD	0.228	ng/Kg	NUJ,J	J	25
23C0619	SED-10C:0-1	EPA1613B	2,3,7,8-TCDF	0.659	ng/Kg	J	J	23H
303388	SED-26C:0-1	SW8082	PCB-aroclor 1254	0.36	mg/kg	E	DNR	20
303388	SED-27C:0-1	SW8082	PCB-aroclor 1260	0.0082	mg/kg		J	3
303388	SED-10C:0-1	SW8082	PCB-aroclor 1248	0.34	mg/kg	E	DNR	20
303388	SED-10C:0-1	SW8082	PCB-aroclor 1254	0.27	mg/kg	E	DNR	20
303373	SED-11G:0-10	SW8082	PCB-aroclor 1260	0.034	mg/kg		J	8H

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
303388	SED-10C:1-3	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303388	SED-11C:0-1	SW8270E	1,2,4-Trichlorobenzene	0.004	mg/kg	U	UJ	14
303388	SED-11C:0-1	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-11C:0-1	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303388	SED-11C:0-1	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303388	SED-11C:0-1	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303388	SED-11C:0-1	SW8270E	Butylbenzyl phthalate	0.02	mg/kg	U	UJ	14
303388	SED-11C:0-1	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303388	SED-11C:0-1	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
303388	SED-11C:1-3	SW8270E	1,2,4-Trichlorobenzene	0.005	mg/kg	U	UJ	14
303388	SED-11C:1-3	SW8270E	2,4-Dimethylphenol	0.029	mg/kg	U	UJ	14
303388	SED-11C:1-3	SW8270E	2-Methylphenol	0.063	mg/kg	U	UJ	14
303388	SED-11C:1-3	SW8270E	Benzoic acid	0.5	mg/kg	E	UJ	5BL
303388	SED-11C:1-3	SW8270E	Benzyl alcohol	0.057	mg/kg	U	UJ	14
303388	SED-11C:1-3	SW8270E	Butylbenzyl phthalate	0.023	mg/kg		J	14
303388	SED-11C:1-3	SW8270E	Diethyl phthalate	0.1	mg/kg	U	UJ	14
303388	SED-11C:1-3	SW8270E	Hexachlorobenzene	0.0021	mg/kg	U	UJ	14
23C0618	SED-14C:0-1	SW8270ESIM	Dibutyltin Ion	22.4	ug/Kg		J	9B
23C0618	SED-14C:0-1	SW8270ESIM	Tributyltin Ion	32.7	ug/Kg		J	9B
23C0619	SED-10C:1-3	EPA1613B	1,2,3,4,7,8,9-HpCDF	0.870	ng/Kg	NUJ,J	J	25
23C0619	SED-10C:1-3	EPA1613B	1,2,3,4,7,8-HxCDD	0.259	ng/Kg	NUJ,J	J	25
23C0619	SED-10C:1-3	EPA1613B	1,2,3,6,7,8-HxCDD	1.83	ng/Kg	NUJ	J	25
23C0619	SED-10C:1-3	EPA1613B	1,2,3,6,7,8-HxCDF	0.309	ng/Kg	NUJ,J	J	25
23C0619	SED-10C:1-3	EPA1613B	1,2,3,7,8,9-HxCDD	0.772	ng/Kg	NUJ,J	J	25
23C0619	SED-10C:1-3	EPA1613B	2,3,7,8-TCDF	0.199	ng/Kg	NUJ,J	J	25
23J0690	SED-14C:0-1	EPA1613B	1,2,3,4,7,8-HxCDD	0.624	ng/Kg	NUJ,J	J	25
23J0690	SED-14C:0-1	EPA1613B	1,2,3,4,7,8-HxCDF	0.977	ng/Kg	NUJ,J	J	25
23C0619	SED-11C:0-1	EPA1613B	1,2,3,7,8,9-HxCDF	0.461	ng/Kg	NUJ,J	J	25

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
23C0619	SED-11C:0-1	EPA1613B	2,3,7,8-TCDD	0.265	ng/Kg	NUJ,J	J	25
23J0690	SED-14C:0-1	EPA1613B	1,2,3,7,8,9-HxCDF	0.269	ng/Kg	NUJ,J	J	25
23J0690	SED-14C:0-1	EPA1613B	1,2,3,7,8-PeCDF	0.550	ng/Kg	NUJ,J	J	25
23J0690	SED-14C:0-1	EPA1613B	2,3,4,6,7,8-HxCDF	0.706	ng/Kg	NUJ,J	J	25
23J0690	SED-14C:0-1	EPA1613B	2,3,7,8-TCDD	0.198	ng/Kg	NUJ,J	J	25
23J0690	SED-14C:0-1	EPA1613B	2,3,7,8-TCDF	1.02	ng/Kg	J	J	23H
23C0619	SED-11C:1-3	EPA1613B	1,2,3,4,7,8,9-HpCDF	0.999	ng/Kg	NUJ,J	J	25
23C0619	SED-11C:1-3	EPA1613B	1,2,3,4,7,8-HxCDD	0.305	ng/Kg	NUJ,J	J	25
23C0619	SED-11C:1-3	EPA1613B	1,2,3,4,7,8-HxCDF	0.480	ng/Kg	NUJ,J	J	25
23C0619	SED-11C:1-3	EPA1613B	1,2,3,6,7,8-HxCDD	1.42	ng/Kg	NUJ	J	25
23C0619	SED-11C:1-3	EPA1613B	1,2,3,7,8,9-HxCDD	0.759	ng/Kg	NUJ,J	J	25
23C0619	SED-11C:1-3	EPA1613B	1,2,3,7,8-PeCDD	0.346	ng/Kg	NUJ,J	J	25
23C0619	SED-11C:1-3	EPA1613B	2,3,4,6,7,8-HxCDF	0.467	ng/Kg	NUJ,J	J	25
303388	SED-10C:1-3	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303388	SED-11C:0-1	SW8081	4,4'-DDT	0.0015	mg/kg	E	UJ	5BL
303388	SED-11C:0-1	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303388	SED-11C:0-1	SW8081	Toxaphene	0.21	mg/kg	E	UJ	5BL
303388	SED-11C:1-3	SW8081	4,4'-DDT	0.001	mg/kg	E	UJ	5BL
303388	SED-11C:1-3	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
303388	SED-14C-DUP3	SW8081	4,4'-DDT	0.001	mg/kg	E	UJ	5BL
303388	SED-14C-DUP3	SW8081	Methoxychlor	0.005	mg/kg	E	UJ	5BL
23C0618	SED-14C-DUP	SW8270ESIM	Dibutyltin Ion	10.1	ug/Kg		J	9B
23C0618	SED-14C-DUP	SW8270ESIM	Tributyltin Ion	11.3	ug/Kg		J	9B
23J0690	SED-27C:0-1	EPA1613B	1,2,3,4,7,8-HxCDF	1.34	ng/Kg	NUJ	J	25
23J0690	SED-27C:0-1	EPA1613B	1,2,3,7,8-PeCDD	0.685	ng/Kg	NUJ,J	J	25
23J0690	SED-27C:0-1	EPA1613B	2,3,7,8-TCDF	0.703	ng/Kg	NUJ,J	J	23H,25
23J0690	SED-27C:0-1	SW8270ESIM	Dibutyltin Ion	6.84	ug/Kg		J	9A
23J0690	SED-27C:0-1	SW8270ESIM	Tributyltin Ion	9.84	ug/Kg		J	9A

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SDG	SAMPLE ID	METHOD	ANALYTE	RESULT	UNITS	LAB FLAG	DV QUALIFIER	DV REASON
23J0690	SED-26C:3-5	EPA1613B	1,2,3,4,7,8,9-HpCDF	0.669	ng/Kg	NUJ,J	J	25
23J0690	SED-26C:3-5	EPA1613B	1,2,3,4,7,8-HxCDD	0.195	ng/Kg	NUJ,J	J	25
23J0690	SED-26C:3-5	EPA1613B	1,2,3,4,7,8-HxCDF	0.476	ng/Kg	NUJ,J	J	25
23J0690	SED-26C:3-5	EPA1613B	1,2,3,7,8,9-HxCDD	0.694	ng/Kg	NUJ,J	J	25
23J0690	SED-26C:3-5	EPA1613B	1,2,3,7,8-PeCDD	0.165	ng/Kg	NUJ,J	J	25