High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry
PCDD/PCDFs (EPA Method 1613B)
EPA Stage 4 Review

Site: PHSS-Swan Island Basin	SDG #: 20646
Laboratory: Cape Fear Analytical (CFA)	Project #: DT2002.03.03.04.01
HydroGeoLogic, Inc. Validator: Ken Rapuano	Validation Date: 09.06.23
HGL Peer Reviewer: Jospeh Vilain (2b) Jennifer Chandler	Peer Review Date: 10/10/23 (2b) 08/17/2023

Client Sample ID	Laboratory Sample ID	Matrix
SIB-067-TOB-0-1-10142022	20646001	Riverbank Soil
SIB-067-OHW-0-1-10142022	20646002	Riverbank Soil
SIB-067-MLW-0-1-10142022	20646003	Riverbank Soil
SIB-000-TOB-0-1-10172022	20646004	Riverbank Soil
SIB-000-OHW-0-1-10172022	20646005	Riverbank Soil
SIB-001-TOB-0-1-10172022	20646006	Riverbank Soil
SIB-001-OHW-0-1-10172022	20646007	Riverbank Soil
SIB-002-TOB-0-1-10172022	20646008	Riverbank Soil
SIB-002-OHW-0-1-10172022	20646009	Riverbank Soil
SIB-003-TOB-0-1-10172022	20646010	Riverbank Soil
SIB-003-OHW-0-1-10172022	20646011	Riverbank Soil
SIB-004-TOB-0-1-10172022	20646012	Riverbank Soil
SIB-004-OHW-0-1-10172022	20646013	Riverbank Soil
SIB-005-TOB-0-1-10172022	20646014	Riverbank Soil
SIB-005-OHW-0-1-10172022	20646015	Riverbank Soil
SIB-005-MLW-0-1-10172022	20646016	Riverbank Soil
SIB-006-TOB-0-1-10172022	20646017	Riverbank Soil
SIB-006-OHW-0-1-10172022	20646018	Riverbank Soil
SIB-007-TOB-0-1-10172022	20646019	Riverbank Soil
SIB-007-OHW-0-1-10172022	20646020	Riverbank Soil

CFA performed analyses for polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) by EPA Method 1613B on riverbank soil samples collected October 14 and 17, 2022. Analyses were performed in accordance with the project Quality Assurance Project Plan (HGL, 2022).

The data were validated in accordance with the following documents:

- Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP), Revision 3; Remedial Design Services, Swan Island Basin Project Area, CERCLA Docket No. 10-2021-001, Portland Harbor Superfund Site Portland, Multnomah County, Oregon (HGL, 2022)
- USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (NFG) (EPA, 2020)
- HGL SOP HGL SOP 412.501 – Data Validation, U.S. EPA Stage 2A and Stage 2B (HGL, 2021)

In some cases, the calibration criteria presented in the QAPP did not correspond to the criteria presented in the laboratory analytical SOPs. In these cases, the laboratory criteria were used to evaluate calibration performance.

The qualifiers defined in Table 1 of EPA, 2020 have been applied to any results requiring qualification as described in this data validation report; the historical site data set uses only the J qualifier for estimated results (i.e., does not include the directional J+ and J− qualifiers) and this convention was retained in this

DV report. The qualifiers have also been applied as the final qualifier to the electronic data deliverable (EDD) file provided by the laboratory. Any non-standard qualifiers and informational flags reported by the laboratory in the laboratory qualifier field of this EDD are not included in the final qualifier field. A qualification summary table is provided at the end of this report as Attachment A.

In the text of the data validation report, assigned qualifiers are presented in the format "[qualifier]-[reason code(s)]" for ease of description. When presented in tabular format, the qualifier and the reason codes are presented in the columns named as presented in the EDD. The HGL data validation SOP does not include a reason code for ion abundance ratio discrepancies in labeled standards or for analyte results reported as estimated potential maximum concentrations (EMPCs); the reason codes IAR and EMPC are used, respectively, where applicable.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No completeness issues were noted.

Qualification: None required.

Sample Delivery and Condition – The samples arrived at the laboratory in acceptable condition and temperature. All samples were collected on October 14 and 17, 2022. The samples were shipped on October 18, 2022, and arrived at the laboratory on October 19, 2022. Per the field team leader, the samples were stored refrigerated before shipping. All samples arrived at the laboratory at temperatures of 2.3 to 3.7 °C.

Qualification: None required.

Holding Times – All samples were extracted within the 1-year holding time from collection; all analyses were performed within the 1-year holding time for extracts.

Qualification: None required.

Field Blanks – Equipment blank EB02-10102022 (results reported in SDG 20186) is associated with all samples collected on 10.14.22 and equipment blank EB03-10192022 (results reported in SDG 20699) is associated with all samples . Due to the differences in mass extracted, the concentrations reported as pg/L in EBs correspond to the 0.1 x concentration in pg/g in oil samples. OCDD was detected in rinse blank EB02-10102022, but the detected concentration was similar to the concentration in the associated aqueous method blank. The OCDD detected in the rinse blank is attributable to laboratory contamination in aqueous sample preparation and no qualification of solid matrix samples is required. OCDD was detected at 4.08 pg/L in rinse blank EB03-10192022, leading to a qualification level of 2.04 pg/g. All OCDD results in associated samples were greater than the qualification level and no qualification is required.

Qualification: None required.

Field Duplicates – Sample FD08-10172022 (results reported in SDG 20647) is a field duplicate of sample SIB-005-TOB-0-1-10172022. The results for 1,2,3,4,6,7,8-HpCDD, OCDD, 1,2,3,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF did not meet the precision criteria. The 1,2,3,4,6,7,8-HpCDD and OCDD results for sample SIB-005-TOB-0-1-10172022 should be qualified J-FDPR and the 1,2,3,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF results should be qualified J-FDPA.

***Qualification*: The 1,2,3,4,6,7,8-HpCDD and OCDD results for sample SIB-005-TOB-0-1-10172022 are qualified J-FDPR and the 1,2,3,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF results are qualified J-FDPA.**

Mass Tuning – Mass tuning was performed before the ICal sequence, before each daily analytical sequence, and at the end of each daily analytical sequence. Data was not provided to calculate the resolving power; however, all peaks appeared to be fully resolved and Gaussian in form.

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Qualification: None required.

Column Check – Column check data for each analytical sequence showed acceptable separation for TCDD and TCDF.

Qualification: None required.

Initial Calibration – A six-point ICal was performed on instrument HRP757_3 (DB-225 column) on November 22, 2022, and a six-point ICal was performed on instrument HRP763_1 (DB-5MS column) on November 2, 2022. These ICals are associated with all PCDD/PCDF results reported in this SDG. The ICal included all target analytes required by the method. All target analytes and labeled standards included in the ICal had %RSDs ≤20%. The ICal verification standard met all acceptance criteria for target analytes and labeled standards.

The ICal was checked by back-calculating the concentration for PCDD/PCDFs and labeled standards for each calibration level. No acceptance criteria for this back-check were provided in the analytical method or in the laboratory SOP. All back-calculated concentrations agreed with the nominal standard concentration within ±20% and in the judgment of the validator, these results are acceptable.

All ion abundance ratio (IAR) criteria were met in the ICal standards and all S/N ratios were >10.

Qualification: None required.

Continuing Calibration – Target PCDD/PCDF compounds and labeled analogs met the method %D requirement in each CCV. All IAR criteria were met in the CCV standards and all S/N ratios were >10.

Qualification: None required.

Method Blanks – The method blank associated with preparation batch 52224 was contaminated with the following PCDD/PCDF analytes:

- 0.576 pg/g 1,2,3,4,6,7,8-HpCDD, leading to a qualification level of 2.38 pg/g;
- 1.14 pg/g OCDD, leading to a qualification level of 5.70 pg/g
- 0.206 pg/g 1,2,3,7,8-PeCDF, leading to a qualification level of 1.03 pg/g
- 0.220 pg/g 2,3,4,7,8-PeCDF, leading to a qualification level of 1.10 pg/g
- 0.254 pg/g 1,2,3,4,7,8-HxCDF, leading to a qualification level of 1.27 pg/g
- 0.434 pg/g 1,2,3,4,6,7,8-HpCDF, leading to a qualification level of 2.17 pg/g

All associated results below the indicated qualification levels should be qualified J-MBL.

***Qualification*: The following results are qualified J-MBL:**

- **SIB-067-MLW-0-1-10142022 – 1,2,3,7,8-PeCDF and 1,2,3,4,7,8-HxCDF**
- **SIB-002-OHW-0-1-10172022 – 2,3,4,7,8-PeCDF**
- **SIB-004-TOB-0-1-10172022 – 2,3,4,7,8-PeCDF**
- **SIB-004-OHW-0-1-10172022 – 2,3,4,7,8-PeCDF**
- **SIB-005-OHW-0-1-10172022 – 2,3,4,7,8-PeCDF**
- **SIB-005-MLW-0-1-10172022 – 1,2,3,4,6,7,8-HpCDF**
- **SIB-006-TOB-0-1-10172022 – 2,3,4,7,8-PeCDF**
- **SIB-007-TOB-0-1-10172022 – 2,3,4,7,8-PeCDF**

Labeled Standards – All labeled standard %Rs met the method control limits. All IARs were in control for labeled standards.

Qualification: None required.

Laboratory Control Samples – The LCS/LCSDs associated with all PCDD/PCDF sample analyses had %Rs and RPDs in control.

Qualification: None required.

MS/MSD – An MS/MSD was performed using sample SIB-067-TOB-0-1-10142022. All MS/MSD %Rs and RPDs were in control with the exception of a high %Rs for 1,2,3,4,6,7,8-HpCDD and OCDD in the MS and MSD, high %Rs for 1,2,3,6,7,8-HxCDD and 1,2,3,4,6,7,8-HpCDF in the MSD, and high MS/MSD RPDs for 1,2,3,4,6,7,8-HpCDD, OCDD, and 1,2,3,4,6,7,8-HpCDF. The 1,2,3,4,6,7,8-HpCDD and OCDD %R discrepancies are not considered applicable because the sample concentrations are >4x the spike concentrations. The 1,2,3,4,6,7,8-HpCDD and OCDD result reported for sample SIB-067-TOB-0-1-10142022 should be qualified J-MSP; the 1,2,3,4,6,7,8-HpCDF result for sample SIB-067-TOB-0-1-10142022 should be qualified J-MSH,MSP.

***Qualification*: The 1,2,3,4,6,7,8-HpCDD and OCDD results reported for sample SIB-067-TOB-0-1-10142022 should be qualified J-MSP; the 1,2,3,4,6,7,8-HpCDF result for sample SIB-067-TOB-0-1-10142022 should be qualified J-MSH,MSP.**

Raw Data Review – Samples SIB-067-TOB-0-1-10142022 and SIB-067-OHW-0-1-10142022 were selected for in-depth review. Gas chromatograms, retention time windows, and S/N were examined. No discrepancies were noted.

Qualification: None required.

Compound Quantitation and Identification – The HGL reviewer confirmed that the laboratory uses the mean internal standard procedure described in Section 17.1.2 of Method 1613B to quantify 1,2,3,7,8,9-HxCDD.

Analyte non-detections were reported as the EDL and qualified U. Analytes detected between the EDL and PQL were reported as J-qualified results by the laboratory. These J qualifiers were retained unless superseded by a more severe qualifier.

If a detected analyte has an ion ration outside the characteristic ion ratio window, the result is reported as an estimated maximum potential concentration. All results reported as an EMPC (a “K” flag is present in the laboratory qualifier) are qualified J-EMPC unless superseded by a higher priority qualifier.

2,3,7,8-TCDF is not fully resolved on the DB-5MS column; when detected above the PQL on the DB-5MS column, the result was confirmed on a DB-225 column using the instrument ID listed in the case narrative. In cases where two results are reported for 2,3,7,8-TCDF for a sample, the result from the DB-225 column is selected for use and the result from the DB-5MS is qualified DNR-EXC.

In cases where a target analyte is detected at a concentration above the calibrated range, the laboratory’s practice is to report the result with a laboratory qualifier of E without running a dilution so long as the detector is not saturated. The OCDD results for 10 affected samples are qualified J-ACR.

***Qualification:* The following results are qualified:**

- **All results reported with a laboratory qualifier of K are qualified J with reason code EMPC.**
- **All 2,3,7,8-TCDF results reported from the DB-5MS column that are paired with a 2,3,7,8-TCDF result from the DB-225 column are qualified DNR, reason code EXC; note that the reportable_result field for these results are populated with “Yes” by the laboratory and are changed to “No” for the affected results.**
- **OCDD results reported with a laboratory qualifier of E are qualified J with reason code ACR; note that the reportable_result field for these results are populated with “No” by the laboratory and are changed to “Yes” for the affected results.**

Calculation and Transcription Verification – Samples SIB-067-TOB-0-1-10142022 and SIB-067-OHW-0-1-10142022 were selected for calculation and transcription verification. Recalculation was also performed on 10% of target analytes in the initial calibration. These calculation verifications used the raw data and were carried through to the results reported on summary pages and also constitute a transcription verification. Sample SIB-067-OHW-0-1-10142022 was analyzed at a 10x dilution; the laboratory confirmed that the quantitation reports associated with this sample analysis already include the dilution factor associated with the reported result and the dilution factor does not need to be included in the calculations. Calculations are presented in Attachment B.

Qualification: None required.

Overall Assessment of Data - The data are usable as reported with the qualification applied by the reviewer.

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Attachment A – Qualification Summary Table
PCDD/PCDFs by Method 1613B

SDG: 20646
Laboratory: Cape Fear Analytical
Validator: Ken Rapuano, HGL
Validation Date: 9.6.23

In addition to the qualifiers assigned below, all detected results <PQL retain the J qualifier assigned by the laboratory. All non-standard qualifiers assigned by the laboratory are removed and are not included as the final qualifier.

Sample ID	Analyte	Conc[1]	Lab Qual	**Val Qual**	**Final Qual[2]**	**Reason Codes[3]**
SIB-067-TOB-0-1-10142022 (20646001)	1,2,3,4,6,7,8-HpCDD	832	--	**J**	**J**	**MSP**
	OCDD	6400	E	**J**	**J**	**ACR, MSP**
	1,2,3,4,6,7,8-HpCDF	37.6	--	**J**	**J**	**MSH, MSP**
SIB-067-OHW-0-1-10142022 (20646002)	OCDD	87800	E	**J**	**J**	**ACR**
SIB-067-MLW-0-1-10142022 (20646003)	1,2,3,7,8-PeCDF	0.434	BJ	**U**	**U**	**MBL**
	1,2,3,4,7,8-HxCDF	0.64	BJK	**UJ**	**UJ**	**MBL, EMPC**
SIB-000-TOB-0-1-10172022 (20646004)	2,3,7,8-TCDF (DB-5MS column)	2.27	--	**DNR**	**DNR**	**EXC[4]**
	2,3,7,8-TCDF (DB-225 column)	1.24	K	**J**	**J**	**EMPC**
SIB-000-OHW-0-1-10172022 (20646005)	No qualification required					
SIB-001-TOB-0-1-10172022 (20646006)	2,3,7,8-TCDF (DB-5MS column)	3.37	--	**DNR**	**DNR**	**EXC[4]**
	2,3,7,8-TCDF (DB-225 column)	1.28	K	**J**	**J**	**EMPC**
SIB-001-OHW-0-1-10172022 (20646007)	2,3,7,8-TCDF (DB-5MS column)	6.15	--	**DNR**	**DNR**	**EXC[4]**
	2,3,7,8-TCDF (DB-225 column)	2.58	K	**J**	**J**	**EMPC**
SIB-002-TOB-0-1-10172022 (20646008)	2,3,7,8-TCDF (DB-5MS column)	2.54	--	**DNR**	**DNR**	**EXC[4]**
	2,3,7,8-TCDF (DB-225 column)	1.11	--	**--**	**--**	**--**
SIB-002-OHW-0-1-10172022 (20646009)	1,2,3,7,8-PeCDF	0.601	BJ	**U**	**U**	**MBL**
SIB-003-TOB-0-1-10172022 (20646010)	No qualification required					
SIB-003-OHW-0-1-10172022 (20646011)	2,3,7,8-TCDF (DB-5MS column)	2.02	--	**DNR**	**DNR**	**EXC[4]**
	2,3,7,8-TCDF (DB-225 column)	2.14	--	**--**	**--**	**--**
SIB-004-TOB-0-1-10172022 (20646012)	2,3,7,8-TCDF (DB-5MS column)	1.99	--	**DNR**	**DNR**	**EXC[4]**
	2,3,7,8-TCDF (DB-225 column)	1.43	--	**--**	**--**	**--**
	2,3,4,7,8-PeCDF	0.92	BJK	**UJ**	**UJ**	**MBL, EMPC**
SIB-004-OHW-0-1-10172022 (20646013)	2,3,4,7,8-PeCDF	0.641	BJK	**UJ**	**UJ**	**MBL, EMPC**

Attachment A – Qualification Summary Table
PCDD/PCDFs by Method 1613B

Sample ID	Analyte	Conc[1]	Lab Qual	**Val Qual**	**Final Qual[2]**	**Reason Codes[3]**
SIB-005-TOB-0-1-10172022 (20646014)	1,2,3,4,6,7,8-HpCDD	101	--	**J**	**J**	**FDPR**
	OCDD	1000	--	**J**	**J**	**FDPR**
	2,3,7,8-TCDF (DB-5MS column)	4.13	--	**DNR**	**DNR**	**EXC**
	2,3,7,8-TCDF (DB-225 column)	1.69	--	**--**	**--**	**--**
	1,2,3,7,8-PeCDF	43.9	--	**J**	**J**	**FDPA**
	1,2,3,4,7,8-HxCDF	10.8	--	**J**	**J**	**FDPA**
	1,2,3,4,6,7,8-HpCDF	15.2	--	**J**	**J**	**FDPA**
	OCDF	51.3	--	**J**	**J**	**FDPA**
SIB-005-OHW-0-1-10172022 (20646015)	2,3,4,7,8-PeCDF	1.08	BJ	**U**	**U**	**MBL**
SIB-005-MLW-0-1-10172022 (20646016)	1,2,3,4,6,7,8-HpCDF	1.06	BJ	**U**	**U**	**MBL**
SIB-006-TOB-0-1-10172022 (20646017)	2,3,7,8-TCDF (DB-5MS column)	1.31	--	**DNR**	**DNR**	**EXC[4]**
	2,3,7,8-TCDF (DB-225 column)	1.74	--	**--**	**--**	**--**
	2,3,4,7,8-PeCDF	1.04	BJ	**U**	**U**	**MBL**
SIB-006-OHW-0-1-10172022 (20646018)	No qualification required					
SIB-007-TOB-0-1-10172022 (20646019)	2,3,7,8-TCDF (DB-5MS column)	3.85	--	**DNR**	**DNR**	**EXC[4]**
	2,3,7,8-TCDF (DB-225 column)	3.35	--	**--**	**--**	**--**
	2,3,4,7,8-PeCDF	0.73	BJ	**U**	**U**	**MBL**
SIB-007-OHW-0-1-10172022 (20646020)	No qualification required					
All samples	Results not already addressed above	Varies	Includes K	**J**	**J**	**EMPC**

[1] All concentrations in pg/g
[2] Where multiple qualifiers are applied to a result, the priority for assigning the final qualifier is as follows:
Detected Results: DNR > R > J > no qualifier
Non-detected results: DNR > R > UJ > U
[3] Reason Code Definitions:
ACR = Analyte reported from above the calibrated range
EMPC = Analyte identified as an EMPC; all identification criteria met except IAR
EXC = Analyte excluded (reportable_result field populated with “No”)
MBH = Analyte detected above the PQL in the associated method blank
MSP = MS/MSD precision did not meet criteria
[4] reportable_result field changed from “No” to “Yes”

Calculation of Reported Target Analyte Results
CFA SDG 20646

Sample SIB-067-OHW-0-1-10142022 (20646002) (results summary pp. 113-114)
Analytical Sequence b27mar23d_6 (Run Log p.1080); TCDF Confirmation Sequence NA
System ID b27mar23d_6-13 (Quant Report pp. 342-343); TCDF Confirmation Quant Report NA
RRFs for analytes with labeled standards from ICal performed on 11/2/22 (pp. 790-800); TCDF Confirmati
RRFs for analytes without labeled standards assigned in accordance with Method 1613B and CFA SOP
Csample = (extract conc (pg/uL) x Vextract (uL)) / Dry weight sample (g)

Note: The raw data presented on the quantitation report already incorporates the dilution factor of 10.

Vex =	20	uL	(p. 988)
Wsample =	1.053E+01	g	
fraction solids sample =	0.95939		(p. 983)
Dry weight sample =	1.010E+01	g	
Prep Factor = Vex (uL)/Dry Wt (g)	1.980E+00	uL/g	

Concentration (pg/g) = Prep factor (uL/g) x Extract conc (pg/uL)

Target PCDD/PCDF	Quantitation Reference	IS Area	IS Conc[1]	Quant Method
Instrument HRP791				
2,3,7,8-TCDD	13C-2,3,7,8-TCDD	2.49E+04	100	IDA
1,2,3,7,8-PeCDD	13C-1,2,3,7,8-PeCDD	1.69E+04	100	IDA
1,2,3,4,7,8-HxCDD	13C-1,2,3,4,7,8-HxCDD	1.55E+04	100	IDA
1,2,3,6,7,8-HxCDD	13C-1,2,3,6,7,8-HxCDD	2.20E+04	100	IDA
1,2,3,7,8,9-HxCDD	Mean HxDD ESs	1.88E+04	100	IS
1,2,3,4,6,7,8-HpCDD	13C-1,2,3,4,6,7,8-HpCDD	1.09E+04	100	IDA
1,2,3,4,6,7,8,9-OCDD	13C-OCDD	1.90E+04	200	IDA
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	2.84E+04	100	IDA
1,2,3,7,8-PeCDF	13C-1,2,3,7,8-PeCDF	2.49E+04	100	IDA
2,3,4,7,8-PeCDF	13C-2,3,4,7,8-PeCDF	2.51E+04	100	IDA
1,2,3,4,7,8-HxCDF	13C-1,2,3,4,7,8-HxCDF	1.82E+04	100	IDA
1,2,3,6,7,8-HxCDF	13C-1,2,3,6,7,8-HxCDF	2.36E+04	100	IDA
2,3,4,6,7,8-HxCDF	13C-2,3,4,6,7,8-HxCDF	1.92E+04	100	IDA
1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDF	1.60E+04	100	IDA
1,2,3,4,6,7,8-HpCDF	13C-1,2,3,4,6,7,8-HpCDF	1.30E+04	100	IDA
1,2,3,4,7,8,9-HpCDF	13C-1,2,3,4,7,8,9-HpCDF	1.13E+04	100	IDA
1,2,3,4,6,7,8,9-OCDF	13C-OCDD	1.90E+04	200	IS
Instrument HRP757_3				
2,3,7,8-TCDF	13C-2,3,7,8-TCDF	Not detected in initial run; confirmation an		

Labeled PCDD/PCDF	Quantitation Reference	IS Area	IS Conc	Quant Method
Instrument HRP791				
13C-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	2.85E+04	100	IS
13C-1,2,3,7,8-PeCDD	13C-1,2,3,4-TCDD	2.85E+04	100	IS
13C-1,2,3,4,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	2.41E+04	100	IS
13C-1,2,3,6,7,8-HxCDD	13C-1,2,3,7,8,9-HxCDD	2.41E+04	100	IS
13C-1,2,3,4,6,7,8-HpCDD	13C-1,2,3,7,8,9-HxCDD	2.41E+04	100	IS
13C-OCDD	13C-1,2,3,7,8,9-HxCDD	2.41E+04	100	IS
13C-2,3,7,8-TCDF	13C-1,2,3,4-TCDD	2.85E+04	100	IS
13C-1,2,3,7,8-PeCDF	13C-1,2,3,4-TCDD	2.85E+04	100	IS
13C-2,3,4,7,8-PeCDF	13C-1,2,3,4-TCDD	2.85E+04	100	IS
13C-1,2,3,4,7,8-HxCDF	13C-1,2,3,7,8,9-HxCDD	2.41E+04	100	IS

13C-1,2,3,6,7,8-HxCDF	13C-1,2,3,7,8,9-HxCDD	2.41E+04	100	IS
13C-2,3,4,6,7,8-HxCDF	13C-1,2,3,7,8,9-HxCDD	2.41E+04	100	IS
13C-1,2,3,7,8,9-HxCDF	13C-1,2,3,7,8,9-HxCDD	2.41E+04	100	IS
13C-1,2,3,4,6,7,8-HpCDF	13C-1,2,3,7,8,9-HxCDD	2.41E+04	100	IS
13C-1,2,3,4,7,8,9-HpCDF	13C-1,2,3,7,8,9-HxCDD	2.41E+04	100	IS
37Cl-2,3,7,8-TCDD	13C-1,2,3,4-TCDD	2.85E+04	100	IS
Instrument HRP757_3				
13C-2,3,7,8-TCDF	13C-1,2,3,4-TCDD	Not detected in initial run; confirmation an		

(1) Concentrations from Table 7 of CFA SOP; labeled standard concentrations presented on quant reports

on ICal NA

Target Area	Target RRF	**Conc-calc (pg/uL)**	Conc-rep (pg/uL)	**Result-calc (pg/g)**	Result-rep (pg/g)	
ND	0.836	**ND**	ND	**ND**	3.72 U	
1.80E+03	0.892	**11.940**	12.002	**23.6**	23.8	
3.85E+03	0.942	**26.368**	26.306	**52.2**	52.1	
4.22E+04	0.917	**209.180**	208.620	**414**	413	
9.17E+03	0.951	**51.427**	51.338	**102**	102	
6.13E+05	0.971	**5791.816**	5808.112	**11466**	11500	
3.80E+06	0.901	**44395.117**	44337.082	**87890**	87800	
4.84E+02	0.923	**1.846**	1.846	**3.66**	4.91 U	Result <EDL
2.11E+03	0.982	**8.629**	8.608	**17.1**	17.0	
5.67E+03	1.065	**21.211**	21.216	**42.0**	42.0	
7.09E+03	1.179	**33.042**	33.039	**65.4**	65.4	
4.92E+03	1.151	**18.112**	18.112	**35.9**	35.9	
4.39E+03	1.190	**19.214**	19.168	**38.0**	37.9	
3.45E+03	1.098	**19.638**	19.669	**38.9**	38.9	
4.70E+04	1.297	**278.750**	278.846	**552**	552	
1.82E+03	1.294	**12.447**	12.517	**24.6**	24.8	
1.19E+04	1.091	**114.815**	115.113	**227**	228	

ıalysis not required.

Target Area	Target RRF	**Conc-calc (pg/uL)**	Conc-rep (pg/uL)	**Result-calc (pg/g)**	Result-rep (pg/g)	Spike Conc(1)	Nominal IS Conc
2.49E+04	1.226	**71.263**	71.293	**141**	141	100	198
1.69E+04	0.814	**72.848**	72.741	**144**	144	100	198
1.55E+04	0.848	**75.844**	75.851	**150**	150	100	198
2.20E+04	0.986	**92.582**	92.566	**183**	183	100	198
1.09E+04	0.683	**66.220**	65.854	**131**	130	100	198
1.90E+04	0.672	**117.319**	117.167	**232**	232	200	396
2.84E+04	1.346	**74.034**	74.212	**147**	147	100	198
2.49E+04	1.163	**75.123**	75.353	**149**	149	100	198
2.51E+04	1.142	**77.119**	77.271	**153**	153	100	198
1.82E+04	1.011	**74.697**	74.486	**148**	147	100	198

2.36E+04	1.194	**82.014**	81.790	**162**	162	100	198
1.92E+04	1.077	**73.972**	73.982	**146**	146	100	198
1.60E+04	0.980	**67.745**	67.483	**134**	134	100	198
1.30E+04	0.886	**60.883**	60.778	**121**	120	100	198
1.13E+04	0.703	**66.664**	66.277	**132**	131	100	198
2.81E+03	1.013	**9.737**	9.761	**19.3**	19.3	10	19.8

alysis not required.

s are back-calculated and do not represent the actual spiked concentration.

%R-calc	%R-rep
71.3	71.3
72.8	72.7
75.8	75.9
92.6	92.6
66.2	65.9
58.7	58.6
74.0	74.2
75.1	75.4
77.1	77.3
74.7	74.5

82.0	81.8
74.0	74.0
67.7	67.5
60.9	60.8
66.7	66.3
97.4	97.6