High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry
PCCDs/PCDFs (EPA Method 1613B)
Stage 2A Review
Data Quality Control (QC)

Site: PHSS-Swan Island Basin	SDG #: 20567
Laboratory: CFA	Project #: DT2002.03.03.04.01
HydroGeoLogic, Inc. Validator: John Tracy	Validation Date: 07.20.23
HGL Peer Reviewer: Ken Rapuano	Peer Review Date: 8.3.23

Client Sample ID	Laboratory Sample ID	Matrix
SIB-104-MLW-0-1-10062022	20567001	Riverbank Soil
SIB-104-OHW-0-1-10062022	20567002	Riverbank Soil
SIB-104-TOB-0-1-10062022	20567003	Riverbank Soil
SIB-103-MLW-0-1-10062022	20567004	Riverbank Soil
SIB-103-OHW-0-1-10062022	20567005	Riverbank Soil
SIB-103-TOB-0-1-10062022	20567006	Riverbank Soil
SIB-102-TOB-0-1-10062022	20567007	Riverbank Soil
SIB-102-OHW-0-1-10062022	20567008	Riverbank Soil
SIB-102-MLW-0-1-10062022	20567009	Riverbank Soil
SIB-101-TOB-0-1-10062022	20567010	Riverbank Soil
SIB-101-OHW-0-1-10062022	20567011	Riverbank Soil
SIB-101-MLW-0-1-10062022	20567012	Riverbank Soil
SIB-100-MLW-0-1-10062022	20567013	Riverbank Soil
SIB-100-OHW-0-1-10062022	20567014	Riverbank Soil
SIB-100-TOB-0-1-10062022	20567015	Riverbank Soil
SIB-099-MLW-0-1-10072022	20567016	Riverbank Soil
SIB-099-OHW-0-1-10072022	20567017	Riverbank Soil
SIB-099-TOB-0-1-10072022	20567018	Riverbank Soil
SIB-102-OHW-0-1-10062022 MS	20567019	Riverbank Soil
SIB-102-OHW-0-1-10062022 MSD	20567020	Riverbank Soil

The following Stage 2A review was performed on the requested analyses. No results were rejected, and analytical completeness is 100%.

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 – With the exception of several labeling discrepancies, which were resolved, all samples arrived intact at the laboratory in acceptable condition and temperature and were properly preserved. No other discrepancies were noted.

Qualification: None required.

Holding Times – All samples were prepared and analyzed within their required holding times.

Qualification: None required.

Method Blanks – The method 1613B method blank was contaminated with the following analytes:

- 0.530 pg/g of 1,2,3,4,6,7,8,9-OCDD, leading to a qualification limit of 2.65 pg/g
- 0.154 pg/g of 2,3,7,8-TCDF, leading to a qualification limit of 0.77 pg/g
- 0.158 pg/g of 1,2,3,7,8-PeCDF, leading to a qualification limit of 0.79 pg/g
- 0.124 pg/g of 1,2,3,4,7,8-HxCDF, leading to a qualification limit of 0.62 pg/g
- 0.104 pg/g of 2,3,4,6,7,8-HxCDF, leading to a qualification limit of 0.52 pg/g
- 0.224 pg/g of 1,2,3,4,6,7,8-HpCDF leading to a qualification limit of 1.12 pg/g

All detections at or below qualification limits should be qualified U-MBL.

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

- **2,3,7,8-TCDF results in samples SIB-104-MLW-0-1-10062022, SIB-104-OHW-0-1-10062022, SIB-104-TOB-0-1-10062022, SIB-103-MLW-0-1-10062022, SIB-103-OHW-0-1-10062022, SIB-102-TOB-0-1-10062022, SIB-102-OHW-0-1-10062022, SIB-102-MLW-0-1-10062022, SIB-101-MLW-0-1-10062022, SIB-100-TOB-0-1-1006202 and SIB-099-OHW-0-1-10072022.**
- **1,2,3,7,8-PeCDF results in samples SIB-104-MLW-0-1-10062022, SIB-103-MLW-0-1-10062022, SIB-102-OHW-0-1-10062022, SIB-102-MLW-0-1-10062022, and SIB-100-MLW-0-1-10062022**
- **1,2,3,4,7,8-HxCDF results in samples SIB-102-MLW-0-1-10062022, SIB-101-OHW-0-1-10062022, SIB-100-MLW-0-1-10062022, and SIB-099-MLW-0-1-10072022**
- **2,3,4,6,7,8-HxCDF results in samples SIB-104-MLW-0-1-10062022, SIB-103-OHW-0-1-10062022, SIB-102-OHW-0-1-10062022, SIB-101-OHW-0-1-10062022, SIB-100-MLW-0-1-10062022, SIB-100-TOB-0-1-10062022, and SIB-099-MLW-0-1-10072022.**

Rinsate Blanks – Rinse blank EB01-10052022 (results reported in SDG 20574) is associated with all samples in this SDG and was free from contamination.

Qualification: None required.

Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) – All LCS/LCSD %Rs and RSDs were within QAPP control limits.

Qualification: None required.

Surrogates – All surrogates (labeled standards) were within control limits.

Qualification: None required.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) – An MS/MSD was performed using sample SIB-102-OHW-0-1-10062022. All %Rs and RSDs were within QAPP control limits with one exception. 1,2,3,4,6,7,8,9-OCDD had extremely low recoveries in the MS and MSD. This result should be qualified J-MSLX in the parent sample.

Qualification: **The 1,2,3,4,6,7,8,9-OCDD result in sample SIB-102-OHW-0-1-10062022 is qualified J-MSLX.**

Field Duplicate – Parent sample SIB-102-TOB-0-1-10062022 was analyzed with this SDG, while its field duplicate, sample FD02-10062022 was analyzed with SDG 20569. All precision criteria were met.

Qualification: None required.

Compound Quantitation – 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 1 affected sample 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.**
- **1 OCDD result reported with a laboratory qualifier of E is 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.**

Qualification Summary Table (results in pg/g):

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-104-MLW-0-1-10062022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.613	BJ	0.613	U	MBL
SIB-104-MLW-0-1-10062022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.461	BJ	0.461	U	MBL
SIB-104-MLW-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.487	BJ	0.487	U	MBL
SIB-104-MLW-0-1-10062022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.206	JK	0.206	J	EMPC
SIB-104-OHW-0-1-10062022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.67	JK	0.67	J	EMPC
SIB-104-OHW-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.616	BJ	0.616	U	MBL
SIB-104-TOB-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.669	BJ	0.669	U	MBL
SIB-104-TOB-0-1-10062022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.136	JK	0.136	J	EMPC
SIB-103-MLW-0-1-10062022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.905	BJK	0.905	J	EMPC
SIB-103-MLW-0-1-10062022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.496	JK	0.496	J	EMPC
SIB-103-MLW-0-1-10062022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.678	BJ	0.678	U	MBL
SIB-103-MLW-0-1-10062022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.344	JK	0.344	J	EMPC
SIB-103-MLW-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.256	BJ	0.256	U	MBL
SIB-103-OHW-0-1-10062022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.257	JK	0.257	J	EMPC
SIB-103-OHW-0-1-10062022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	0.223	JK	0.223	J	EMPC
SIB-103-OHW-0-1-10062022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.581	JK	0.581	J	EMPC
SIB-103-OHW-0-1-10062022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	0.585	JK	0.585	J	EMPC
SIB-103-OHW-0-1-10062022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.225	BJK	0.225	UJ	MBL,EMPC
SIB-103-OHW-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.231	BJK	0.231	UJ	MBL,EMPC
SIB-103-OHW-0-1-10062022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.461	JK	0.461	J	EMPC
SIB-103-TOB-0-1-10062022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	1.68	JK	1.68	J	EMPC
SIB-103-TOB-0-1-10062022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.723	JK	0.723	J	EMPC
SIB-103-TOB-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.42	B	1.42	DNR	EXC
SIB-102-TOB-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.656	BJK	0.656	UJ	MBL,EMPC
SIB-102-OHW-0-1-10062022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.696	BJK	0.696	J	EMPC
SIB-102-OHW-0-1-10062022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.774	JK	0.774	J	EMPC
SIB-102-OHW-0-1-10062022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.766	BJ	0.766	U	MBL
SIB-102-OHW-0-1-10062022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.343	JK	0.343	J	EMPC
SIB-102-OHW-0-1-10062022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.303	BJ	0.303	U	MBL

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-102-OHW-0-1-10062022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.309	JK	0.309	J	EMPC
SIB-102-OHW-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.182	BJK	0.182	UJ	MBL,EMPC
SIB-102-OHW-0-1-10062022	OCTACHLORODIBENZO-P-DIOXIN	270	--	270	J	MSLX
SIB-102-MLW-0-1-10062022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.327	BJ	0.327	U	MBL
SIB-102-MLW-0-1-10062022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.356	BJK	0.356	UJ	MBL,EMPC
SIB-102-MLW-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.42	BJ	0.42	U	MBL
SIB-101-TOB-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.54	--	2.54	DNR	EXC
SIB-101-OHW-0-1-10062022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	2.25	JK	2.25	J	EMPC
SIB-101-OHW-0-1-10062022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.392	BJ	0.392	U	MBL
SIB-101-OHW-0-1-10062022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	0.256	JK	0.256	J	EMPC
SIB-101-OHW-0-1-10062022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.268	BJ	0.268	U	MBL
SIB-101-MLW-0-1-10062022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.901	JK	0.901	J	EMPC
SIB-101-MLW-0-1-10062022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	1.04	BJK	1.04	J	EMPC
SIB-101-MLW-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.67	BJ	0.67	U	MBL
SIB-100-MLW-0-1-10062022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.601	BJ	0.601	U	MBL
SIB-100-MLW-0-1-10062022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.781	JK	0.781	J	EMPC
SIB-100-MLW-0-1-10062022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.431	BJ	0.431	U	MBL
SIB-100-MLW-0-1-10062022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.463	BJK	0.463	UJ	MBL,EMPC
SIB-100-OHW-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.21	--	2.21	DNR	EXC
SIB-100-TOB-0-1-10062022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.481	BJ	0.481	U	MBL
SIB-100-TOB-0-1-10062022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.489	JK	0.489	J	EMPC
SIB-100-TOB-0-1-10062022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.765	BJK	0.765	UJ	MBL,EMPC
SIB-099-MLW-0-1-10072022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.541	BJK	0.541	UJ	MBL,EMPC
SIB-099-MLW-0-1-10072022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.739	JK	0.739	J	EMPC
SIB-099-MLW-0-1-10072022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.372	BJ	0.372	U	MBL
SIB-099-OHW-0-1-10072022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	1.58	JK	1.58	J	EMPC
SIB-099-OHW-0-1-10072022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	1.39	JK	1.39	J	EMPC
SIB-099-OHW-0-1-10072022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.77	BJ	0.77	U	MBL
SIB-099-OHW-0-1-10072022	OCTACHLORODIBENZO-P-DIOXIN	5140	E	5140	J	ACR
SIB-099-TOB-0-1-10072022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	0.269	JK	0.269	J	EMPC
SIB-099-TOB-0-1-10072022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	1.08	BJK	1.08	J	EMPC

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-099-TOB-0-1-10072022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.716	JK	0.716	J	EMPC
SIB-099-TOB-0-1-10072022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	1.17	JK	1.17	J	EMPC