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 #: 21634
Laboratory: CFA	Project #: DT2002.03.03.04.01
HydroGeoLogic, Inc. Validator: John Tracy	Validation Date: 09.12.23
HGL Peer Reviewer: Ken Rapuano	Peer Review Date: 9.15.23

Client Sample ID	Laboratory Sample ID	Matrix
SIB-081-OHW-1-2-10122022	21634001	Riverbank Soil
SIB-081-TOB-1-2-10112022	21634002	Riverbank Soil
SIB-084-MLW-1-2-10112022	21634003	Riverbank Soil
SIB-084-OHW-1-2-10112022	21634004	Riverbank Soil
SIB-084-TOB-1-2-10112022	21634005	Riverbank Soil
SIB-083-TOB-1-2-10112022	21634006	Riverbank Soil
SIB-086-MLW-1-2-10112022	21634007	Riverbank Soil
SIB-085-OHW-1-2-10112022	21634008	Riverbank Soil
SIB-085-TOB-1-2-10112022	21634009	Riverbank Soil
SIB-085-TOB-2-3-10112022	21634010	Riverbank Soil
SIB-087-MLW-1-2-10102022	21634011	Riverbank Soil
SIB-087-OHW-1-2-10102022	21634012	Riverbank Soil
SIB-087-OHW-2-3-10102022	21634013	Riverbank Soil
SIB-087-TOB-1-2-10102022	21634014	Riverbank Soil
SIB-087-TOB-2-3-10102022	21634015	Riverbank Soil
SIB-089-MLW-1-2-10102022	21634016	Riverbank Soil
SIB-089-OHW-1-2-10102022	21634017	Riverbank Soil
SIB-088-MLW-1-2-10102022	21634018	Riverbank Soil
SIB-088-OHW-1-2-10102022	21634019	Riverbank Soil
SIB-090-MLW-1-2-10102022	21634020	Riverbank Soil

The following Stage 2A review was performed on the requested analyses. Two results were rejected, and analytical completeness is 99.4%.

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 – 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 bank was contaminated with target analytes including the following:

- 1,2,3,4,6,7,8,9-OCDD at 0.786 pg/g, leading to a qualification limit of 3.93 pg/g

Detections in associated samples less than or equal to the qualification limits should be qualified U-MBL.

Qualification: None required.

Rinsate Blanks – Equipment blank EB02-10102022 (results reported in SDG 20574) is associated with all samples in this SDG. 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 soil 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.

Qualification: None required.

Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) – LCS/LCSD %Rs and RPDs were within QAPP control limits with one exception. 1,2,3,4,6,7,8-HpCDF recovered below control limits in the LCSD. All 1,2,3,4,6,7,8-HpCDF results should be qualified J/UJ.

***Qualification:* All 1,2,3,4,6,7,8-HpCDF results are qualified J/UJ, reason code LCSL.**

Surrogates – All surrogates (labeled standards) were within control limits with the exception of sample SIB-088-MLW-1-2-10102022. Labeled standards 13C-1,2,3,4,7,8-HxCDD and 13C-1,2,3,4,6,7,8-HpCDF and cleanup standard 37Cl-2,3,7,8-TCDD recovered below control limits. Labeled standard 13C-1,2,3,4,7,8-HxCDD is used to quantitate both 1,2,3,4,7,8-HxCDD and 1,2,3,7,8,9-HxCDD; labeled standard 13C-1,2,3,4,6,7,8-HpCDF is used to quantitated 1,2,3,4,6,7,8-HpCDF; and cleanup standard 37Cl-2,3,7,8-TCDD is associated with all sample results. All %Rs were greater than 10%. Associated analytes quantitated with labeled standard discrepancies should be qualified J/UJ-LSL. All analytes reported for sample SIB-088-MLW-1-2-10102022 should be qualified J/UJ-CSL.

***Qualification:* In sample SIB-088-MLW-1-2-10102022, the 1,2,3,4,6,7,8-HpCDF result is qualified J-LSL; the 1,2,3,4,7,8-HxCDD and 1,2,3,7,8,9-HxCDD results are qualified UJ-LSL. All results reported for sample SIB-088-MLW-1-2-10102022 are qualified J/UJ-CSL.**

Matrix Spike/Matrix Spike Duplicate (MS/MSD) – An MS/MSD was performed using sample SIB-081-OHW-1-2-10122022. All %Rs were within QAPP control limits in the MS/MSD with the exception of 1,2,3,4,6,7,8,9-OCDD, which recovered high in the MS. This result in the parent sample should be qualified J. All RPDs were within QAPP control limits.

***Qualification:* The 1,2,3,4,6,7,8,9-OCDD result in sample SIB-081-OHW-1-2-10122022 is qualified J, reason code MSH.**

Field Duplicate – No field duplicate was submitted with this SDG.

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.

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.**

Qualification Summary Table (results in pg/g):

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-081-OHW-1-2-10122022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	14.5	--	14.5	J	LCSL
SIB-081-OHW-1-2-10122022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.98	JK	0.98	J	EMPC
SIB-081-OHW-1-2-10122022	OCTACHLORODIBENZO-P-DIOXIN	567	--	567	J	MSH
SIB-081-TOB-1-2-10112022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	142	--	142	J	LCSL
SIB-081-TOB-1-2-10112022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.68	--	1.68	DNR	EXC
SIB-081-TOB-1-2-10112022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.468	JK	0.468	J	EMPC
SIB-084-MLW-1-2-10112022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	0.262	JK	0.262	J	LCSL,EMPC
SIB-084-OHW-1-2-10112022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	5.49	--	5.49	J	LCSL
SIB-084-OHW-1-2-10112022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.662	JK	0.662	J	EMPC
SIB-084-OHW-1-2-10112022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.472	JK	0.472	J	EMPC
SIB-084-OHW-1-2-10112022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.572	JK	0.572	J	EMPC
SIB-084-TOB-1-2-10112022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	2.19	J	2.19	J	LCSL
SIB-084-TOB-1-2-10112022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.314	JK	0.314	J	EMPC
SIB-084-TOB-1-2-10112022	OCTACHLORODIBENZOFURAN	3.97	JK	3.97	J	EMPC
SIB-083-TOB-1-2-10112022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	38	--	38	J	LCSL
SIB-083-TOB-1-2-10112022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	1.88	JK	1.88	J	EMPC
SIB-083-TOB-1-2-10112022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.5	JK	1.5	J	EMPC
SIB-086-MLW-1-2-10112022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	59.5	--	59.5	J	LCSL
SIB-086-MLW-1-2-10112022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	4.19	JK	4.19	J	EMPC
SIB-086-MLW-1-2-10112022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	3.2	K	3.2	J	EMPC
SIB-086-MLW-1-2-10112022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.16	--	1.16	DNR	EXC
SIB-086-MLW-1-2-10112022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.444	JK	0.444	J	EMPC
SIB-085-OHW-1-2-10112022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	43.5	--	43.5	J	LCSL
SIB-085-OHW-1-2-10112022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	2.94	JK	2.94	J	EMPC
SIB-085-OHW-1-2-10112022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	7.24	K	7.24	J	EMPC
SIB-085-OHW-1-2-10112022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	9.2	K	9.2	J	EMPC
SIB-085-OHW-1-2-10112022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.79	JK	1.79	J	EMPC
SIB-085-OHW-1-2-10112022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.41	--	1.41	DNR	EXC
SIB-085-OHW-1-2-10112022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.98	K	1.98	J	EMPC

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-085-TOB-1-2-10112022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	42	--	42	J	LCSL
SIB-085-TOB-1-2-10112022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	4.6	JK	4.6	J	EMPC
SIB-085-TOB-1-2-10112022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	3.28	JK	3.28	J	EMPC
SIB-085-TOB-1-2-10112022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	4.93	JK	4.93	J	EMPC
SIB-085-TOB-1-2-10112022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	2.64	K	2.64	J	EMPC
SIB-085-TOB-1-2-10112022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.91	--	2.91	DNR	EXC
SIB-085-TOB-1-2-10112022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.18	K	2.18	J	EMPC
SIB-085-TOB-1-2-10112022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.472	JK	0.472	J	EMPC
SIB-085-TOB-2-3-10112022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	12.2	--	12.2	J	LCSL
SIB-085-TOB-2-3-10112022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	1.38	JK	1.38	J	EMPC
SIB-085-TOB-2-3-10112022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.738	JK	0.738	J	EMPC
SIB-085-TOB-2-3-10112022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	1.47	JK	1.47	J	EMPC
SIB-085-TOB-2-3-10112022	2,3,7,8-TETRACHLORODIBENZOFURAN	1	--	1	DNR	EXC
SIB-087-MLW-1-2-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	0.635	JK	0.635	J	LCSL,EMPC
SIB-087-MLW-1-2-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	4.06	JK	4.06	J	EMPC
SIB-087-MLW-1-2-10102022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.138	JK	0.138	J	EMPC
SIB-087-MLW-1-2-10102022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	0.384	JK	0.384	J	EMPC
SIB-087-MLW-1-2-10102022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.27	JK	0.27	J	EMPC
SIB-087-OHW-1-2-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	5.76	--	5.76	J	LCSL
SIB-087-OHW-1-2-10102022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	0.456	JK	0.456	J	EMPC
SIB-087-OHW-1-2-10102022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	0.422	JK	0.422	J	EMPC
SIB-087-OHW-1-2-10102022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.765	JK	0.765	J	EMPC
SIB-087-OHW-1-2-10102022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.256	JK	0.256	J	EMPC
SIB-087-OHW-2-3-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	1.57	J	1.57	J	LCSL
SIB-087-OHW-2-3-10102022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	0.326	JK	0.326	J	EMPC
SIB-087-TOB-1-2-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	51.2	--	51.2	J	LCSL
SIB-087-TOB-1-2-10102022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	2.22	JK	2.22	J	EMPC
SIB-087-TOB-1-2-10102022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	6.07	K	6.07	J	EMPC
SIB-087-TOB-1-2-10102022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	3.09	K	3.09	J	EMPC
SIB-087-TOB-1-2-10102022	2,3,7,8-TETRACHLORODIBENZOFURAN	8.4	--	8.4	DNR	EXC

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-087-TOB-1-2-10102022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.833	K	0.833	J	EMPC
SIB-087-TOB-2-3-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	57.6	--	57.6	J	LCSL
SIB-087-TOB-2-3-10102022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	5.41	K	5.41	J	EMPC
SIB-087-TOB-2-3-10102022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	8.68	K	8.68	J	EMPC
SIB-087-TOB-2-3-10102022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	2.99	K	2.99	J	EMPC
SIB-087-TOB-2-3-10102022	2,3,7,8-TETRACHLORODIBENZOFURAN	10.1	--	10.1	DNR	EXC
SIB-087-TOB-2-3-10102022	2,3,7,8-TETRACHLORODIBENZOFURAN	8.05	K	8.05	J	EMPC
SIB-087-TOB-2-3-10102022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.79	K	0.79	J	EMPC
SIB-089-MLW-1-2-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	6.3	--	6.3	J	LCSL
SIB-089-MLW-1-2-10102022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.408	JK	0.408	J	EMPC
SIB-089-MLW-1-2-10102022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	0.61	JK	0.61	J	EMPC
SIB-089-MLW-1-2-10102022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.576	JK	0.576	J	EMPC
SIB-089-MLW-1-2-10102022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.318	JK	0.318	J	EMPC
SIB-089-MLW-1-2-10102022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.636	JK	0.636	J	EMPC
SIB-089-OHW-1-2-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	128	--	128	J	LCSL
SIB-089-OHW-1-2-10102022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	17.5	K	17.5	J	EMPC
SIB-089-OHW-1-2-10102022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	4.4	K	4.4	J	EMPC
SIB-089-OHW-1-2-10102022	2,3,7,8-TETRACHLORODIBENZOFURAN	3.53	--	3.53	DNR	EXC
SIB-089-OHW-1-2-10102022	2,3,7,8-TETRACHLORODIBENZOFURAN	4.39	K	4.39	J	EMPC
SIB-088-MLW-1-2-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	0.955	JK	0.955	J	LCSL,LSL,EMPC,CSL
SIB-088-MLW-1-2-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	2.48	JK	2.48	J	EMPC, CSL
SIB-088-MLW-1-2-10102022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	0.557	J	0.557	J	CSL
SIB-088-MLW-1-2-10102022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.629	JK	0.629	J	EMPC, CSL
SIB-088-MLW-1-2-10102022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.403	U	0.403	UJ	LSL, CSL
SIB-088-MLW-1-2-10102022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	0.3	U	0.3	UJ	CSL
SIB-088-MLW-1-2-10102022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.407	U	0.407	UJ	CSL
SIB-088-MLW-1-2-10102022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	0.391	U	0.391	UJ	CSL
SIB-088-MLW-1-2-10102022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	0.395	U	0.395	UJ	LSL, CSL
SIB-088-MLW-1-2-10102022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.449	U	0.449	UJ	CSL
SIB-088-MLW-1-2-10102022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.547	U	0.547	UJ	CSL

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-088-MLW-1-2-10102022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.298	U	0.298	UJ	CSL
SIB-088-MLW-1-2-10102022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.373	U	0.373	UJ	CSL
SIB-088-MLW-1-2-10102022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.793	U	0.793	UJ	CSL
SIB-088-MLW-1-2-10102022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.785	U	0.785	UJ	LSL, CSL
SIB-088-MLW-1-2-10102022	OCTACHLORODIBENZOFURAN	3.3	JK	3.3	J	EMPC, CSL
SIB-088-MLW-1-2-10102022	OCTACHLORODIBENZO-P-DIOXIN	18.9	--	18.9	J	CSL
SIB-088-OHW-1-2-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	37.9	--	37.9	J	LCSL
SIB-088-OHW-1-2-10102022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	4.14	JK	4.14	J	EMPC
SIB-088-OHW-1-2-10102022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	0.872	JK	0.872	J	EMPC
SIB-088-OHW-1-2-10102022	2,3,7,8-TETRACHLORODIBENZOFURAN	4.03	--	4.03	DNR	EXC
SIB-088-OHW-1-2-10102022	2,3,7,8-TETRACHLORODIBENZOFURAN	3.5	K	3.5	J	EMPC
SIB-090-MLW-1-2-10102022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	7.69	--	7.69	J	LCSL
SIB-090-MLW-1-2-10102022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.504	JK	0.504	J	EMPC
SIB-090-MLW-1-2-10102022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	0.358	JK	0.358	J	EMPC
SIB-090-MLW-1-2-10102022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	0.27	JK	0.27	J	EMPC