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 #: 20542
Laboratory: CFA	Project #: DT2002.03.03.04.01
HydroGeoLogic, Inc. Validator: John Tracy	Validation Date: 07.19.23
HGL Peer Reviewer: Ken Rapuano	Peer Review Date: 8.3.23

Client Sample ID	Laboratory Sample ID	Matrix
SIB-120-MLW-0-1-10032022	20542001	Riverbank Soil
SIB-120-OHW-0-1-10032022	20542002	Riverbank Soil
SIB-120-TOB-0-1-10032022	20542003	Riverbank Soil
SIB-119-OHW-0-1-10032022	20542004	Riverbank Soil
SIB-118-OHW-0-1-10032022	20542005	Riverbank Soil
SIB-117-MLW-0-1-10032022	20542006	Riverbank Soil
SIB-117-OHW-0-1-10032022	20542007	Riverbank Soil
SIB-119-TOB-0-1-10042022	20542008	Riverbank Soil
SIB-118-TOB-0-1-10042022	20542009	Riverbank Soil
SIB-117-TOB-0-1-10042022	20542010	Riverbank Soil
SIB-116-TOB-0-1-10042022	20542011	Riverbank Soil
SIB-115-OHW-0-1-10042022	20542012	Riverbank Soil
SIB-115-TOB-0-1-10042022	20542013	Riverbank Soil
SIB-114-OHW-0-1-10042022	20542014	Riverbank Soil
SIB-114-TOB-1-2-10042022	20542015	Riverbank Soil
SIB-113-TOB-0-1-10042022	20542016	Riverbank Soil
SIB-112-OHW-0-1-10042022	20542017	Riverbank Soil
SIB-112-MLW-0-1-10042022	20542018	Riverbank Soil
FD01-10042022	20542019	Riverbank Soil
SIB-112-TOB-0-1-10052022	20542020	Riverbank Soil
SIB-112-TOB-0-1-10052022 MS	20542021	Riverbank Soil
SIB-112-TOB-0-1-10052022 MSD	20542022	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 0.254 pg/g of 2,3,7,8-TCDF, 0.154 pg/g of 1,2,3,4,7,8-HxCDF, and 0.258 pg/g of 1,2,3,4,6,7,8-HpCDF, leading to qualification limits of 1.27 pg/g (6.35 pg/g for 5x dilutions), 0.77 pg/g (3.85 pg/g for 5x dilutions), and 1.29 pg/g (6.45 pg/g for 5x dilutions), respectively. All detections below qualification limits should be qualified U-MBL.

***Qualification:* The 2,3,7,8-TCDF results in samples SIB-120-MLW-0-1-10032022, SIB-120-OHW-0-1-10032022, SIB-119-OHW-0-1-10032022, SIB-117-MLW-0-1-10032022, SIB-117-OHW-0-1-10032022, SIB-119-TOB-0-1-10042022, SIB-118-TOB-0-1-10042022, SIB-115-TOB-0-1-10042022, SIB-114-TOB-1-2-10042022, SIB-113-TOB-0-1-10042022, SIB-112-OHW-0-1-10042022, SIB-112-MLW-0-1-10042022, FD01-10042022, and SIB-112-TOB-0-1-10052022 are qualified U-MBL. The 1,2,3,4,7,8-HxCDF result in sample SIB-112-MLW-0-1-10042022 is qualified U-MBL.**

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-112-TOB-0-1-10052022. All %Rs and RSDs were within QAPP control limits.

Qualification: None required.

Field Duplicate – Sample FD01-10042022 was submitted as a field duplicate of sample SIB-112-MLW-0-1-10042022. All precision criteria were met with the exception of 1,2,3,4,6,7,8-HpCDF, which failed absolute difference criteria. These results should be qualified J-FDPA.

***Qualification:* The 1,2,3,4,6,7,8-HpCDF results in samples FD01-10042022 and SIB-112-MLW-0-1-10042022 are qualified J-FDPA.**

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 5 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.**
- **5 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.**
- **Three Heptachloro-p-dioxin results reported with a laboratory qualifier of E have the reportable_result field populated with "No" by the laboratory and are changed to "Yes". Although total congener results are not validated, these results are reportable.**

Qualification Summary Table (results in pg/g):

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-120-MLW-0-1-10032022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.85	BJK	0.85	J	EMPC
SIB-120-MLW-0-1-10032022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	0.619	JK	0.619	J	EMPC
SIB-120-MLW-0-1-10032022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	0.339	JK	0.339	J	EMPC
SIB-120-MLW-0-1-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.577	BJK	0.577	UJ	MBL,EMPC
SIB-120-OHW-0-1-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	3.83	JK	3.83	UJ	MBL,EMPC
SIB-120-OHW-0-1-10032022	OCTACHLORODIBENZO-P-DIOXIN	31800	E	31800	J	ACR
SIB-120-TOB-0-1-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.81	B	1.81	DNR	EXC
SIB-120-TOB-0-1-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.52	BK	1.52	J	EMPC
SIB-119-OHW-0-1-10032022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	7.27	JK	7.27	J	EMPC
SIB-119-OHW-0-1-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	6.47		6.47	DNR	EXC
SIB-119-OHW-0-1-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	5.5		5.5	U	MBL
SIB-118-OHW-0-1-10032022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	2.42	JK	2.42	J	EMPC
SIB-118-OHW-0-1-10032022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.97	JK	1.97	J	EMPC
SIB-118-OHW-0-1-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.87	BK	1.87	DNR	EXC
SIB-118-OHW-0-1-10032022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.466	JK	0.466	J	EMPC
SIB-118-OHW-0-1-10032022	OCTACHLORODIBENZO-P-DIOXIN	9900	E	9900	J	ACR
SIB-117-MLW-0-1-10032022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	3.37	JK	3.37	J	EMPC
SIB-117-MLW-0-1-10032022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	4.21	JK	4.21	J	EMPC
SIB-117-MLW-0-1-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	4.7	J	4.7	U	MBL
SIB-117-OHW-0-1-10032022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	9.02	JK	9.02	J	EMPC
SIB-117-OHW-0-1-10032022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	11.9	JK	11.9	J	EMPC
SIB-117-OHW-0-1-10032022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	6.82	JK	6.82	J	EMPC
SIB-117-OHW-0-1-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	13.9		13.9	DNR	EXC
SIB-117-OHW-0-1-10032022	2,3,7,8-TETRACHLORODIBENZOFURAN	5.4		5.4	U	MBL
SIB-119-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.923	BJ	0.923	U	MBL
SIB-118-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.58	J	2.58	U	MBL
SIB-118-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	1.04	JK	1.04	J	EMPC
SIB-117-TOB-0-1-10042022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	3.45	JK	3.45	J	EMPC
SIB-117-TOB-0-1-10042022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	0.761	JK	0.761	J	EMPC

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-117-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.17	B	2.17	DNR	EXC
SIB-117-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.85	BK	1.85	J	EMPC
SIB-116-TOB-0-1-10042022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	1.67	JK	1.67	J	EMPC
SIB-116-TOB-0-1-10042022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	1.43	JK	1.43	J	EMPC
SIB-116-TOB-0-1-10042022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	1.55	JK	1.55	J	EMPC
SIB-116-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.42	B	1.42	DNR	EXC
SIB-116-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.519	K	0.519	J	EMPC
SIB-116-TOB-0-1-10042022	OCTACHLORODIBENZO-P-DIOXIN	4400	E	4400	J	ACR
SIB-115-OHW-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.65		2.65	DNR	EXC
SIB-115-OHW-0-1-10042022	OCTACHLORODIBENZO-P-DIOXIN	12600	E	12600	J	ACR
SIB-115-TOB-0-1-10042022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	2.36	JK	2.36	J	EMPC
SIB-115-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.74	B	1.74	DNR	EXC
SIB-115-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.22	B	1.22	U	MBL
SIB-115-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.339	JK	0.339	J	EMPC
SIB-114-OHW-0-1-10042022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	5.39	K	5.39	J	EMPC
SIB-114-OHW-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	3.92		3.92	DNR	EXC
SIB-114-OHW-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	3.25	K	3.25	J	EMPC
SIB-114-OHW-0-1-10042022	OCTACHLORODIBENZO-P-DIOXIN	9950	E	9950	J	ACR
SIB-114-TOB-1-2-10042022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.16	JK	1.16	J	EMPC
SIB-114-TOB-1-2-10042022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	0.985	JK	0.985	J	EMPC
SIB-114-TOB-1-2-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.41	BK	1.41	DNR	EXC
SIB-114-TOB-1-2-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.884	BJK	0.884	UJ	MBL,EMPC
SIB-113-TOB-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.888	BJ	0.888	U	MBL
SIB-112-OHW-0-1-10042022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	1.27	JK	1.27	J	EMPC
SIB-112-OHW-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.08	BK	1.08	UJ	MBL,EMPC
SIB-112-OHW-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.13	B	1.13	DNR	EXC
SIB-112-MLW-0-1-10042022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	13		13	J	FDPA
SIB-112-MLW-0-1-10042022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	0.732	BJ	0.732	U	MBL
SIB-112-MLW-0-1-10042022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	1.16	JK	1.16	J	EMPC
SIB-112-MLW-0-1-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.241	BJ	0.241	U	MBL
FD01-10042022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	45.4		45.4	J	FDPA

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
FD01-10042022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	1.07	JK	1.07	J	EMPC
FD01-10042022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.454	BJ	0.454	U	MBL
SIB-112-TOB-0-1-10052022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	0.892	JK	0.892	J	EMPC
SIB-112-TOB-0-1-10052022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.878	JK	0.878	J	EMPC
SIB-112-TOB-0-1-10052022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.5	B	1.5	DNR	EXC
SIB-112-TOB-0-1-10052022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.12	B	1.12	U	MBL