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 #: 20647
Laboratory: CFA	Project #: DT2002.03.03.04.01
HydroGeoLogic, Inc. Validator: John Tracy	Validation Date: 08.10.23
HGL Peer Reviewer: Ken Rapuano	Peer Review Date: 8.28.23

Client Sample ID	Laboratory Sample ID	Matrix
SIB-008-TOB-0-1-10172022	20647001	Sediment
SIB-008-OHW-0-1-10172022	20647002	Sediment
SIB-008-MLW-0-1-10172022	20647003	Sediment
SIB-009-TOB-0-1-10172022	20647004	Sediment
SIB-009-OHW-0-1-10172022	20647005	Sediment
SIB-010-TOB-0-1-10172022	20647006	Sediment
SIB-010-OHW-0-1-10172022	20647007	Sediment
SIB-011-TOB-0-1-10172022	20647008	Sediment
SIB-011-OHW-0-1-10172022	20647009	Sediment
SIB-012-MLW-0-1-10172022	20647010	Sediment
SIB-012-MLW-0-1-10172022 MS	20647011	Sediment
SIB-012-MLW-0-1-10172022 MSD	20647012	Sediment
SIB-013-MLW-0-1-10172022	20647013	Sediment
SIB-014-MLW-0-1-10172022	20647014	Sediment
FD08-10172022	20647015	Sediment
SIB-068-OHW-0-1-10142022	20647016	Sediment
SIB-068-MLW-0-1-10142022	20647017	Sediment
SIB-004-MLW-0-1-10172022	20647018	Sediment

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 bank was free from contamination.

Qualification: None required.

Rinsate Blanks – Rinse blank EB02-10/10/2022 (results reported in SDG 20574) is associated with all samples sampled on 10/14/22 with results reported in this SDG. The rinsate blank was contaminated with 1,2,3,4,6,7,8,9-OCDD at 8.04 pg/L; however, this concentration is below the OCDD concentration found in the method blank associated with the EB and the EB contamination is related to laboratory aqueous sample preparation and not related to sample cross-contamination. No qualification required.

Rinse blank EB03-10/19/2022 (results reported in SDG 20699) is associated with all samples sampled on 10/17/22 with results reported in this SDG. The rinsate blank was contaminated with 1,2,3,4,6,7,8,9-OCDD at 4.08 pg/L leading to a qualification limit of 2.04 pg/g. Detections of 1,2,3,4,6,7,8,9-OCDD are greater than the qualification limit in all associated samples.

Qualification: None required.

Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) – LCS/LCSD %Rs and RPDs 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-012-MLW-0-1-10172022. The MSD had high %R for 1,2,3,4,6,7,8-HpCDD and 1,2,3,4,6,7,8,9-OCDD. For 1,2,3,4,6,7,8,9-OCDD, the sample concentration was >4x the spike concentration and the %R results are not applicable. The MS/MSD pair showed high RPDs for 1,2,3,4,6,7,8-HpCDD and 1,2,3,4,6,7,8,9-OCDD. For sample SIB-012-MLW-0-1-10172022, the 1,2,3,4,6,7,8-HpCDD result should be qualified J-MSH,MSP and the 1,2,3,4,6,7,8,9-OCDD result should be qualified J-MSP.

***Qualification:* For sample SIB-012-MLW-0-1-10172022, the 1,2,3,4,6,7,8-HpCDD result is qualified J-MSH,MSP and the 1,2,3,4,6,7,8,9-OCDD result is qualified J-MSP.**

Field Duplicate – Sample FD08-10172022, a field duplicate, was analyzed with this SDG, while its parent sample, SIB-005-TOB-0-1-10172022 was analyzed with SDG 20646. All results in this duplicate pair met precision criteria with the exception of 1,2,3,4,6,7,8-HpCDD and 1,2,3,4,6,7,8,9-OCDD, which failed RPD criteria and 1,2,3,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, and 1,2,3,4,6,7,8,9-OCDF, which failed absolute difference criteria. The 1,2,3,4,6,7,8-HpCDD and 1,2,3,4,6,7,8,9-OCDD results in samples FD08-10172022 and SIB-005-TOB-0-1-10172022 should be qualified J-FDPR, while the 1,2,3,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, and 1,2,3,4,6,7,8,9-OCDF results should be qualified J/UJ-FDPA.

***Qualification*: For samples FD08-10172022 and SIB-005-TOB-0-1-10172022, the 1,2,3,4,6,7,8-HpCDD and 1,2,3,4,6,7,8,9-OCDD results 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 1,2,3,4,6,7,8,9-OCDF results are qualified J/UJ-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 3 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.**
- **Three 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. Results qualified E for total congeners or for QC samples also had the reportable_result field changed to "Yes"; although these results are not validated, the affected results are reportable.**

Qualification Summary Table (results in pg/g):

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-008-TOB-0-1-10172022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	2.6	JK	2.6	J	EMPC
SIB-008-TOB-0-1-10172022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.3	JK	1.3	J	EMPC
SIB-008-TOB-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	4.74		4.74	DNR	EXC
SIB-008-TOB-0-1-10172022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.296	JK	0.296	J	EMPC
SIB-008-OHW-0-1-10172022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	1.49	JK	1.49	J	EMPC
SIB-008-OHW-0-1-10172022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	2.51	JK	2.51	J	EMPC
SIB-008-OHW-0-1-10172022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	0.881	JK	0.881	J	EMPC
SIB-009-TOB-0-1-10172022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	1.69	JK	1.69	J	EMPC
SIB-009-TOB-0-1-10172022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	2.95	JK	2.95	J	EMPC
SIB-009-TOB-0-1-10172022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.28	JK	1.28	J	EMPC
SIB-009-TOB-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	9.06		9.06	DNR	EXC
SIB-009-TOB-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.91	K	1.91	J	EMPC
SIB-009-OHW-0-1-10172022	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	31.7	K	31.7	J	EMPC
SIB-010-TOB-0-1-10172022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	2.48	JK	2.48	J	EMPC
SIB-010-TOB-0-1-10172022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	0.748	JK	0.748	J	EMPC
SIB-010-TOB-0-1-10172022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	1.61	JK	1.61	J	EMPC
SIB-010-TOB-0-1-10172022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	1.19	JK	1.19	J	EMPC
SIB-010-OHW-0-1-10172022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	2.43	JK	2.43	J	EMPC
SIB-010-OHW-0-1-10172022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	1.74	JK	1.74	J	EMPC
SIB-010-OHW-0-1-10172022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	1.68	JK	1.68	J	EMPC
SIB-010-OHW-0-1-10172022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	3.7	JK	3.7	J	EMPC
SIB-010-OHW-0-1-10172022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	2.5	JK	2.5	J	EMPC
SIB-010-OHW-0-1-10172022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.3	JK	1.3	J	EMPC
SIB-010-OHW-0-1-10172022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	2.23	JK	2.23	J	EMPC
SIB-010-OHW-0-1-10172022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	2.78	JK	2.78	J	EMPC
SIB-010-OHW-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	3.79	K	3.79	DNR	EXC
SIB-010-OHW-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.23	K	1.23	J	EMPC
SIB-011-TOB-0-1-10172022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	7.98	K	7.98	J	EMPC
SIB-011-TOB-0-1-10172022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	3.81	K	3.81	J	EMPC

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-011-TOB-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	15.5		15.5	DNR	EXC
SIB-011-OHW-0-1-10172022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	18.5	JK	18.5	J	EMPC
SIB-011-OHW-0-1-10172022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	17.4	JK	17.4	J	EMPC
SIB-011-OHW-0-1-10172022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	3.23	JK	3.23	J	EMPC
SIB-011-OHW-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	6.31	K	6.31	J	EMPC
SIB-011-OHW-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	11.6		11.6	DNR	EXC
SIB-011-OHW-0-1-10172022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.791	JK	0.791	J	EMPC
SIB-011-OHW-0-1-10172022	OCTACHLORODIBENZO-P-DIOXIN	27800	E	27800	J	ACR
SIB-012-MLW-0-1-10172022	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	292		292	J	MSH,MSP
SIB-012-MLW-0-1-10172022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	4.64	JK	4.64	J	EMPC
SIB-012-MLW-0-1-10172022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	3.78	JK	3.78	J	EMPC
SIB-012-MLW-0-1-10172022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	2.34	JK	2.34	J	EMPC
SIB-012-MLW-0-1-10172022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.87	JK	1.87	J	EMPC
SIB-012-MLW-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.5	K	2.5	J	EMPC
SIB-012-MLW-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.63		2.63	DNR	EXC
SIB-012-MLW-0-1-10172022	OCTACHLORODIBENZO-P-DIOXIN	2990		2990	J	MSP
SIB-013-MLW-0-1-10172022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	23.1	K	23.1	J	EMPC
SIB-013-MLW-0-1-10172022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	7.48	K	7.48	J	EMPC
SIB-013-MLW-0-1-10172022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	7.3	K	7.3	J	EMPC
SIB-013-MLW-0-1-10172022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	7.6	K	7.6	J	EMPC
SIB-013-MLW-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	5.91		5.91	DNR	EXC
SIB-013-MLW-0-1-10172022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	0.737	K	0.737	J	EMPC
SIB-013-MLW-0-1-10172022	OCTACHLORODIBENZO-P-DIOXIN	11400	E	11400	J	ACR
SIB-014-MLW-0-1-10172022	1,2,3,7,8,9-HEXACHLORODIBENZOFURAN	3.6	JK	3.6	J	EMPC
SIB-014-MLW-0-1-10172022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	3.42	K	3.42	J	EMPC
SIB-014-MLW-0-1-10172022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	4.32	JK	4.32	J	EMPC
SIB-014-MLW-0-1-10172022	2,3,7,8-TETRACHLORODIBENZOFURAN	2.9		2.9	DNR	EXC
SIB-014-MLW-0-1-10172022	OCTACHLORODIBENZO-P-DIOXIN	8350	E	8350	J	ACR
FD08-10172022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	4.44	J	4.44	J	FDPA
FD08-10172022	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	37		37	J	FDPR

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
FD08-10172022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN		U		UJ	FDPA
FD08-10172022	1,2,3,7,8-PENTACHLORODIBENZOFURAN		U		UJ	FDPA
FD08-10172022	OCTACHLORODIBENZOFURAN	14.3		14.3	J	FDPA
FD08-10172022	OCTACHLORODIBENZO-P-DIOXIN	426		426	J	FDPR
SIB-068-OHW-0-1-10142022	1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN	1.31	JK	1.31	J	EMPC
SIB-068-OHW-0-1-10142022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	3.41	JK	3.41	J	EMPC
SIB-068-OHW-0-1-10142022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	1.28	JK	1.28	J	EMPC
SIB-068-OHW-0-1-10142022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	2.11	JK	2.11	J	EMPC
SIB-068-OHW-0-1-10142022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	1.31	JK	1.31	J	EMPC
SIB-068-OHW-0-1-10142022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.03	K	1.03	DNR	EXC
SIB-068-MLW-0-1-10142022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	3.14	JK	3.14	J	EMPC