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 #: 20692
Laboratory: CFA	Project #: DT2002.03.03.04.01
HydroGeoLogic, Inc. Validator: John Tracy	Validation Date: 07.28.23
HGL Peer Reviewer: Ken Rapuano	Peer Review Date: 8.4.23

Client Sample ID	Laboratory Sample ID	Matrix
SIB-039-MLW-0-1-10252022	20692001	Riverbank Soil
SIB-039-OHW-0-1-10252022	20692002	Riverbank Soil
FD14-10252022	20692003	Riverbank Soil
SIB-038-MLW-0-1-10252022	20692004	Riverbank Soil
SIB-038-OHW-0-1-10252022	20692005	Riverbank Soil
SIB-037-MLW-0-1-10252022	20692006	Riverbank Soil
SIB-037-OHW-0-1-10252022	20692007	Riverbank Soil
SIB-036-MLW-0-1-10252022	20692008	Riverbank Soil
SIB-036-OHW-0-1-10252022	20692009	Riverbank Soil
SIB-036-OHW-0-1-10252022 MS	20692010	Riverbank Soil
SIB-036-OHW-0-1-10252022 MSD	20692011	Riverbank Soil
SIB-035-OHW-0-1-10252022	20692012	Riverbank Soil
SIB-034-MLW-0-1-10252022	20692013	Riverbank Soil
SIB-034-OHW-0-1-10252022	20692014	Riverbank Soil
SIB-033-OHW-0-1-10252022	20692015	Riverbank Soil
SIB-032-OHW-0-1-10252022	20692016	Riverbank Soil
SIB-031-OHW-0-1-10252022	20692017	Riverbank Soil
SIB-030-MLW-0-1-10252022	20692018	Riverbank Soil
SIB-030-OHW-0-1-10252022	20692019	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 3.84 pg/g of 1,2,3,4,6,7,8,9-OCDD and 0.598 pg/g of 1,2,3,4,6,7,8-HpCDF leading to qualification limits of 19.2 pg/g and 2.99 pg/g, respectively. All associated detections are above qualification limits, and no qualification is needed.

Qualification: None required.

Rinsate Blanks – Rinse blank EB04-10262022 (results reported in SDG 20699) is associated with all samples in this SDG and was free from contamination with the exception of 1,2,3,4,6,7,8,9-OCDD, which was detected at 3.95 pg/L leading to a qualification limit of 1.975 pg/g. All detections are above the qualification limit and no qualification is required.

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-036-OHW-0-1-10252022. All %Rs were within QAPP control limits, with the exception of 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,6,7,8-HpCDF, and 1,2,3,4,6,7,8,9-OCDF, which recovered above control limits in the MS and/or MSD. 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. For 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, and 1,2,3,4,6,7,8,9-OCDF , these results should be qualified J-MSH in the parent sample. All RPDs were within control limits with the exception of 1,2,3,4,6,7,8,9-OCDD and this result should be qualified J-MSP in the parent sample.

***Qualification:* In sample SIB-036-OHW-0-1-10252022, the 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, and 1,2,3,4,6,7,8,9-OCDF results are qualified J-MSH and the 1,2,3,4,6,7,8,9-OCDD result is qualified J-MSP.**

Field Duplicate –Sample FD14-10252022 was submitted as a field duplicate of sample SIB-039-OHW-0-1-10252022. All precision criteria were met the following exceptions: 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,6,7,8-HpCDF, and 1,2,3,4,6,7,8,9-OCDF failed RPD criteria and should be qualified J-FDPR, while 1,2,3,4,7,8-HxCDF failed absolute difference criteria and should be qualified J-FDPA.

***Qualification:* In samples FD14-10252022 and SIB-039-OHW-0-1-10252022, the 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,6,7,8-HpCDF, and 1,2,3,4,6,7,8,9-OCDF results are qualified J-FDPR and the 1,2,3,4,7,8-HxCDF result is 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 6 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.**
- **6 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 Total HpCDFs results and one Heptachloro-p-dioxin result 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-039-MLW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.75	JK	1.75	J	EMPC
SIB-039-MLW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.07	K	1.07	J	EMPC
SIB-039-MLW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.7	--	1.7	DNR	EXC
SIB-039-OHW-0-1-10252022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	117	--	117	J	FDPR
SIB-039-OHW-0-1-10252022	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	189	--	189	J	FDPR
SIB-039-OHW-0-1-10252022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	43	--	43	J	FDPA
SIB-039-OHW-0-1-10252022	OCTACHLORODIBENZOFURAN	226	--	226	J	FDPR
SIB-039-OHW-0-1-10252022	OCTACHLORODIBENZO-P-DIOXIN	1970	--	1970	J	FDPR
FD14-10252022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	49.1	--	49.1	J	FDPR
FD14-10252022	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	83.7	--	83.7	J	FDPR
FD14-10252022	1,2,3,4,7,8-HEXACHLORODIBENZOFURAN	18.1	--	18.1	J	FDPA
FD14-10252022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	0.412	JK	0.412	J	EMPC
FD14-10252022	2,3,4,7,8-PENTACHLORODIBENZOFURAN	3.33	JK	3.33	J	EMPC
FD14-10252022	OCTACHLORODIBENZOFURAN	114	--	114	J	FDPR
FD14-10252022	OCTACHLORODIBENZO-P-DIOXIN	867	--	867	J	FDPR
SIB-038-MLW-0-1-10252022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	6.18	K	6.18	J	EMPC
SIB-038-MLW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	3.02	K	3.02	J	EMPC
SIB-038-MLW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	2	--	2	DNR	EXC
SIB-038-MLW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	0.787	JK	0.787	J	EMPC
SIB-038-OHW-0-1-10252022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	1.74	JK	1.74	J	EMPC
SIB-038-OHW-0-1-10252022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	1.09	JK	1.09	J	EMPC
SIB-037-MLW-0-1-10252022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	2.25	JK	2.25	J	EMPC
SIB-037-MLW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	1.94	JK	1.94	J	EMPC
SIB-037-MLW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.65	--	1.65	DNR	EXC

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-037-MLW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	1.74	K	1.74	J	EMPC
SIB-037-MLW-0-1-10252022	OCTACHLORODIBENZO-P-DIOXIN	9980	E	9980	J	ACR
SIB-037-OHW-0-1-10252022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	0.578	JK	0.578	J	EMPC
SIB-037-OHW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	1.51	JK	1.51	J	EMPC
SIB-037-OHW-0-1-10252022	2,3,4,6,7,8-HEXACHLORODIBENZOFURAN	4.1	JK	4.1	J	EMPC
SIB-036-MLW-0-1-10252022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	14.7	JK	14.7	J	EMPC
SIB-036-MLW-0-1-10252022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	53.9	K	53.9	J	EMPC
SIB-036-MLW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	39.4	JK	39.4	J	EMPC
SIB-036-MLW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	11.3	JK	11.3	J	EMPC
SIB-036-MLW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	16.3	--	16.3	DNR	EXC
SIB-036-MLW-0-1-10252022	OCTACHLORODIBENZO-P-DIOXIN	118000	E	118000	J	ACR
SIB-036-OHW-0-1-10252022	1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN	119	--	119	J	MSH
SIB-036-OHW-0-1-10252022	1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN	144	--	144	J	MSH
SIB-036-OHW-0-1-10252022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	0.886	JK	0.886	J	EMPC
SIB-036-OHW-0-1-10252022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	1.26	JK	1.26	J	EMPC
SIB-036-OHW-0-1-10252022	OCTACHLORODIBENZOFURAN	184	--	184	J	MSH
SIB-036-OHW-0-1-10252022	OCTACHLORODIBENZO-P-DIOXIN	1620	--	1620	J	MSP
SIB-035-OHW-0-1-10252022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	59.1	K	59.1	J	EMPC
SIB-035-OHW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	33.2	JK	33.2	J	EMPC
SIB-035-OHW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	9.34	JK	9.34	J	EMPC
SIB-035-OHW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	12.8	--	12.8	DNR	EXC
SIB-035-OHW-0-1-10252022	OCTACHLORODIBENZO-P-DIOXIN	77200	E	77200	J	ACR
SIB-034-MLW-0-1-10252022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	37.2	JK	37.2	J	EMPC
SIB-034-MLW-0-1-10252022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	74.6	K	74.6	J	EMPC
SIB-034-MLW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	24.7	JK	24.7	J	EMPC
SIB-034-MLW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	17.8	JK	17.8	J	EMPC

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-034-MLW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	17.2	--	17.2	DNR	EXC
SIB-034-MLW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	6.73	K	6.73	J	EMPC
SIB-034-MLW-0-1-10252022	OCTACHLORODIBENZO-P-DIOXIN	59300	E	59300	J	ACR
SIB-034-OHW-0-1-10252022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	226	K	226	J	EMPC
SIB-034-OHW-0-1-10252022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	70.4	K	70.4	J	EMPC
SIB-034-OHW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZOFURAN	33.2	JK	33.2	J	EMPC
SIB-034-OHW-0-1-10252022	1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN	15	JK	15	J	EMPC
SIB-034-OHW-0-1-10252022	2,3,7,8-TETRACHLORODIBENZOFURAN	10.2	K	10.2	DNR	EXC
SIB-034-OHW-0-1-10252022	OCTACHLORODIBENZO-P-DIOXIN	113000	E	113000	J	ACR
SIB-033-OHW-0-1-10252022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	525	K	525	J	EMPC
SIB-032-OHW-0-1-10252022	1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN	283	K	283	J	EMPC
SIB-030-OHW-0-1-10252022	1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN	18.7	JK	18.7	J	EMPC
SIB-030-OHW-0-1-10252022	1,2,3,6,7,8-HEXACHLORODIBENZOFURAN	126	K	126	J	EMPC
SIB-030-OHW-0-1-10252022	1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN	31.5	JK	31.5	J	EMPC
SIB-030-OHW-0-1-10252022	OCTACHLORODIBENZO-P-DIOXIN	64200	E	64200	J	ACR