Stage 2 - 4 Review
Data Quality Control (QC)

Site: Portland Harbor Superfund Site	SDG #: Case 22J0223
Laboratory: ARI	Date: 8/20/2023
HydroGeoLogic, Inc. Reviewer: Deanna Cullen Level IV reviewer: Jennifer Chandler HGL Peer Reviewer: Ken Rapuano (10.13.23)	Project: DT2002

Client Sample ID	Laboratory Sample ID	Analyses	Matrix
SIB-086-MLW-0-1-10112022	22J0223-01	PCB Aroclors and Total Metals/Mercury	Solid
SIB-086-MLW-1-2-10112022	22J0223-02	PCB Aroclors and Total Metals/Mercury	Solid
SIB-086-OHW-0-1-10112022	22J0223-03	PCB Aroclors and Total Metals/Mercury	Solid
SIB-086-TOB-0-1-10112022	22J0223-04	PCB Aroclors and Total Metals/Mercury	Solid
SIB-085-MLW-0-1-10112022	22J0223-05	PCB Aroclors and Total Metals/Mercury	Solid
SIB-085-MLW-1-2-10112022	22J0223-06 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-085-OHW-0-1-10112022	22J0223-07	PCB Aroclors and Total Metals/Mercury	Solid
SIB-085-OHW-1-2-10112022	22J0223-08 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-085-TOB-0-1-10112022	22J0223-09	PCB Aroclors and Total Metals/Mercury	Solid
SIB-085-TOB-1-2-10112022	22J0223-10 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-085-TOB-2-3-10112022	22J0223-11 *	PCB Aroclors and Total Metals/Mercury	Solid
FD05-10112022	22J0223-12	PCB Aroclors and Total Metals/Mercury	Solid
SIB-084-MLW-0-1-10112022	22J0223-13	PCB Aroclors and Total Metals/Mercury	Solid
SIB-084-MLW-1-2-10112022	22J0223-14 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-084-OHW-0-1-10112022	22J0223-15	PCB Aroclors and Total Metals/Mercury	Solid
SIB-084-OHW-1-2-10112022	22J0223-16 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-084-TOB-0-1-10112022	22J0223-17	PCB Aroclors and Total Metals/Mercury	Solid
SIB-084-TOB-1-2-10112022	22J0223-18 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-083-MLW-0-1-10112022	22J0223-19	PCB Aroclors and Total Metals/Mercury	Solid
SIB-083-OHW-0-1-10112022	22J0223-20	PCB Aroclors and Total Metals/Mercury	Solid
SIB-083-TOB-0-1-10112022	22J0223-21	PCB Aroclors and Total Metals/Mercury	Solid
SIB-083-TOB-1-2-10112022	22J0223-22 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-082-MLW-0-1-10112022	22J0223-23	PCB Aroclors and Total Metals/Mercury	Solid
SIB-082-OHW-0-1-10112022	22J0223-24	PCB Aroclors and Total Metals/Mercury	Solid
SIB-082-TOB-0-1-10112022	22J0223-25	PCB Aroclors and Total Metals/Mercury	Solid
SIB-081-MLW-0-1-10122022	22J0223-26	PCB Aroclors and Total Metals/Mercury	Solid
SIB-081-MLW-1-2-10122022	22J0223-27 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-081-OHW-0-1-10112022	22J0223-28	PCB Aroclors and Total Metals/Mercury	Solid
SIB-081-OHW-1-2-10122022	22J0223-29 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-081-TOB-0-1-10112022	22J0223-30	PCB Aroclors and Total Metals/Mercury	Solid
SIB-081-TOB-1-2-10122022	22J0223-31 *	PCB Aroclors and Total Metals/Mercury	Solid
FD06-10122022	22J0223-32	PCB Aroclors and Total Metals/Mercury	Solid
SIB-080-MLW-0-1-10122022	22J0223-33	PCB Aroclors and Total Metals/Mercury	Solid

Client Sample ID	Laboratory Sample ID	Analyses	Matrix
SIB-080-MLW-1-2-10122022	22J0223-34 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-080-OHW-0-1-10122022	22J0223-35	PCB Aroclors and Total Metals/Mercury	Solid
SIB-080-TOB-0-1-10122022	22J0223-36	PCB Aroclors and Total Metals/Mercury	Solid
SIB-079-MLW-0-1-10122022	22J0223-37	PCB Aroclors and Total Metals/Mercury	Solid
SIB-079-MLW-1-2-10122022	22J0223-38 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-079-OHW-0-1-10122022	22J0223-39	PCB Aroclors and Total Metals/Mercury	Solid
SIB-079-OHW-1-2-10122022	22J0223-40 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-079-TOB-0-1-10122022	22J0223-41	PCB Aroclors and Total Metals/Mercury	Solid
SIB-079-TOB-1-2-10122022	22J0223-42 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-078-MLW-0-1-10122022	22J0223-43	PCB Aroclors and Total Metals/Mercury	Solid
SIB-078-OHW-0-1-10122022	22J0223-44	PCB Aroclors and Total Metals/Mercury	Solid
SIB-078-OHW-1-2-10122022	22J0223-45 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-078-TOB-0-1-10122022	22J0223-46 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-077-MLW-0-1-10122022	22J0223-47	PCB Aroclors and Total Metals/Mercury	Solid
SIB-077-MLW-1-2-10122022	22J0223-48 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-077-OHW-0-1-10122022	22J0223-49	PCB Aroclors and Total Metals/Mercury	Solid
SIB-077-OHW-1-2-10122022	22J0223-50 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-077-TOB-0-1-10122022	22J0223-51	PCB Aroclors and Total Metals/Mercury	Solid
SIB-076-MLW-0-1-10122022	22J0223-52	PCB Aroclors and Total Metals/Mercury	Solid
SIB-076-MLW-1-2-10122022	22J0223-53 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-076-OHW-0-1-10122022	22J0223-54	PCB Aroclors and Total Metals/Mercury	Solid
SIB-076-TOB-0-1-10122022	22J0223-55	PCB Aroclors and Total Metals/Mercury	Solid
SIB-076-TOB-1-2-10122022	22J0223-56 *	PCB Aroclors and Total Metals/Mercury	Solid
SIB-082-MLW-1-2-10112022	22J0223-57 *	PCB Aroclors and Total Metals/Mercury	Solid

* Samples were placed on hold and no analysis was performed.

The following sequential Stage 2A and 4 reviews were performed on the requested analyses. No results were rejected, and analytical completeness is 100%.

Analytical Resources, LLC (ARI) performed analyses of PCB and Metals/Mercury soils collected between October 11, 2022, and October 12, 2022 for polychlorinated biphenyl (PCB) congeners by EPA Method 8082A and Metals and Mercury by EPA Methods 6020B and 7471B. Analyses were performed in accordance with the project Quality Assurance Project Plan (HGL, 2022).

The data were validated in accordance with the following documents:

- Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP), Revision 3; Remedial Design Services, Swan Island Basin Project Area, CERCLA Docket No. 10-2021-001, Portland Harbor Superfund Site Portland, Multnomah County, Oregon (HGL, 2022)
- USEPA National Functional Guidelines for Organic Superfund Methods Data Review (NFG) (EPA, 2020a)
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (NFG) (EPA, 2020b)
- HGL SOP HGL SOP 412.501 – Data Validation, U.S. EPA Stage 2A and Stage 2B (HGL, 2021)

In some cases, the calibration criteria presented in the QAPP did not correspond to the criteria presented

in the laboratory analytical SOPs. In these cases, the laboratory criteria were used to evaluate calibration performance.

The qualifiers defined in General Table 1 of EPA, 2020a and b have been applied to any results requiring qualification as described in this data validation report; the historical site data set uses only the J qualifier for estimated results (i.e., does not include the directional J+ and J− qualifiers) and this convention was retained in this DV report. The qualifiers have also been applied as the final qualifier to the electronic data deliverable (EDD) file provided by the laboratory. Any non-standard qualifiers and informational flags reported by the laboratory in the laboratory qualifier field of this EDD are not included in the final qualifier field. A qualification summary table is provided at the end of this report as Attachment A.

In the text of the data validation report, assigned qualifiers are presented in the format "[qualifier]-[reason code(s)]" for ease of description. When presented in tabular format, the qualifier and the reason codes are presented in the columns named as presented in the EDD.

Narrative and Completeness Review – The case narrative and data package were checked for completeness. No completeness issues were noted. The narrative noted sporadic continuing calibration or IS failures on one of the two analytical columns and that data are reported using a column with acceptable performance. The issues noted in the narrative are addressed in the appropriate validation report sections below.

Qualification: None required.

Sample Delivery and Condition – All samples arrived intact at the laboratory in acceptable condition and temperature and were properly preserved.

Qualification: None required.

Holding Times – The narrative noted that mercury samples were frozen until prepped in accordance with the QAPP archiving protocols. The samples for PCB Aroclors were also stored frozen. Freezing extends the mercury holding time to 180 days and all mercury analyses were performed within this extended holding time.

Qualification: None required.

Method Blanks – All Aroclor method blanks were free from contamination. The 6020B method blank associated with batch BLA0297 contained copper at 0.22 mg/kg, leading to a qualification limit of 1.1 mg/kg. All associated copper results were above this qualification limit and no qualification is required.

Qualification: None required.

Rinsate Blanks – All samples in this SDG are associated with rinse blank EB02-10102022 (results reported in SDG 22J0175). The equipment blank was free from contamination.

Qualification: None required.

Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) – All LCS/LCSD %Rs and RPDs were within QAPP control limits. The laboratory prepared a standard reference material in each batch. All SRM results met control limits.

Qualification: None required.

Surrogates – All surrogates were within QAPP control limits, with the following exceptions:

- SIB-080-OHW-0-1-10122022, SIB-076-OHW-0-1-10122022, and SIB-082-OHW-0-1-10112022 – DCB high on both columns

- SIB-080-TOB-0-1-10122022 – DCB high on column 2; %R >20% higher than upper limit
- SIB-086-TOB-0-1-10112022, SIB-085-OHW-0-1-10112022, SIB-085-TOB-0-1-10112022, and SIB-082-TOB-0-1-10112022 – DCB high on column 2; %R ≤20% higher than upper limit

All detected results for samples SIB-080-OHW-0-1-10122022, SIB-076-OHW-0-1-10122022, and SIB-082-OHW-0-1-10112022 should be qualified J-SSH. The detected results for sample SIB-080-TOB-0-1-10122022 are reported from column 2 and should also be qualified J-SSH. When a single surrogate is high but ≤20% above the upper limit, results are not qualified, in accordance with the HGL consistency memorandum.

Qualification: Detected Aroclor results for samples SIB-080-OHW-0-1-10122022, SIB-076-OHW-0-1-10122022, SIB-082-OHW-0-1-10112022, and SIB-080-TOB-0-1-10122022 are qualified J-SSH.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) – An MS/MSD was performed on SIB-085-TOB-0-1-10112022. The MS %R had a slightly high %R for Aroclor 1260. As the MSD %R was in control, in the judgment of the HGL validator, the MS %R results are inconclusive, and no qualification was applied.

An MS/MSD was performed on SIB-077-MLW-0-1-10122022. Mercury had a low %R in the MS and an extremely low %R in the MSD; the mercury RPD was above the control limit. All mercury results for samples prepared in this batch are detections and should be qualified J-MSLX, MSP. The mercury post-digestion spike associated with this MS/MSD also had a low %R; the PDS is an additional line of evidence, but no additional reason code is required.

Qualification: All mercury results from batch BLA0364 are qualified J-MSLX, MSP.

Field Duplicate – Sample FD05-10112022 was submitted as a field duplicate of sample SIB-085-MLW-0-1-10112022 and sample FD06-10122022 was submitted as a field duplicate of sample SIB-081-OHW-0-1-10122022. All duplicate pair results met the precision criteria.

Qualification: None required.

Laboratory Duplicate – Laboratory duplicate analyses were performed for metals using samples SIB-085-TOB-0-1-10112022 and SIB-077-MLW-0-1-10122022. The laboratory duplicate performed in association with mercury batch BLA0364 did not meet the RPD limit. All mercury results for samples prepared in this batch are detections and should be qualified J-LDPR.

Qualification: All mercury results from batch BLA0364 are qualified J-LDPR.

Compound Quantitation – Analyte results were reported with the associated DL, LOD, and LOQ in the DoD format instead of with the associated MDL and RL. Non-detected results were reported on the hardcopy as <#, where # corresponds to the LOD. The HGL reviewer confirmed that the value associated with non-detected results in the EDD is the MDL, in accordance with the project reporting requirements. Analytes detected between the MDL and LOQ were reported as J-qualified results by the laboratory. These J qualifiers were retained unless superseded by a more severe qualifier.

Qualification: None required.

Combination of both Metals/Mercury and Polychlorinated Biphenyl Congeners: Level IV

Note: The MDL associated with each Aroclor is the same on both columns. Although non-detected Aroclor results are nominally reported from one of the two columns as designated on the data reporting forms, the impact of QC elements such as calibration, calibration verification, and internal standards are considered not to affect non-detected results if one of the two columns associated with reported ND results is in control.

Only detected results reported from a column showing a discrepancy are qualified; results reported from a column in control are not qualified even if the other column shows a discrepancy.

Mass Tuning – Mass tuning was performed before each method 6020B ICal sequence. All analytical sequences were associated with a passing tune check.

Qualification: None required.

Initial Calibration (ICAL) –

PCB: ICALs were analyzed for method 8082A PCB analysis and were within method requirements. All results were reported, and no qualifiers were required. All second source verification standard results were in control.

Metals: Initial calibrations were performed and were within method 6020B and method 7471B requirements.

Qualification: None required.

Calibration Range Checks – Low-level calibration checks were performed after each metals ICal. All %Rs met the 50-150% acceptance criteria. High concentration calibration verifications were also performed after each metals ICal. The lead-208 %R in the 300 µg/L high level standard in sequence SLA0354 did not meet the %D≤10% limit. A 200 µg/L standard was also performed in this sequence and met the control limit. The only lead result reported from this analytical sequence had a raw result <200 µg/L and no qualification is required.

Qualification: None required.

Initial and Continuing Calibration Verification (ICV and CCV) – All ICV and CCV %Ds were in control except for sporadic discrepancies for Aroclor 1260 in CCVs. Calibration discrepancies for Aroclor 1260 are also considered to affect results for Aroclors 1248, 1254, 1262, and 1268.

Aroclor 1260 had a high %D in the ZB5 column in CCV2 and CCV4 analyzed in sequence SKK0234; the detected Aroclor results in the two bracketed samples were reported from the ZB35 column and do not require qualification. As the CCV criteria were met for the ZB35 column, qualification of the non-detected Aroclor 1248, 1254, 1262 and 1268 results is not required.

Aroclor 1260 had a high %D in the ZB5 column in CCV5 analyzed in sequence SKK0335; all results in the bracketed samples were reported from this column. The detected Aroclor 1260 results reported for samples SIB-086-OHW-0-1-10112022 and SIB-086-TOB-0-1-10112022 should be qualified J-CCVD. Aroclors 1248 and Aroclor 1254 CCV standards were analyzed before these two samples and were in control; the results for Aroclors 1248 and 1254 do not require qualification. As the CCV criteria were met for the ZB35 column, qualification of the non-detected Aroclor 1262 and 1268 results is not required.

Metals: ICVs constituting a second source were performed after each sequence ICal. All ICV results were in control. CCVs were performed at the appropriate frequency; all CCVs bracketing sample analyses were within method 6020B and method 7471B requirements.

***Qualification:* The detected Aroclor 1260 results for samples SIB-086-OHW-0-1-10112022 and SIB-086-TOB-0-1-10112022 are qualified J-CCVD.**

Initial and Continuing Calibration Blanks: The ICB and CCB results were <MDL for all ICP-MS metals and mercury analytical sequences.

Qualification: None required.

Internal Standards:

PCB: Hexabromobiphenyl results were low on column zb5 for samples SIB-080-OHW-0-1-10122022, SIB-078-MLW-0-1-10122022, and SIB-076-MLW-0-1-10122022; however, any detected Aroclor 1260 results were reported from column zb35. HBBP is also associated with Aroclor 1262 and 1268 results. As the HBBP peak area was in control on column ZB35 in all three samples, qualification of the non-detected Aroclor 1260, Aroclor 1262, and 1268 results is not required.

Hexabromobiphenyl results were low on column zb5 for samples SIB-079-MLW-0-1-10122022 and SIB-082-OHW-0-1-10112022; the detected Aroclor 1260 results in both samples should be qualified J-ISL; in the judgment of the HGL reviewer, no qualification of non-detected results is required.

Metals: ICP-MS metals ISs could not be evaluated; this data was not presented in a summary form and the %Rs cannot be determined from the raw data.

***Qualification: The Aroclor 1260 results for samples* SIB-079-MLW-0-1-10122022 and SIB-082-OHW-0-1-10112022 are qualified J-ISL.**

Interference Check Sample:

ICS was performed and was within QAPP requirements.

Qualification: None required.

Confirmation (second column): Detected Aroclor results were confirmed on a second column. Ten detected results did not meet the RPD ≤40% criterion and were qualified J-CF.

Qualification: The following detected results are qualified J-CF

- ***SIB-086-MLW-0-1-10112022 – Aroclor 1254***
- ***SIB-086-TOB-0-1-10112022 – Aroclor 1254***
- ***SIB-084-OHW-0-1-10112022 – Aroclors 1248 and 1260***
- ***SIB-082-OHW-0-1-10112022 – Aroclor 1254***
- ***SIB-079-TOB-0-1-10122022 – Aroclor 1254***
- ***SIB-077-OHW-0-1-10122022 – Aroclor 1260***
- ***SIB-077-TOB-0-1-10122022 – Aroclor 1260***
- ***SIB-076-OHW-0-1-10122022 – Aroclor 1254***
- ***SIB-076-TOB-0-1-10122022 – Aroclor 1254***

Raw Data Review, Compound Quantitation and Identification, and Calculation and Transcription Verification – Gas chromatograms and retention time windows were examined. Calculations and recalculations were performed on random 10% of the raw data. All results were within acceptable criteria. Aroclor recalculations are presented in Attachment 1 and Metals recalculations are presented in Attachment 2.

Qualification: None required.

Overall Assessment of Data - The data are usable as reported with the qualification applied by the reviewer.

Qualification Summary Table (concentrations in µg/kg [Aroclors] or mg/kg [metals]):

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-086-MLW-0-1-10112022	Aroclor 1254	2.9	J	2.9	J	CF
SIB-086-OHW-0-1-10112022	Aroclor 1260	42.7	D	42.7	J	CCVD
SIB-086-TOB-0-1-10112022	Aroclor 1254	28	P1 D	28	J	CF
SIB-086-TOB-0-1-10112022	Aroclor 1260	79.9	D	79.9	J	CCVD
SIB-084-OHW-0-1-10112022	Aroclor 1260	5.2	--	5.2	J	CF
SIB-084-OHW-0-1-10112022	Aroclor 1260	12	P1	12	J	CF
SIB-083-MLW-0-1-10112022	Mercury	0.027	--	0.027	J	MSLX, MSP, LDPR
SIB-083-OHW-0-1-10112022	Mercury	0.157	--	0.157	J	MSLX, MSP, LDPR
SIB-083-TOB-0-1-10112022	Mercury	0.124	--	0.124	J	MSLX, MSP, LDPR
SIB-082-MLW-0-1-10112022	Mercury	0.0382	--	0.0382	J	MSLX, MSP, LDPR
SIB-082-OHW-0-1-10112022	Mercury	0.221	--	0.221	J	MSLX, MSP, LDPR
SIB-082-OHW-0-1-10112022	Aroclor 1254	196	P1 D	196	J	SSH, CF
SIB-082-OHW-0-1-10112022	Aroclor 1260	273	D	273	J	SSH, ISL
SIB-082-TOB-0-1-10112022	Mercury	0.103	--	0.103	J	MSLX, MSP, LDPR
SIB-081-MLW-0-1-10122022	Mercury	0.0106	J	0.0106	J	MSLX, MSP, LDPR
SIB-081-OHW-0-1-10122022	Mercury	0.0865	--	0.0865	J	MSLX, MSP, LDPR
SIB-081-TOB-0-1-10122022	Mercury	0.105	--	0.105	J	MSLX, MSP, LDPR
FD06-10122022	Mercury	0.0844	--	0.0844	J	MSLX, MSP, LDPR
SIB-080-MLW-0-1-10122022	Mercury	0.033	--	0.033	J	MSLX, MSP, LDPR
SIB-080-OHW-0-1-10122022	Mercury	0.111	--	0.111	J	MSLX, MSP, LDPR
SIB-080-OHW-0-1-10122022	Aroclor 1248	150	P1 D	150	J	SSH
SIB-080-OHW-0-1-10122022	Aroclor 1254	477	D	477	J	SSH
SIB-080-OHW-0-1-10122022	Aroclor 1260	194	D	194	J	SSH
SIB-080-TOB-0-1-10122022	Mercury	0.0469	--	0.0469	J	MSLX, MSP, LDPR
SIB-080-TOB-0-1-10122022	Aroclor 1254	92.9	D	92.9	J	SSH
SIB-080-TOB-0-1-10122022	Aroclor 1260	92.7	D	92.7	J	SSH
SIB-079-MLW-0-1-10122022	Mercury	0.055	--	0.055	J	MSLX, MSP, LDPR
SIB-079-MLW-0-1-10122022	Aroclor 1260	9.4	--	9.4	J	ISL
SIB-079-OHW-0-1-10122022	Mercury	0.104	--	0.104	J	MSLX, MSP, LDPR
SIB-079-TOB-0-1-10122022	Mercury	0.0324	--	0.0324	J	MSLX, MSP, LDPR
SIB-079-TOB-0-1-10122022	Aroclor 1254	9.7	P1	9.7	J	CF

Sample	Analyte	Lab Value	Lab Qualifier	Validated Value	Validated Qualifier	Reason Code
SIB-078-MLW-0-1-10122022	Mercury	0.0385	--	0.0385	J	MSLX, MSP, LDPR
SIB-078-OHW-0-1-10122022	Mercury	0.141	--	0.141	J	MSLX, MSP, LDPR
SIB-077-MLW-0-1-10122022	Mercury	0.0972	--	0.0972	J	MSLX, MSP, LDPR
SIB-077-OHW-0-1-10122022	Mercury	0.0888	--	0.0888	J	MSLX, MSP, LDPR
SIB-077-OHW-0-1-10122022	Aroclor 1260	62.3	P1 D	62.3	J	CF
SIB-077-TOB-0-1-10122022	Aroclor 1260	272	P1 D	272	J	CF
SIB-076-OHW-0-1-10122022	Aroclor 1254	56.4	P1 D	56.4	J	SSH, CF
SIB-076-OHW-0-1-10122022	Aroclor 1260	53.3	P1 D	53.3	J	SSH
SIB-076-TOB-0-1-10122022	Aroclor 1254	37.9	P1 D	37.9	J	CF

Aroclors Target Analyte Calculations		Volumes and masses normalized to L, ug, and kg	
SDG 22J0223		Final extract volume (L) [Vt]	0.0025
Sample SIB-077-TOB-0-1-10122022		Sample wet weight (kg) [Ws]	0.01384
Lab Sample ID 22J0223-20		%moisture	9.56
Reported Results p. 77		Fraction solids	0.9044
Sample Raw Data pp. 78-82		Dilution	5.0
ICal Summary Data on pp. 299-308		Laboratory MDL (ug/kg) =	0.6
Confirmation Calc on p. 826		Dry weight DL calc	3.0
Surrogates on p. 791		Dry Weight DL rep	2.9
Detected compounds	IS injected = 80 ng/mL (=80 ug/L)		Conc (ug/kg) = (On

Aroclor 1260 - Peak 1		**Aroclor 1260 - Peak 2**	
Column ZB5		Column ZB5	
Target Response (area) =	11525	Target Response (area) =	9115
IS conc (ug/L) =	80	IS conc (ug/L) =	80
IS Response (area) =	921298	IS Response (area) =	921298
Target RRF =	2.63E-02	Target RRF =	2.74E-02
On-column conc calc (ug/L)	38.1	On-column conc calc (ug/L)	28.9
On-column conc rep (ug/L)	38.1	On-column conc rep (ug/L)	28.9

Mean on-column calc (ug/L) =	33.7	On-column	**Confirmation**
Reported on-column (ug/L) =	33.7	On-column	
Mean conc calc (ug/kg) =	33.6		
Reported conc (ug/kg) =	33.6	**Reported Result**	

Aroclor 1260 - Peak 1		**Aroclor 1260 - Peak 2**	
Column ZB35		Column ZB35	
Target Response (area) =	6694	Target Response (area) =	13780
IS conc (ug/L) =	80	IS conc (ug/L) =	80
IS Response (area) =	419865	IS Response (area) =	419865
Target RRF =	4.05E-02	Target RRF =	1.02E-01
On-column conc calc (ug/L)	31.5	On-column conc calc (ug/L)	25.8
On-column conc rep (ug/L)	31.5	On-column conc rep (ug/L)	25.8

Mean on-column calc (ug/L) =	30.2	On-column
Reported on-column (ug/L) =	30.2	On-column
Mean conc calc (ug/kg) =	30.2	
Reported conc (ug/kg) =	30.2	Confirmation Summary

TCMX		**TCMX**	
Column ZB5		Column ZB35	
Target Response (area) =	50180	Target Response (area) =	24077
IS conc (ug/L) =	80	IS conc (ug/L) =	80
IS Response (area) =	483452	IS Response (area) =	254713
Target RRF =	1.18E+00	Target RRF =	1.12E+00
On-column conc calc (ug/L)	7.02	On-column conc calc (ug/L)	6.76
On-column conc rep (ug/L)	7.0	On-column conc rep (ug/L)	6.8
Final conc calc (ug/kg)	7.01	Final conc calc (ug/kg)	6.7
Final conc rep (ug/kg)	7.4	Final conc rep (ug/kg)	Not reported
Spike (ug/kg) =	7.9892	Spike (ug/kg) =	7.9892
%R calc =	87.8	%R calc =	84.4
%R rep =	87.8	%R rep =	84.4

DCB		**DCB**	
Column ZB5		Column ZB35	
Target Response (area) =	82792	Target Response (area) =	50603
IS conc (ug/L) =	80	IS conc (ug/L) =	80
IS Response (area) =	921298	IS Response (area) =	419865
Target RRF =	8.11E-01	Target RRF =	1.07E+00
On-column conc calc (ug/L)	8.87	On-column conc calc (ug/L)	9.01
On-column conc rep (ug/L)	8.9	On-column conc rep (ug/L)	9.0
Final conc calc (ug/kg)	8.86	Final conc calc (ug/kg)	9.0
Final conc rep (ug/kg)	8.9	Final conc rep (ug/kg)	Not reported
Spike (ug/kg) =	7.9892	Spike (ug/kg) =	7.9892
%R calc =	111	%R calc =	113
%R rep =	111	%R rep =	113

Laboratory LOQ (ug/kg) =	4.0
Dry weight LOQ calc	20.0
Dry Weight LOQ rep	20.0

-column (ug/L) * Vt (L) * DF) / (Ws (kg) * fraction solids)

Aroclor 1260 - Peak 3		**Aroclor 1260 - Peak 4**		**Aroclor 1260 - Peak 5**
Column ZB5		Column ZB5		Column ZB5
Target Response (area) =	22573	Target Response (area) =	14556	Target Response (area) =
IS conc (ug/L) =	80	IS conc (ug/L) =	80	IS conc (ug/L) =
IS Response (area) =	921298	IS Response (area) =	921298	IS Response (area) =
Target RRF =	7.30E-02	Target RRF =	3.73E-02	Target RRF =
On-column conc calc (ug/L)	26.9	On-column conc calc (ug/L)	33.9	On-column conc calc (ug/L)
On-column conc rep (ug/L)	26.9	On-column conc rep (ug/L)	33.9	On-column conc rep (ug/L)

ZB5 Result	ZB35 Result	RPD (calc)	RPD (reported)	
33.6	30.2	10.7	10.7	Result from ZB5 column rep

Aroclor 1260 - Peak 3		**Aroclor 1260 - Peak 4**		
Column ZB35		Column ZB35		
Target Response (area) =	10888	Target Response (area) =	4916	
IS conc (ug/L) =	80	IS conc (ug/L) =	80	IS = HBBP
IS Response (area) =	419865	IS Response (area) =	419865	
Target RRF =	6.88E-02	Target RRF =	2.79E-02	
On-column conc calc (ug/L)	30.2	On-column conc calc (ug/L)	33.5	
On-column conc rep (ug/L)	30.2	On-column conc rep (ug/L)	33.5	

IS = BNB

IS = HBBP

7400	
80	IS = HBBP
921298	
1.58E-02	
40.5	
40.5	

orted on summary form and in EDD.

Metals MS/MSD Summary
SDG 22J0223
Parent Sample SIB-085-TOB-0-1-10112022
Parent Sample Lab ID 22J0223-09
Reported Results pp. 924-5 (Pb), 1818-9 (Hg), and 1920-23 (As, Cd, Cu, Zn)

Analyte	Spike	Parent Conc	MS Conc	MS %R (calc)	MS %R (rep)
Lead	26.4	39.7	72.0	122	122
Mercury	0.195	0.182	0.374	98.7	98.8
Arsenic	26.4	3.10	28.0	94.2	94.3
Cadmium	26.4	0.35	27.7	104	104
Copper	26.4	36.5	64.6	107	107
Zinc	84.4	128	220	109	109

Analyte	Spike	Parent Conc	MSD Conc	MSD %R (calc)	MS %R (rep)
Lead	26.5	39.7	68.3	108	108
Mercury	0.195	0.182	0.386	105	104
Arsenic	26.5	3.10	27.8	93.1	93.1
Cadmium	26.5	0.35	27.2	101	102
Copper	26.5	36.5	62.9	99.6	99.6
Zinc	84.8	128	216	103	104

Analyte	RPD (calc)	RPD (rep)	Calculated using conc not %R
Lead	5.24	5.24	
Mercury	3.03	3.03	
Arsenic	0.717	0.717	
Cadmium	1.76	1.76	
Copper	2.73	2.73	
Zinc	1.87	1.87	