HGL Data Validation Review Report

Project Name/Number	PHSS-SIB PDI / DT2002
Data Validation Stage	4
Laboratory	ALS Environmental
SDG	K2212676
HGL Reviewer	Ken Rapuano 9/14/23
HGL Peer Review	Justin Hersh 9/15/2023

General issues: The HGL reviewer ensured that all results with an interpreted_qualifiers of U or UJ had the corresponding detect_flag field populated with N and that all rows had Y in the validated_yn field.

The DV report used the higher of the method blank or equipment blank results (on-column) to qualify associated results. Although HGL's internal protocol is to use all applicable reason codes, using the reason code only associated with the highest associated blank is consistent with the NFG and is acceptable for this project.

Although equipment blank results are not validated, the method blanks associated with equipment blank EB04-10262022 were contaminated with several target analytes, including DRO, RRO, BEHP, and multiple PAHs; however, the analytes detected in this EB were generally higher than most corresponding aqueous method blank concentration and only B2EHP and pyrene are considered to be laboratory artifacts in that EB. Any change to qualification or reason codes is discussed in the method-specific sections below.

Diesel Range Organics (DRO) and Residual Range Organics (RRO):

The DV report used the on-column concentration to determine when to apply qualification for equipment blank contamination. This is appropriate when the dilution factor is 1; however, when the sample is diluted, this has the effect of applying the dilution factor to the qualification limit due to the equipment blank. HGL considers the undiluted qualification limit to be an absolute limit of the potential contribution of cross-contamination during sampling and applying the dilution factor on a sample-specific basis artificially overestimates the potential impact of field sampling cross contamination. When determining whether qualification should be applied, the equipment blank on-column qualification limit should be divided by the dilution factor to appropriately separate field contamination from laboratory contamination as represented by the method blank. SIX DRO results and six RRO results from 10x diluted analyses were either above the equipment blank qualification limit when dilution factor was removed from the evaluation or the method blank qualification limit for the diluted analyses was above the unadjusted equipment blank qualification limit. Five of the six affected DRO results and two of the six affected RRO results were below the qualification limit calculated from the associated soil method blank and the EBL reason code was replaced with MBL, but no change was made to the qualification. The HGL reviewer removed the U qualifier and EBL reason code from the remaining DRO result and four affected RRO results.

The validator applied a final qualifier if UJ instead of U to 16 RRO results that were assigned reason code EBL but did not assign a reason code indicating why UJ was appropriate. The HGL reviewer revalidated the CCVs associated with all TPH results and applied J/UJ qualifiers and assigned CCVD reason codes based on review of the CCV results and the bracketed reported sample results; these reassigned reason codes included some results that had a UJ qualifier; however, the HGL reviewer noted additional CCV discrepancies that required additional qualification. In HGL's CCV re-evaluation, one %D of 15.1% was considered a nominal exceedance of the 15% limit and was not used to qualify associated sample results.

Sample	Analyte	Validated Result	Validated Qualifier	Modified Validated Qualifier	Modified Interpreted Qualifier	Modified Final Reason Code
SIB-026-OHW-0-1-10252022	RRO	51	UJ	UJ	UJ	EBL,CCVD
SIB-025-OHW-0-1-10252022	DRO	130	U	--	J	--
	RRO	1400	U	--	--	--
SIB-024-OHW-0-1-10252022	DRO	68	--	J	J	CCVD
	RRO	180	UJ	UJ	UJ	EBL,CCVD
SIB-023-OHW-0-1-10252022	DRO	16	U	UJ	UJ	EBL,CCVD
	RRO	120	UJ	UJ	UJ	EBL,CCVD
SIB-022-OHW-0-1-10252022	DRO	43	U	U	U	MBL
	RRO	350	U	U	U	MBL
SIB-125-TOB-0-1-10262022	DRO	20	U	UJ	UJ	EBL,CCVD
	RRO	150	UJ	UJ	UJ	EBL,CCVD
SIB-125-OHW-0-1-10262022	DRO	24	U	UJ	UJ	EBL,CCVD
	RRO	200	UJ	UJ	UJ	EBL,CCVD
SIB-125-MLW-0-1-10262022	RRO	42	UJ	UJ	UJ	EBL,CCVD
SIB-124-TOB-0-1-10262022	DRO	98	--	J	J	CCVD
	RRO	320	UJ	UJ	UJ	EBL,CCVD
SIB-124-OHW-0-1-10262022	DRO	79	--	J	J	CCVD
	RRO	310	UJ	UJ	UJ	EBL,CCVD
SIB-124-MLW-0-1-10262022	RRO	47	UJ	UJ	UJ	EBL,CCVD
SIB-123-TOB-0-1-10262022	DRO	28	U	UJ	UJ	EBL,CCVD
	RRO	150	UJ	UJ	UJ	EBL,CCVD
SIB-123-OHW-0-1-10262022	DRO	59	--	J	J	CCVD
	RRO	200	UJ	UJ	UJ	EBL,CCVD
SIB-122-TOB-0-1-10262022	RRO	61	UJ	UJ	UJ	EBL,CCVD
SIB-122-OHW-0-1-10262022	DRO	52	--	J	J	CCVD
	RRO	380	--	J	J	CCVD
SIB-122-MLW-0-1-10262022	RRO	26	UJ	UJ	UJ	EBL,CCVD
SIB-121-TOB-0-1-10262022	DRO	56	--	J	J	CCVD
	RRO	550	--	J	J	CCVD
SIB-121-OHW-0-1-10262022	DRO	55	U	U	U	MBL
	RRO	530	U	--	J	--
FD18-10262022	DRO	46	U	U	U	MBL

Sample	Analyte	Validated Result	Validated Qualifier	Modified Validated Qualifier	Modified Interpreted Qualifier	Modified Final Reason Code
	RRO	230	UJ	UJ	UJ	MBL,CCVD
FD20-10262022	DRO	42	U	U	U	MBL
	RRO	390	UJ	J	J	CCVD
SIB-022-MLW-0-1-10252022	DRO	110	U	U	U	MBL
	RRO	490	UJ	J	J	CCVD

Tributyltin:

The DV report noted the %D discrepancy in column RTX-1 bracketing the analysis of five samples but misidentified that column as the secondary column and did not apply any qualification. The laboratory narrative indicated that the practice when both columns are in control is to report the lower of the two results; as only one result was available to be selected, there is some quantitative uncertainty in the reported values and in the judgment of the HGL reviewer applied a J or UJ qualifier, reason code CCVD, to results associated with a CCV discrepancy in the secondary column even though all data were reported from the primary column. This is consistent with the qualification approach the validator took in the data validation performed on SDG K2212356.

The validation report did not identify the analytical holding time exceedance for sample SIB-022-MLW-0-1-10252022; the HGL reviewer applied a J qualifier and reason code HTA to the result for this sample.

The validation report did not note the confirmation RPD >40% for sample SIB-122-MLW-0-1-10262022; the HGL reviewer applied a J qualifier and reason code CF to this result.

The result for sample SIB-125-TOB-0-1-10262022 was qualified J with reason code MSH, MSP due to MS/MSD discrepancies. This sample is also the parent sample for field duplicate FD16-10262022. In the judgment of the HGL reviewer, the MS/MSD results are also applicable to the field duplicate from the same location and the tributyltin result reported for sample FD16-10262022 should be qualified J, reason code MSH, MSP.

Sample	Analyte	Validated Result	Validated Qualifier	Modified Validated Qualifier	Modified Interpreted Qualifier	Modified Final Reason Code
SIB-122-MLW-0-1-10262022	Tributyltin	0.85	--	J	J	CF
SIB-121-TOB-0-1-10262022	Tributyltin	9.9	--	J	J	CCVD
SIB-121-MLW-0-1-10262022	Tributyltin		--	J	UJ	CCVD
FD15-10262022	Tributyltin	1.4	--	J	J	CCVD
FD16-10262022	Tributyltin	28	--	J	J	CCVD, MSH, MSP
FD17-10262022	Tributyltin		--	J	UJ	CCVD
SIB-022-MLW-0-1-10252022	Tributyltin	290	--	J	J	HTA, CCVD

Organochlorine Pesticides:

The DV report did not note the high %R for trans-nonachlor in the MSD performed on sample SIB-125-TOB-0-1-10262022; the trans-nonachlor result for sample SIB-125-TOB-0-1-10262022 and for its field duplicate FD16-10262022 were qualified J by the HGL reviewer, reason code MSH.

The DV report did not note the high %Rs for cis-nonachlor and trans-nonachlor in the MSD performed on sample SIB-122-TOB-0-1-10262022; the cis-nonachlor and trans-nonachlor results for sample SIB-122-TOB-0-1-10262022 were qualified J by the HGL reviewer, reason code MSH.

The DV report did not note the low %R for 2,4′-DDT in the MSD performed on sample SIB-121-TOB-0-1-10262022; as the MS %R was in control and the MSD %R was only slightly out of control, the HGL reviewer concurs with no qualification being applied.

Sample	Analyte	Validated Result	Validated Qualifier	Modified Validated Qualifier	Modified Interpreted Qualifier	Modified Final Reason Code
SIB-125-TOB-0-1-10262022	trans-Nonachlor	20	--	J	J	MSH
SIB-122-TOB-0-1-10262022	cis-Nonachlor	2.9	--	J	J	MSH
	trans-Nonachlor	8.6	--	J	J	MSH
FD16-10262022	trans-Nonachlor	17	--	J	J	MSH

bis(2-Ethylhexyl)phthalate; Polycyclic Aromatic Hydrocarbons (PAHs):

Six B2EHP results were qualified U due to contamination in the equipment blank; these results should have the U-qualifier and EBL reason code removed due to the equipment blank result being considered analytical artifacts (see General Issues). The soil method blank associated with these samples was free from contamination and no alternate qualification or reason code relating to blanks is required.

The DV report did not note the high %R for fluorene and phenanthrene in the MSD performed on sample SIB-123-TOB-0-1-10262022; the fluorene and phenanthrene results for sample SIB-123-TOB-0-1-10262022 and for its field duplicate FD18-10262022 were qualified J by the HGL reviewer, reason code MSH.

The DV report did not note the high %R for almost all PAH analytes in the MSD performed on sample SIB-121-TOB-0-1-10262022; the results for sample SIB-121-TOB-0-1-10262022 and for its field duplicate FD20-10262022 were qualified J by the HGL reviewer, reason code MSH. The HGL reviewer also qualified the 2-methylnaphthalene result for FD20-10262022 J-MSP due to a high RPD in the MS/MSD pair.

The pyrene result for sample SIB-125-MLW-0-1-10262022 was qualified U due to equipment blank contamination; the pyrene result in the equipment blank is attributable to laboratory contamination and not applicable to soil sample results. The HGL reviewer removed the U qualifier and EBL reason code from the affected pyrene result.

The data validator applied a J qualifier to the approval_code field of the benzo[a]anthracene result reported for SIB-121-MLW-0-1-10262022. This appears to be a paste error made when applying qualifiers to the Excel file and this extraneous cell entry was deleted by the HGL reviewer.

Sample	Analyte	Validated Result	Validated Qualifier	Modified Validated Qualifier	Modified Interpreted Qualifier	Modified Final Reason Code
SIB-026-OHW-0-1-10252022	bis(2-Ethylhexyl)phthalate	31	U	--	J	--
SIB-023-OHW-0-1-10252022	bis(2-Ethylhexyl)phthalate	39	U	--	J	--
SIB-022-OHW-0-1-10252022	bis(2-Ethylhexyl)phthalate	30	U	--	J	--
SIB-125-MLW-0-1-10262022	bis(2-Ethylhexyl)phthalate	14	U	--	J	--
SIB-125-MLW-0-1-10262022	Pyrene	2	U	--	J	--
SIB-124-MLW-0-1-10262022	bis(2-Ethylhexyl)phthalate	30	U	--	J	--
SIB-123-TOB-0-1-10262022	bis(2-Ethylhexyl)phthalate	130	UJ	J	J	MSH
SIB-123-TOB-0-1-10262022	Fluorene	22	--	J	J	MSH
SIB-123-TOB-0-1-10262022	Phenanthrene	300	J	J	J	MSH, MSP
SIB-122-MLW-0-1-10262022	bis(2-Ethylhexyl)phthalate	51	UJ	J	J	SSH
SIB-121-TOB-0-1-10262022	Acenaphthene	15	UJ	UJ	UJ	EBL, MSH, MSP
SIB-121-TOB-0-1-10262022	Anthracene	28	J	J	J	MSH, MSP
SIB-121-TOB-0-1-10262022	Benzo(a)anthracene	79	J	J	J	MSH, MSP
SIB-121-TOB-0-1-10262022	Benzo(a)pyrene	140	J	J	J	MSH, MSP
SIB-121-TOB-0-1-10262022	Benzo(b)fluoranthene	140	J	J	J	MSH, MSP
SIB-121-TOB-0-1-10262022	Benzo(k)fluoranthene	51	J	J	J	MSH, MSP
SIB-121-TOB-0-1-10262022	Chrysene	110	J	J	J	MSH, MSP
SIB-121-TOB-0-1-10262022	Fluoranthene	180	J	J	J	MSH, MSP
SIB-121-TOB-0-1-10262022	Fluorene	11	UJ	UJ	UJ	EBL, MSH, MSP
SIB-121-TOB-0-1-10262022	Indeno(1,2,3-c,d)pyrene	72	J	J	J	MSH, MSP
SIB-121-TOB-0-1-10262022	Naphthalene	6.4	UJ	UJ	UJ	EBH, MSH, MSP
SIB-121-TOB-0-1-10262022	Phenanthrene	110	J	J	J	MSH, MSP
SIB-121-TOB-0-1-10262022	Pyrene	190	J	J	J	MSH, MSP
SIB-121-OHW-0-1-10262022	bis(2-Ethylhexyl)phthalate	510	J	J	J	SSH, LCSH, MSH
FD18-10262022	Fluorene	18	--	J	J	MSH
FD18-10262022	Phenanthrene	350	--	J	J	MSH, MSP
FD20-10262022	Anthracene	21	--	J	J	MSH, MSP
FD20-10262022	Benzo(a)anthracene	60	--	J	J	MSH, MSP
FD20-10262022	Benzo(a)pyrene	95	--	J	J	MSH, MSP
FD20-10262022	Benzo(b)fluoranthene	100	--	J	J	MSH, MSP
FD20-10262022	Benzo(k)fluoranthene	38	--	J	J	MSH, MSP
FD20-10262022	Chrysene	76	--	J	J	MSH, MSP
FD20-10262022	Fluoranthene	140	--	J	J	MSH, MSP

Sample	Analyte	Validated Result	Validated Qualifier	Modified Validated Qualifier	Modified Interpreted Qualifier	Modified Final Reason Code
FD20-10262022	Fluorene	8.7	U	UJ	UJ	EBL, MSH, MSP
FD20-10262022	Indeno(1,2,3-c,d)pyrene	55	--	J	J	MSH, MSP
FD20-10262022	Naphthalene	2.8	U	UJ	UJ	EBH, MSH, MSP
FD20-10262022	Phenanthrene	88	--	J	J	MSH, MSP
FD20-10262022	Pyrene	140	--	J	J	MSH, MSP

Total Organic Carbon (TOC):

The DV report indicated that all analyses were performed within the holding time. The holding time for soil samples listed in the QAPP is incorrect. The HGL reviewer confirmed that all samples were analyzed within the correct holding time of 28 days.