



## REGION 5

CHICAGO, IL 60604

November 14, 2023

### Via Electronic Mail Only

Mr. Aaron Lammers, E.I.T  
SME-USA  
882 40th Street SE  
Grand Rapids, Michigan 49508

RE: 2022 Surface Sediment Monitoring Report  
Sheboygan Harbor and River Superfund Site

Dear Mr. Lammers:

The U.S. Environmental Protection Agency (EPA), in consultation with the Wisconsin Department of Natural Resources (WDNR), has completed its review of SME's January 16, 2023, *Sheboygan River and Harbor Superfund Site 2022 Phase I Surface Sediment Monitoring Report*, Sheboygan, Wisconsin.

EPA has questions about the application of SWAC calculations in the report. Paragraph 1.2.1 of the Report references the USEPA-approved *Upper River Phase II Sediment Removal Design* report (RAWP), prepared by PRS in 2006 for the methodology used for the SWAC calculations. EPA sees a benefit to writing these rules in the report text, rather than referencing the document, since they are essential for the SWAC calculations and it is not clear the approved methodology was followed. It is unclear if this is the same document referenced in Section 4.1.3 as the Verification Plan and PMP, and EPA requests clarification.

Specific issues regarding the calculations in the report are as follows:

- Section 2.2.1 of the report identifies that AA2, DEP11,12, 15, 19, 23, 24, 25, 28, 29 all were assigned the laboratory Limit of Detection (LOD) value. Based on the methodology identified in 2006 RAWP, only DEP11, 19, and 24 should be assigned LODs, and the rest should be eliminated from the SWAC estimation.
- Section 2.2.2 of the report identifies that DEP10 to DEP13, DEP15, DEP16, DEP22 to DEP24, DEP28, DEP31, DEP32, DEP-34, DEP36, DEP37, DEP39 to DEP41, DEP43 to DEP45, DEP49, DEP50, DEP52 to DEP55, DEP57, and DEP61 were expected to have sediment deposits greater than 1-ft but did not. EPA is concerned that assigning all of these LODs would be inappropriate,

and the resulting SWACs would not be representative of exposure (they are either are not contributing to exposure or the risk is being greatly underestimated).

- Section 2.2.3 of the report identifies that soft sediment samples were unable to be retrieved from DEP5, DEP6, DEP9, GRID316, GRID 314, GRID312, GRID310, GRID304, GRID276, GRID275, GRID273, GRID271, GRID267, GRID265, GRID264, GRID263, GRID261, GRID257, GRID255, GRID251, GRID247, and GRID243 and a value of half the detection limit was applied in the calculations for these samples. EPA is concerned that the resulting SWACs would not be representative of exposure (they are either are not contributing to the exposure, or the risk is being greatly underestimated).
- Section 4.2 of the report discusses the SWACs, and it appears that the calculations are based on a different set of assumptions from the 2006 RAWP by PRS, which has the following assumptions:
  - If sediment thickness is measurable (unconsolidated material) and a sample can be collected, that PCB concentration is used to represent all residual sediment in that RMU.
  - If sediment thickness is measurable (unconsolidated material) but a sample cannot be recovered from any sample location within an RMU after 2 unsuccessful attempts with a petite ponar dredge the area will not be included as part of the SWAC calculation.
  - If no measurable sediment exists in the RMU that has been dredged a value of 0.017 ppm (detection limit) PCB will be used.

It appears that assumption #2 and #3 have been reversed in these calculations in this section.

- Section 5 of the report discusses the results of fish monitoring and identifies “significant increase/decrease(s)”; however, there is no statistical analysis in the document. The term significant increase/decrease should be reserved for results that have been statistically analyzed and those tests should be included in the document.
- Section 5 of the report also attempts to determine if fish PCB concentrations have continued to decline within the last five years. However, it is not clear that a comparison of the UCL of 2022 with the UCL of 2018 for all the reaches combined is appropriate. Table 4 shows the UCL has been higher and lower than the 2018 samples from 2018-2022, and that variability makes it difficult to assess the decline over time when only a select few years are considered. Other factors, including the size range of species that were able to be successfully collected, needs to be factored into the analysis, which is why a multivariate analysis was recommended during the comment period of the last report. Should SME continue to report differences in UCLs, an additional table for each species for each reach should be included, along with the rolling three-year means or medians, to help visualize the data without dramatic annual variability.

Separately, EPA’s FIELDS Group performed calculations to aid in evaluation of SWAC estimates using the methods described in the 2006 RAWP. The attached evaluation provides revised calculations and identifies issues with sampling methodology that may improve the SWAC estimation process.

EPA and WDNR would like to schedule a call to discuss these issues and reach consensus on the resolution. We propose a call scheduled within the next 60 days to address these items.

Sincerely,

Joseph Kelly  
Remedial Project Manager

Attachment: FIELDS Review of the Sheboygan River SWAC computations

cc: Jason Smith, Tecumseh Products Company  
Keith Egan & Bret Stuntz, SME  
Mark Mather, GRH Development  
Peter Johnson, Johnson Wright, Inc.  
Sara Maihofer, OCH-JV  
Christopher Dietrich & Gwen Saliars, WDNR  
Charles Roth & John Canar, EPA  
Susan Prout, ORC

## FIELDS Review of the Sheboygan River SWAC computations

### *SWAC Rules for Sheboygan River (2006 RAWP)*

*If sediment thickness is measurable (unconsolidated material) and a sample can be collected, that PCB concentration is used to represent all residual sediment in that RMU.*

*If sediment thickness is measurable (unconsolidated material) but a sample cannot be recovered from any sample location within an RMU after 2 unsuccessful attempts with a petite ponar dredge the area will not be included as part of the SWAC calculation.*

*If no measurable sediment exists in the RMU that has been dredged a value of 0.017 ppm (detection limit) PCB will be used.*

In order to provide SWAC estimates that can be meaningfully compared to previous years' sampling and to changes in fish concentrations over the same time period we are recommending some changes to the current methods of data collection and analysis. The SWAC calculations laid out in the 2006 remedial action work plan should provide a reasonable estimate for the average SWAC in each section. However, it does not appear that the methods are being applying correctly. We recommend reviewing the 2006 RAWP and making some changes in the sampling methodology to improve the SWAC estimation process.

Changes in the SWAC estimations from 2017 to 2022 are being affected by three factors:

1. Changes in sediment surface area for individual deposits,
2. the elimination of deposit that no longer have sediment thickness >1 ft,
3. no samples (due to lack of recovery) for specific deposits (RMUs) with sediment >1 ft.

1. Changes in sediment deposits: It's not clear how the sediment deposits were re-assigned surface areas. Maps showing the deposits would be helpful, along with the changes from the previous sampling. If new data (sediment thickness) were collected to reconfigure the sediment deposits the data should be presented in the report.

2. Sediment deposits that are no longer >1 ft thickness: The process for areas with no sediment in the 2006 work plan is to use the limit of detection as a substitute value for no data. This approach makes the assumption that areas with little sediment also have low PCB concentrations. The assumption, without data, may create significant error in the SWAC estimate. We recommend a sampling effort to provide an average concentration for the low deposition areas. This could be done by compositing multiple samples to provide sufficient sample volume for analysis. Assuming the concentrations are low from the sampling, future estimates could use the data rather than resampling. If the results show higher concentrations, then future sampling would likely be needed to assess changes in those areas.

3. No sample recovery in depositional areas: It appears the current SWAC estimates for 2017 and 2022 are using a replacement value (LOD) for unsampled deposits with significant sediment (>1ft). For unsampled deposits, the process in the 2006RAWP is to remove the unsampled deposits from the SWAC calculations. Using the LOD instead of removing the areas has significant impact on the SWAC estimates (Tables 1 and 2). Substituting the LOD is assuming that the deposit has no [PCB], removing the deposit from the calculation assumes the unsampled deposit has a value equal to the mean of the entire section. We recommend reviewing the 2006 RAWP and recalculating the SWACs for 2017 and 2022 according to the work plan.

It is also not clear why there are large numbers of unsampled deposits (22 in 2017 and 77 in 2022).

Considering the criterion in defining a deposit was >1ft of sediment thickness this seems to be a rather high number of unsampled deposits. Either the sediment thickness estimates are inaccurate (likely due to insufficient data) or the sampling methods (petite ponar grabs) are not effective. Future sampling should consider these issues and make corrections. We would recommend sediment sampling at the same time as measuring the sediment thickness. In this way if the sediment pokes are saying there is sufficient sediment but sediment cannot be collected, alternative sampling methods can be used. For example, the sediment surface can be consolidated and difficult for a ponar to penetrate (where a sediment probe breaks through easily) but a core tube would likely break through. We do not agree with the work plan rule of three attempts. Every deposit needs to be sampled to provide the best estimate of the average concentration in each section.

Abbreviations Defined

SWAC—Surface weighted Average Concentration

RAWP—Remedial Assessment Work Plan

RMU—Remedial Management Unit

LOD—Limit of Detection

Table 1. SWAC Estimates 2017 (mg/kg)			
mg/kg tPCB	SME	FIELDS	Comment
Inner Harbor	0.487	0.487	0 DUs removed
Lower River	0.294	0.294	0 DUs removed
Mid-River	0.221	0.409	14 DUs removed
Upper River	1.825	1.93	8 DUs removed

Table 2. SWAC Estimates 2022 (mg/kg)			
mg/kg tPCB	SME	FIELDS	Comment
Inner Harbor	0.611	0.624	3 DUs removed
Lower River	0.484	0.651	24 DUs removed
Mid-River	0.127	0.82	40 DUs removed
Upper River	0.947	1.13	10 DUs removed