



SAVING THE LAND THAT MATTERS MOST

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Sent Via Email and US First Class Mail

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**Re: Hudson River PCBs Superfund Site
Surface Sediment Sampling Work Plan for 2016**

Dear Mr. Klawinski:

As members of the US EPA's Five Year Review team for the Hudson River PCBs Superfund Site ("Site"), we write to you regarding the *Surface Sediment Sampling Work Plan for 2016* ("2016 Sediment Work Plan"), part of the long-term operation, maintenance, and monitoring ("OM&M") program for the Site.¹ In short, the 2016 Sediment Work Plan is inadequate for both long-term monitoring and for any short-term use in EPA's 2017 Five Year Review of the remedial action for Operating Unit 2 ("OU2") at the Site. The 2016 Sediment Work Plan has neither the temporal or spatial resolution to meet either of these goals in either a timely or substantive manner. EPA must use its full authority, as set forth in the 2010 Consent Decree, to modify the OM&M scope as needed to adaptively manage the project and also to evaluate whether the remedial action has achieved the Preliminary Reduction Goals² ("PRGs") laid out in the Hudson River Site Record of Decision ("ROD").

Over the past month, there has been much in-depth discussion of the 2016 Sediment Work Plan specifically and OM&M program in general. Other members of the Five Year

¹ According to GE's submission of the 2016 Work Plan, "[t]he remainder of the long-term OM&M program for water, fish, and sediments will be described in a *Long-Term Operation, Maintenance, and Monitoring Plan for Water, Fish, and Sediment Monitoring*, to be submitted to EPA in 2017." Letter from Robert G. Gibson, GE, to Gary Klawinski, EPA, re: Hudson River PCBs Superfund Site, Remedial Action Consent Decree (Civil Action No. 1:05 CV-1270), Surface Sediment Sampling Work Plan for 2016 (Oct. 17, 2016) (cover letter to Anchor QEA, LLC, *Surface Sediment Sampling Work Plan for 2016, Hudson River PCBs Superfund Site* (October 2016)).

² HUDSON RIVER PCBs REASSESSMENT RI/FS PHASE 3 REPORT: FEASIBILITY STUDY DECEMBER 2000; *IDENTIFICATION OF REMEDIAL ACTION OBJECTIVES (RAOs) AND RESPONSE ACTIONS*
<https://www3.epa.gov/hudson/fs000001.pdf>

Review team, including the New York Department of Environmental Conservation (“NYSDEC”), the National Oceanic and Atmospheric Administration (“NOAA”), and the U.S. Fish and Wildlife Service (“USFWS”) (together, the Natural Resource Damages Trustees for the Site), have expressed their concerns with the inadequacy of the 2016 Work Plan, and we support those concerns and incorporate fully herein those stated critiques and recommendations by those agencies, including as stated in NOAA’s October 31, 2016 letter to EPA and NYSDEC’s October 14, 2016 email (with attachments) to EPA.

Background

Under the 2010 Consent Decree between GE and EPA, GE is required to conduct a long-term OM&M program following completion of the in-river dredging in the Upper Hudson River.³ Although the 2010 *Operation, Maintenance, and Monitoring Scope for Phase 2 of the Remedial Action* (“Phase 2 OM&M Scope”)⁴ requires, *inter alia*, post-remediation collection and analysis of sediment samples in both dredged and non-dredged areas in the Upper Hudson River, as part of the 2016 Sediment Work Plan, GE will only be taking sediment samples of the non-dredged areas.⁵ According to the 2016 Sediment Work Plan, “[t]he primary purpose of this initial round of post-remediation sampling in non-dredge areas is to collect data to establish baseline post-dredging concentrations of [PCBs] in such areas for use as a point of comparison in later sediment sampling rounds to estimate the rate of sediment recovery in such areas.”⁶

Despite the fact that the Phase 2 OM&M Scope specifically required that surface sediment sampling be conducted every 3 years (for at least two additional rounds of sampling), EPA, with little to no explanation, is allowing GE to only conduct surface sediment sampling every 5 years, cutting the number of sampling events by one-third right off the bat.⁷ Thus, the next round of sampling, including the required sampling of the dredge areas, will not be undertaken until 2021.⁸

The stated Data Quality Objectives (“DQOs”) for the overall long-term sediment OM&M plan are:⁹

- Determine post-remediation PCB levels in sediments in non-dredge areas of the Upper Hudson River
- Provide data on Select Areas that exceeded the removal criteria but were not targeted for removal because they were buried by cleaner sediments to assess whether the deposits have experienced erosion.
- Determine sediment recovery rates in non-dredge areas of the Upper Hudson River.

³ 2016 Sediment Work Plan, at 1.

⁴ Attachment E to the 2010 *Statement of Work for Remedial Action and Operation, Maintenance, and Monitoring*.

⁵ 2016 Sediment Work Plan, at 1. OM&M data collection and analysis must also be done for fish and water, and there are additional sediment OM&M activities that must be done that will have separate OM&M plans. *See id.*

⁶ *Id.*, at 2.

⁷ *See id.*

⁸ *Id.*

⁹ *See id.*, at 3, *citing* to Phase 2 OM&M Scope, at Section 2.3.1.

- Examine the changes to surface PCB concentrations in backfill areas.

The 2016 Sediment Work plan only attempts to address the first DQO stated above.¹⁰ The data quality goal for the 2016 sampling is to be able to calculate the mean surface PCB concentration in each River Section (RS1, RS2, and RS3).¹¹ As designed by EPA, the surface sediment samples will be collected from the top 2 inches of each River Section from 226 locations in the non-dredged areas (with an additional 149 samples from within the dredged areas), despite the fact that the Phase 2 OM&M Scope requires a minimum of 500 samples.¹²

According to EPA’s consultant’s *OM&M Sediment Sampling Design*,¹³ “[t]he primary objective of this sampling design is to develop a statistically-based sediment collection plan supporting unbiased estimates of overall river section average Total PCB (TPCB) concentrations in surface sediments, and associated uncertainty bounds in each of three river sections (i.e., RS1, RS2, and RS3) in the Upper Hudson River.”¹⁴

The bottom line is that the OM&M sediment sampling must be designed to appropriately monitor the long-term effectiveness of the OU2 remedial remedy (i.e., the in-river dredging), and this 2016 Sediment Work Plan, as currently designed, fails to do so. Any sediment sampling program—including the 2016 Sediment Work Plan—that does not allow for the use of sediment data to understand why a remedial action objective or remedial goal was or, perhaps more importantly, was *not* met is simply insufficient.

The 2016 Work Plan Fails to Monitor the Long-Term Effectiveness of the OU2 Remedial Action

First, the spatial resolution (i.e., the density of the samples) is too small and more samples must be taken, especially given the variability (heterogeneity) of the lower River Sections 2 and 3. As currently designed, the 2016 Sediment Work Plan will average the sediments collected over each River Section, providing an area-weighted average of the dredged and undredged area averages respectively, and samples will be allocated proportionally to the size of each stratum within each designated river-mile segment.¹⁵ This design however fails to consider the variable distribution of PCBs in sediments remaining in the river and generally the greatly differing degree to which each pool of the river between GE’s facility in Fort Edward and the Federal Dam at Troy was subject to cleanup, we reiterate NYSDEC’s request that the appropriate level of spatial resolution for OM&M sediment sampling is pool-by-pool, in eight segments rather than three. This is critical because the New York State Department of Health’s fish consumption advisory determinations – the Institutional Control on which the EPA is now

¹⁰ *Id.* Eventually, this data is anticipated to be used as a baseline for comparison to future average concentrations and to determine the rate of recovery for the surface sediment PCBs. *Id.*, at 3-4.

¹¹ *Id.*

¹² *Id.*

¹³ See 2016 Sediment Work Plan, Attachment A, Kern Statistical Services, *OM&M Sediment Sampling Design* (Oct. 5, 2016) (“EPA OM&M Sediment Sampling Design”).

¹⁴ EPA OM&M Sediment Sampling Design, at 1.

¹⁵ *Id.* “For example, if a particular one-mile segment contains 10% of the undredged area, then 10% of the samples for undredged areas will be allocated to that segment.”

hanging its hat – are made. As NOAA stated: “The river pool approach is essential to establishing a surface sediment baseline for evaluations of fish exposure, PCB loading to the Lower Hudson River, and the rate of recovery of the system.” The River Section basis proposed by EPA is simply too large and makes it too difficult to diagnose any potential problems with the performance of the OU2 remedy. It must be changed to a pool-by-pool sampling basis.

Additionally, additional stratum need to be added to the 2016 Sediment Work Plan. The Work Plan is specifically designed to preclude sampling within 25 feet of the boundary of a dredged Certification Unit (“CU”).¹⁶ However, data indicates that these adjacent areas have higher PCB levels that are not, or may not be, similar to either the dredged areas or the large non-dredged areas. The current stratified random sampling design is likely to miss these adjacent areas and provide insufficient data from these areas. Thus, if specific areas are excluded from sampling by design, then those areas may be inadequately represented in the final sampling. Consequently, an additional stratum must be added for the areas immediately adjacent to the dredged areas, separate and apart from the “non-dredge” area currently contemplated by the 2016 Sediment Work Plan.¹⁷ As NOAA explained: “the random sample design framework [currently designed] essentially guarantees that areas of most concern – the highly contaminated areas in RS2 & RS3 immediately surrounding the dredged areas –will not be sampled to any meaningful degree.”

Second, the temporal resolution (i.e., the timing of the sampling) is too long and sampling needs to occur at smaller time intervals, especially given that the 2010 Phase 2 OM&M Scope requires samples to be taken every 3 years. NYSDEC previously and specifically requested that the OM&M sediment sampling program be robust enough to discern the rate of decline, if any, of the PCBs in the sediment in Hudson River within 5 years; we agree and the 2016 Sediment Work Plan should be designed to do just that. As NYSDEC requested, EPA should direct that an increased number of samples be collected such that there is a statistical power to determine any sediment concentration trends in 5 rather than 10 years. There is no reason to delay the results of this program, especially since the 2002 Record of Decision anticipated that one remedial goal would be reached within 5 years after completion of the dredging,¹⁸ and others would be reached in less than 10 years post-dredging.

Additionally, it is critical that the sediment sampling program be designed to document the rate of recovery post-dredging as compared to the anticipated rate of recovery set forth in the decision documents. As NYSDEC explained, without such sampling and evaluation, EPA cannot claim to be implementing an MNR remedy.

As well, as both NYSDEC and NOAA requested, the OM&M sampling needs to measure PCBs in the top 12 inches of sediment, and not be limited to merely the top 2 inches, which is consistent with the ROD and will have a higher degree of certainty.

¹⁶ 2016 Sediment Work Plan, at 5.

¹⁷ These adjacent areas should be a third stratum, and EPA should consider not utilizing a randomized approach for this stratum because there are data to indicate that these areas differ from either of the other two. The sampling design for this adjacent area needs to be based on what is known of the PCB levels from the last set of samples, either the post dredge confirmation or the pre-dredge remedial design samples.

¹⁸ See EPA, Hudson River Superfund Site Record of Decision (2002), at 103.

Third, the analytical test method for measuring the PCBs in the samples is outdated and the method must be updated. The 2016 Sediment Work Plan indicates that PCBs will be measured via Method 8082 (modified via the Green Bay procedure) and EPA indicates that 4% of the samples will also use Method 1668 to measure PCBs. Given the greater accuracy of Method 1668, the justification for relying on the older and less accurate Method 8082 is unclear. As EPA moves away from using Method 8082, and adopts method 1668, there will be a problem unless a much larger percentage of samples use both methods to co-calibrate conversions. For these reasons, EPA should increase the number of samples collected in every reach of the river to ensure sufficient data is available for substantive and statistically significant comparisons between the methods to facilitate accurate conversion before EPA switches to only method 1668 for OM&M sediment samples in the future.¹⁹

Fourth, the sediment sampling plan will measure Be-7, a naturally-occurring radioactive element that has a short half-life (approx. 50 days). As a result, this measurement will indicate only the presence of newly deposited sediment, within a period of about 200 days, after which its presence is not detectable in sediments. This sampling method will not indicate longer term sedimentation rates,²⁰ a critically important process for monitored natural recovery (“MNR”) at the Site. The OM&M sediment sampling plan should include sediment traps or another effective method that measures sediment deposition directly for measuring the sediment deposition rate. An additional benefit of sediment traps is that this method is useful in places that are known to collect sediment: that maybe have lower flow rates, less scour, and are not as disturbed.

Finally, NYSDEC, in its comments to EPA on the 2016 Sediment Work Plan, explained that the OM&M sediment sampling plan for the Site should include the following additional DQOs and, critically, *should be designed to meet them*:

- 1) For the Upper Hudson River: Quantify, on a reach-by-reach basis, the distribution of PCBs in the surface sediments, in order to: (1) confirm the hypothesis that the dredging remedy achieved the anticipated reduction in surface sediment PCBs concentrations; (2) quantify PCB distribution in surface sediments at the start of the MNR period; and (3) provide sufficient measurements to allow for quantification of temporal trend on a river-reach basis within 5 years.
- 2) For the Lower Hudson River: Quantify, on an appropriate spatial scale, the distribution of PCBs in the surface sediments in the lower Hudson, in order to: (1) confirm the hypothesis that the dredging remedy in the Upper Hudson River will result in a reduction in surface sediment Total PCBs in the Lower Hudson River; (2) quantify PCB distribution in surface sediments at the start of the MNR period in the Lower Hudson River; and (3) provide sufficient measurements to allow for quantification of temporal trend on an appropriate spatial scale within 5 years.

¹⁹ NYSDEC’s comments also note the problems associated with Method 8082, and calls for at least a subset of the samples to be run by Method 1668, with EPA taking a sufficiently robust number of samples to be analyzed by both the arochlor and congener methods to establish a sufficiently precise relationship between the two. NOAA’s letter calls for at least 25% of the samples to be analyzed as splits by Method 1668.

²⁰ The Be-7 measuring method will not determine sediment deposition over multiple years unless the samples are collected every 200 days.

We support and agree with NYSDEC's recommendations for additional DQOs and incorporate them fully herein.²¹

For all these reasons, the 2016 Sediment Work Plan fails to appropriately or effectively monitor the long-term effectiveness of the OU2 remedial action, and EPA should make those recommended changes to the OM&M sediment sampling design that are discussed herein, as well as those set forth by NYSDEC's and NOAA's comments.

The 2016 Work Plan Fails to Assess the Protectiveness of the OU2 Remedial Action

EPA ostensibly requested GE to “conduct the first year of one component of the long-term [OM&M] program for sediments in 2016”²² in order to try to use that information in its 2017 Five Year Review protectiveness assessment. However, it is quite clear that the 2016 Work Plan was not designed to be used as part of the Five Year Review protectiveness determination. As NOAA stated in its letter: “[t]he proposed sediment OMM plan is not adequate to provide critical information needed to evaluate remedy effectiveness and protectiveness.”

First, the purpose of the 2016 Sediment Work Plan is to attempt to set a baseline for long-term sediment monitoring; it is not designed to assess the effectiveness or protectiveness of the in-river dredging remedy for OU2 that ended in 2015. As such, the sediment sampling plan is simply not asking the right question(s) for the purposes of a Five Year Review analysis.

Second, in addition to those temporal resolution issues discussed above, the 5-year interval for the sediment sampling is too long, is not in compliance with the decision documents, and cannot be used to technically track the effectiveness and protectiveness of the remedy for the purposes of this and future Five Year Reviews. As an example of the problems associated with only sampling every five years, if EPA waits the five years, then the data from that sampling will not be available until the sixth year and EPA will not be able to use the data for the next Five Year Review in 2022. The sampling should be repeated every 3 years as required by the Phase 2 OM&M Scope.

Thus, for all these reasons, EPA cannot appropriately use any data collected pursuant to the 2016 Sediment Work Plan for its 2017 Five Year Review of the protectiveness of the remedial action for OU2.

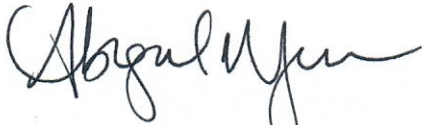
EPA has the authority and has stated its willingness to modify the OM&M scope, including the 2016 Sediment Work Plan, as needed to adaptively manage the project. EPA must increase the scope of the post-dredging sediment sampling and require GE to take more samples more frequently in order to ensure that the remedy is effective and protective of human health and the environment, and if not, to accurately discern the shortcomings and design a solution.

²¹ Although these comments do not reiterate each and every recommendation of NYSDEC and/or NOAA, we do support those agency's comments in full.

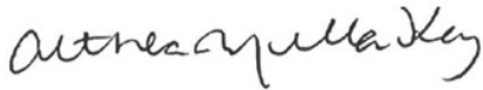
²² See Letter from Robert G. Gibson, GE, to Gary Klawinski, EPA, re: Hudson River PCBs Superfund Site, Remedial Action Consent Decree (Civil Action No. 1:05 CV-1270), Surface Sediment Sampling Work Plan for 2016 (Oct. 17, 2016).

We appreciate this opportunity to voice our serious concerns regarding the 2016 Work Plan, and expect that EPA will take our comments into consideration and make the requested changes. Although EPA has repeatedly stated that it will not do so, we respectfully request that our comments (as well as those by NYSDEC, NOAA, and/or USFWS) be timely responded to in writing in order to ensure the open and transparent Five Year Review process that EPA has promised.

Sincerely,



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