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Via Hand Delivery and E-Mail

June 14, 2017

Albert Kelly
Senior Advisor to the Administrator
United States Environmental Protection Agency
William Jefferson Clinton Federal Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Prioritizing the Superfund Program – Sediment Management Work Group Recommendations to the U.S. EPA Task Force to Improve the Superfund Program

Dear Mr. Kelly:

The Sediment Management Work Group (SMWG) is an ad hoc group of a diverse cross-section of industry (auto, aerospace, chemical, paper, paint, pharmaceutical and utilities, among others), port authorities and government parties actively involved in the evaluation and management of contaminated sediments on a nationwide basis (see attached list of SMWG Members). Founded in 1998, the SMWG has long advocated a national policy addressing contaminated sediment issues that is founded on compliance with the Superfund National Contingency Plan (NCP), particularly its remedy selection criteria and cost-effectiveness proportionality requirements and application of sound science and risk-based evaluation of contaminated sediment management options. The United States Environmental Protection Agency's (U.S. EPA) *Contaminated Sediment Guidance for Hazardous Waste Sites,* EPA-540-R-05-112 (2005) ("Sediment Guidance") is an important detailed sediment-site specific reiteration of those requirements and principles. What has been lacking in the contaminated sediment arena is the consistent adherence to NCP and the detailed principles of the Sediment Guidance, particularly at the Regional level.

The SMWG appreciates this opportunity to submit recommendations for improving the Superfund program to the Task Force that you chair, formed by U.S. EPA Administrator E. Scott Pruitt in the May 22, 2017 memorandum titled Prioritizing the Superfund Program. In the May 22, 2017 memorandum, Administrator Pruitt directed the Task Force to make recommendations to achieve a number of objectives, including (among others):

- Streamline and improve the efficiency of the Superfund program, with a focus on . . . reducing the amount of time between identification of contamination at a site and determination that a site is ready for reuse.

- Streamline and improve the efficiency of the Superfund program, with a focus on . . . realigning incentives of all involved parties to foster faster cleanups.
- Streamline and improve the remedy development and selection process, particularly at sites with contaminated sediment, including to ensure that risk-management principles are considered in the selection of remedies at such sites.
- Promoting consistency in remedy selection.
- Promoting… more effective utilization of the National Remedy Review Board (NRRB) and the Contaminated Sediments Technical Advisory Group (CSTAG) in an efficient and expeditious manner.

The following comments provide recommendations to support each of these objectives (some recommendations support several of these objectives). These comments are submitted by SMWG and do not necessarily express the opinion or views of any individual SMWG member.

Executive Summary

The SMWG supports U.S. EPA Administrator Pruitt's efforts to prioritize and enhance the effectiveness and efficiency of the Superfund program. Enhancing the process to remediate sediment sites can more efficiently put these water bodies into beneficial use generating billions of dollars in economic and social benefits.[1] Reaching sensible risk-based remedy decisions that allow the cleanup to be completed sooner, rather than many years in the future, unlocks vast opportunities for greater public use and promotion of urban redevelopment.

The SMWG has ten specific recommendations to improve the Superfund process as it relates to contaminated sediment sites. These recommendations include:

1. **Adherence to U.S. EPA's Sound National Sediment Policy That is Based on Risk Management Principles at the Regional Level is Critical to the Effectiveness and Success of the Superfund Program in the Contaminated Sediment Arena**.

   The present lack of accountability of the U.S. EPA Regions when they disregard the provisions of the NCP or the Sediment Guidance is leading to long delays in addressing contaminated sediment sites and remedies that are unachievable, impractical and excessive in scope and cost. In contrast, realistic risk-based remedies will drive efficient and protective results without excessive cost and delays. U.S. EPA's Sediment Guidance provides a comprehensive foundation for decision-making at contaminated sediment sites that is based on risk management principles. Although the Sediment Guidance was adopted after an extensive internal and external review process, some recent U.S. EPA Region decisions

[1] https://www.epa.gov/superfund-redevelopment-initiative/redevelopment-economics-superfund-sites

involving contaminated sediment sites are inconsistent with the Sediment Guidance, particularly at sediment mega-sites. The SMWG's recommendations are designed to correct many of these inconsistencies between the applicable NCP and Sediment Guidance provisions and the remedies being selected. Renewed focus on adherence to the NCP and Sediment Guidance in decision-making will further the objectives set forth in the May 22, 2017 memorandum by reducing the amount of time until a site can be determined ready for reuse, realigning the incentives of all parties to foster faster cleanups, supporting the use of risk-management principles in remedy selection at contaminated sediment sites and promoting consistency in remedy selection.

2. **At Sediment Sites, U.S. EPA Should Strongly Support the Concept Of Addressing the Most Obvious and Significant Bioavailable Risk Drivers In the Sediment Through One or More Early Actions, Followed By a Period Of Monitoring the Effectiveness of the Risk Reduction of the Early Action(s) Before Selecting the Final Site Remedy Instead of Pursuing Mega-Remedies that Mandate Virtually All Risk to be Addressed Up Front, Regardless of the Level of Risk Posed.**

   This phased approach would greatly accelerate progress at sediment mega-sites by facilitating earlier risk reduction in areas of the site needing the most attention, instead of waiting for 10 to 20 years and selecting mega-remedies that mandate virtually all risk to be addressed up front, regardless of the level of risk posed. The SMWG strongly urges that this approach be utilized at all sediment mega-sites, including those with recent selected remedies that are not yet under construction. Emphasizing the use of early actions will further the objectives of U.S. EPA's May 22, 2017 memo to achieve protective, faster and more cost-effective remedies at contaminated sediment sites.

3. **Guidance Should be Issued on the Appropriate Method to Establish Representative Background Concentrations for Use in Setting Cleanup Levels at Contaminated Sediment Sites**.

   U.S. EPA should issue a policy guidance on the proper determination and use of background concentrations that is specifically tailored for use at contaminated sediment sites. This document should provide clear and detailed methodology for determining the identification and use of realistic background conditions. This guidance must account for many sediment sites that are located in highly urbanized settings in order to set achievable remedial goals. Recent remedy decisions at contaminated sediment mega-sites have applied arbitrary methods of data censoring that have driven cleanup goals below the actual regional background. It is essential that technically defensible, representative background values be used in setting appropriate cleanup levels at contaminated sediment sites, taking urban settings into account, to develop achievable and sustainable cleanup goals.

4. **Strict Compliance with the NCP's Cost-Effectiveness Proportionality Rule at Contaminated Sediment Sites is Necessary to Restore this Long-Standing CERCLA Remedy Selection Criterion to its Proper Place at Contaminated Sediment Sites.**

   U.S. EPA should issue guidance requiring that Superfund sediment remedies comply with the NCP's requirement that there be a proportionality between incremental risk reduction and incremental cost in the proposed remedy. This guidance should further specify a method or process for transparently determining and documenting how potential remedies meet the objective of cost/risk proportionality. Although CERCLA and the NCP require remedies to be cost-effective, the SMWG has found that at contaminated sediment sites there has been a lack of a robust cost-effectiveness proportionality evaluation, if any. Therefore, the SMWG believes that new guidance is needed so that U.S. EPA decision-makers will be required to demonstrate that a proportional relationship exists between the incremental risk reduction expectations of a given remedy and the incremental cost of that remedy over the next protective alternative. This needs to be evaluated in a detailed (i.e., non-conclusory) and transparent manner.

5. **U.S. EPA Should Support the Use of the Realistic Risk Assessment Methodologies at Contaminated Sediment Sites.**

   Use of realistic risk assessment is particularly valuable when highly specific (and uncertain) exposure scenarios are driving cleanup standards. For example, at contaminated sediment sites, many risk-based cleanup goals are based on hypothetical risks based on worst-case (and in some cases, unrealistic) assumptions, such as artificially inflated public fish consumption rates. Particularly where the exposure pathway involves multiple sources, significant uncertainty and highly unrealistic risk estimates can result. Realistic risk assessment provides a more accurate understanding of actual risk. It requires populations to be identified that are currently at risk and can lead to the development of meaningful risk management plans while expediting remedies by focusing on areas that exceed risk levels or background. This approach is consistent with the objectives of the U.S. EPA May 22, 2017 memorandum while being protective of stakeholders but eliminating unrealistic risk scenarios that have been known to drive unnecessary remedies (in some instances increasing the cost by hundreds of millions of dollars) that in turn lead to legal disputes and delays.

6. **Sustainability Principles are Consistent with the NCP Criteria and Should be Incorporated Into the Remedy Selection Evaluation at Sediment Sites.**

   U.S. EPA should formally incorporate a sustainability analysis in its Superfund remedy analysis and decisions. Sustainability enhances risk-based decision-making by incorporating consideration of social and economic impacts as well as environmental impacts over the life cycle of the remedial action. The SMWG believes that opportunities exist for utilizing

sustainability analysis both in pending Superfund remedy decisions and also for those sites where RODs have been issued but not yet constructed. Increased utilization of sustainability principles in remedy selection decisions will further the objectives of U.S. EPA May 22, 2017 memo.

7. **U.S. EPA Should Apply Lessons Learned from the Highly-Regarded Great Lakes Legacy Act Sediment Remediation Program to Develop Similar Collaborative Public-Private Partnerships to More Efficiently and Effectively Address Contaminated Sediment Sites.**

   Implementation of this recommendation will incentivize all parties to foster faster cleanups and is aligned with the use of risk-management principles in remedy selection at contaminated sediment sites.

8. **U.S. EPA Should Issue Guidance on the Limited Applicability of Principal Threat Waste (PTW) Designation at Contaminated Sediment Sites.**

   The PTW concept, which was originally intended as an optional process to be used only when it is helpful to focus decision-making, has been misused at sediment sites. Most recently, the PTW Guidance was mis-applied at the Lower Willamette River and the San Jacinto River sites to justify remedy decisions that required excessive dredging, when in situ remedies, such as capping or monitored natural recovery, would be more appropriate. At both sites, the incremental cost are very significant. Excessive dredging dramatically increases both the cost and the implementation duration of remedies, which means that the waterbody is not available for beneficial redevelopment in a timely fashion. Therefore, a new guidance document on PTW specific to sediment sites should be developed and issued in the near future.

9. **The Agency's Current Conservative Interpretation of the Antiquated PCB Disposal Rule's Characterization Requirement to Use Historic Sediment Data to Determine Whether a TSCA Landfill is Needed is Inefficient and Costly, With No Net Environmental Benefit and Should be Administratively Changed.**

   PCB contamination drives remedies at many sediment sites across the country. At sediment sites where PCB contaminated sediments will be removed, U.S. EPA should clarify that the proper procedure for characterizing the dredged sediments for disposal at TSCA vs. non-TSCA landfills should be based on the test results taken from the sediment piles in the staging areas on-shore, after de-waterization, solidification and other treatment, if any, has occurred. This can easily be accomplished by issuing a clarification updating the existing guidance or by issuing a supplement to the existing "Questions and Answers" TSCA document. Previous U.S. EPA disposal decisions have required the sediments to be characterized based on the PCB concentration "as found" in the sediments in historic in situ

samples, rather than the waste actually being disposed. In some cases, this has resulted in the sediments being required to be disposed of in TSCA-licensed landfills at significantly increased expense. This would be appropriate if the material being disposed of in state-of-the-art TSCA PCB landfills actually contained PCBs at the regulatory threshold of 50 parts per million. However, once the sediment has been dredged, dewatered and prepared for transportation, it often contains a much lower concentration of PCBs, and can safely be disposed of in a RCRA Subtitle D facility. This would make the scarce capacity at TSCA PCB landfills available for waste requiring such disposal. Providing that dredged PCB contaminated sediment should be characterized for disposal at the time of its post-dredging processing (rather than based on historic in situ sediment samples) will further the objectives of the May 22, 2017 memorandum.

10. CSTAG and NRRB Enhancements for Reviewing Key Issues at Contaminated Sediment Sites Expected to Cost Over $50 Million Are Needed, Including a Change in Procedure Whereby the Scope of the Boards' Reviews Should Include Making a Recommendation of the Appropriate Remedy for the Site by CSTAG to the NRRB and by the NRRB to the U.S. EPA Administrator.

U.S. EPA's decision process for contaminated sediment sites should fully integrate the comments of CSTAG and the NRRB into the formal sediment site remedy selection process. Although CSTAG includes personnel within U.S. EPA with the greatest technical expertise as it relates to sediment sites, the SMWG believes that CSTAG's ability to positively influence decisions has been diminished because CSTAG's recommendations over the entire trajectory of the site proceedings, including remedy choice, have been viewed by Regional staff as merely advisory, and not a binding part of the decision process. This dynamic should be changed. Also, CSTAG's formerly separate review (2002-2011) of the U.S. EPA Regions' recommended remedy for contaminated sediment sites prior to NRRB review should be restored for all sediment sites expected to cost over $50 Million (currently only sites over $500 million are eligible for a detailed CSTAG remedy review).

Consequently, the CSTAG and NRRB procedures should be revised to require that their respective sequential deliberations on evaluation of site remedial options include the issuance of a recommended remedy from each Board for all sediment sites expected to cost over $50 Million. This important change would make CSTAG's recommendations, including its recommended remedy, a formal step in the Agency's decision-making process for sediment remedies (as opposed to its current "advisory only" status).

In addition, although some interaction currently occurs between CSTAG and the Regions before remedy selection, the SMWG recommends that the current CSTAGs procedures that contemplate ongoing interaction with the Regions throughout the various stages of the Site prior to the remedy evaluation stage be formalized at sediment mega-sites on critical site issues, including the appropriate scope of the Remedial Investigation, the appropriate

assumptions and basis for the Risk Assessment and the review and evaluation of the Feasibility Study's analysis of the remedial options. In contrast, conducting such reviews at complex sediment sites only at the end of the process when a remedy is to be selected is too late, because it does not allow for review of critical aspects of the site that provide a foundation for effective remedy evaluation and selection.

With respect to the NRRB's review of the proposed remedy for contaminated sediment sites, in order to provide the U.S. EPA Administrator with a sound and informed basis to approve future sediment remedies expected to cost over $50 Million (pursuant to Administrator Pruitt's May 9, 2017 amendment of the CERCLA Remedy Selection Delegation of Authority), the NRRB's deliberation should include review of CSTAG's recommended remedy and transmittal of the NRRB's own recommendation on the appropriate site remedy to the Administrator. This change would formally incorporate the NRRB's remedy recommendation into the Agency's decision-making process for contaminated sediment sites as opposed to its current "advisory only" role.

Enhancing the role of the CSTAG and the NRRB in remedy decisions would provide a critical cornerstone of the changes needed in order to meet the objectives of U.S. EPA's May 22, 2017 Task Force memorandum by ensuring that the NCP and Sediment Guidance are appropriately applied in making the remedy selection at contaminated sediment sites over $50 million and by promoting more effective use of the experience and expertise of CSTAG and the NRRB in an efficient and expeditious manner.

The following Table depicts how each recommendation furthers one or more of the key objectives of the May 22, 2017 memorandum.

	Total Time to Re-Use	Realign Incentives	Risk Management	Consistency	CSTAG /NRRB Effectiveness	Within Current EPA Authority?
Restoring Consistency with National Guidance	✓✓	✓✓	✓✓	✓✓		✓
Early Actions	✓✓	✓✓	✓✓			✓
Background	✓	✓✓	✓	✓		✓
NCP Cost-Effectiveness	✓	✓✓		✓		✓
Risk Assessment		✓	✓✓	✓		✓
Sustainability		✓	✓✓			✓
Public-Private Partnership	✓	✓✓	✓			✓
Principal Threat Waste	✓	✓		✓✓		✓
PCB Disposal	✓	✓✓	✓	✓		✓
NRRB/ CSTAG				✓✓	✓✓	✓

RECOMMENDATIONS

1. **Adherence to U.S. EPA's Sound National Sediment Policy that is Based on Risk Reduction and Risk Management Principles at the Regional Level is Critical to the Effectiveness and Success of the Superfund Program in the Contaminated Sediment Arena.**

At many contaminated sediment sites, particularly the mega-sites (where costs are likely to exceed $50 million), U. S. EPA's Regional Offices are not consistently applying CERCLA, the NCP or the Sediment Guidance. Of equal concern is that those Regions have not been held accountable for those significant departures from national policy. This failure to follow U.S. EPA's sound policy has led to significant inconsistencies between Regions and has resulted in additional costly delays in selecting the remedy, lost opportunities to optimize risk management and the NCP' mandate for efficient, implementable and cost-effective remedies.

U.S. EPA's Sediment Guidance provides a comprehensive foundation for decision-making at contaminated sediment sites that is founded upon risk reduction principles (as opposed to removal of contaminant mass which often is not causing risk). These principles also focus on realistic risk and exposure scenarios.

If the Sediment Guidance is appropriately followed, faster, more effective and more permanent risk reduction will inevitably follow. The Sediment Guidance's risk reduction and cost-effectiveness evaluations also ensure that the requirements of CERCLA and the NCP for remedy selection are met.

REQUEST FOR ACTION: By implementing the recommendations discussed below, the Superfund Program's objectives of assessing appropriate risk based on sound scientific principles and implementation of protective and cost-effective remedies based on risk-reduction can be restored. These important steps will lead to remedies that are faster, fairer and will accelerate the significant economic growth that currently is being delayed for decades along this nation's many waterways impacted by contaminated sediment.

2. **At Sediment Sites, U.S. EPA Should Strongly Support The Concept Of Addressing the Most Obvious and Significant Bioavailable Risk Drivers In The Sediment Through One or More Early Actions, Followed By A Period Of Monitoring The Effectiveness Of The Risk Reduction Of The Early Action(s) Before Selecting the Final Site Remedy Instead of Pursuing Mega-Remedies that Mandate Virtually All Risk to be Addressed Up Front, Regardless of the Level of Risk Posed.**

This practical, more efficient and cost-effective approach is in stark contrast to the current unwieldy practice followed in many U.S. EPA Regions where remedial actions have been delayed for 15-20 or more years, during which massive quantities of data are collected at

great expense (sometimes $100 Million or more), while site risks continue unabated. This unacceptable delay is based on the unrealistic perception that, if only enough data can be collected in advance, virtual certainty can be achieved in order to select a remedy with virtual certainty to work. Experience has shown, however, that there is no more effective approach than implementing a remedy sequentially, seeing how the remedy functions in practice, and then making appropriate modifications before performing more work. Moreover, the all-in-one upfront approach to remedial selection at sediment mega-sites invariably leads to remedies that are unrealistically and inappropriately ultraconservative, thereby driving away the very parties who otherwise would step up to implement sediment remedies at these sites.

The current approach followed by the U.S. EPA Regions with responsibility for most of the mega-sediment sites has led to at least two broad-sweeping and counterproductive impacts:

First, in a site at which U.S. EPA will make a single selection of a remedy for an entire large site, minor technical issues can become magnified, requiring excessive study to verify a broad spectrum of issues. During the RI/FS stage, small technical issues can have significant potential implications on the scope and cost of the anticipated final remedy, leading to many costly and lengthy technical battles. These battles, in turn, lead to lengthy delays-- often 15-20 or more years-- before the remedy is selected, let alone constructed. In addition, this approach also has led to inordinate RI/FS costs of over $100 Million at the Passaic and Willamette Rivers and Newtown Creek. While clearly there are situations in which a more comprehensive RI/FS can lead to a superior remedy decision, the "all or nothing" component of a single remedy decision can trigger excessive caution on the part of both U.S. EPA and potentially responsible parties that can create a reluctance to make remedial decisions.

Second, all-encompassing single remedy RODs by their nature are more conservative – as U.S. EPA believes it has only one chance to "get it right." The excessive conservatism is counter-productive for everyone concerned because it can drive away responsible parties who would otherwise be willing to implement appropriately phased remedies at mega sediment sites. Conservative "all-in-one" upfront remedies, typically impose unachievable cleanup levels that are below appropriate background concentrations (such as 9 ppb cleanup criteria for PCBs at the Willamette River and the 50 ppb cleanup criteria for PCBs at the Passaic River) and are subject to recontamination. Furthermore, by requiring parties to sign up for remedies that often have a large up front dredging component that does not result in any corresponding proportional incremental risk reduction benefit (as required by the NCP's cost-effectiveness proportionality requirement [see section 4, below]), there is no opportunity to undertake less radical (and often environmentally more beneficial) remediation of the biggest risk drivers at a given site and then to monitor the positive impact of addressing those particularly elevated bioavailable areas. This Early Action approach would allow the areas with the greatest risk to be addressed earlier in the process and for the system to potentially recover and improve before proceeding with substantial additional removal of mass that typically has been required in the all-encompassing up front remedy approach currently being utilized. If monitoring results after implementation of the Early

Action(s) are positive, some or all of the aggressive removal requirements that might otherwise be contemplated may prove to be unnecessary or less extensive.

The Superfund Program has a number of existing tools that could easily be used to solve this problem: 1) Early Actions and use of Operable Units (which divide sites into areas or phases within a ROD or RODs), 2) use of Adaptive Management tools (that are designed to implement specific, focused remedies and then monitor the results and effectiveness before proceeding with additional remedial measures, if necessary), and 3) phasing remedy implementation to accomplish the same purpose as early actions and/or Adaptive Management. These tools were all supported recently in U.S. EPA's January 9, 2017 Directive, entitled "Remediating Contaminated Sediment Sites - Clarification of Several Key Remedial Investigation/Feasibility Study and Risk Management Recommendations" OLEM Directive 9200.1-130

These Superfund techniques have proven successful at many large upland Superfund sites for years and the Sediment Guidance also recognizes that a phased approach "may be the best or only option" at complex sites and also specifically encourages the use of an adaptive management approach. By utilizing these methods, mega sediment sites will be addressed faster, fairer, and more effectively, and responsible parties will be encouraged to undertake these important cleanups.

REQUEST FOR ACTION: The U.S EPA Superfund Task Force should direct that the Agency immediately implement the January 9, 2017 Superfund Directive's support for use of Early Actions, Operable Units, Phased Remedies and Adaptive Management actions at large contaminated sediment sites in order to jump start remedies at these sites and should separately direct that such early actions be followed by monitoring to gauge the results.

Such a phased approach should be the presumptive approach at sediment mega-sits and would permit monitoring of the results on the effectiveness of those earlier actions before an overall massive remedy is selected or implemented inappropriately and prematurely. This approach should be implemented at all contaminated sediment sites that have not yet started construction. At sites with existing RODs, requirements to address all site risks at the inception of the construction should be modified to implement remedies at the areas of the site that are the major drivers of site risk first, followed by a monitoring period. Monitoring results can then be reviewed and the effectiveness of the early actions can be assessed. If risks have been mitigated or are being reduced at a reasonable pace, further aggressive remedial actions could be deferred, reduced or eliminated as long as continued reasonable progress in risk reduction is occurring. If not, additional remedial options would be revisited in light of the current information developed.

3. <u>Guidance on a Methodology for Establishing Scientifically Defensible Representative Background Concentrations for Use in Establishing Cleanup Criteria Specific to Contaminated Sediment Sites is a Critical Void in U.S. EPA's National Sediment Policy and the Absence of Such Guidance Has Resulted In the Selection of Unachievable Cleanup Criteria and Likely Perceived Remedy Failures in the Future</u>

Many sediment remediation sites are located in waterbodies where specific site-related contaminants of concern are also released from other sources in the waterway. This most frequently occurs in urban settings but may also occur in certain rural or agricultural areas. Other sources may include releases from industrial and municipal outfalls such as POTWs, CSOs and storm water discharges; run-off from contaminated soil, roadways, rooftops and other impervious surfaces; as well as air deposition. Contaminant concentrations that are not attributable to the specific remediation project site releases are known as "background."

According to Superfund policy, site cleanup levels are not generally set at concentrations less than natural or anthropogenic background (U.S. EPA, 2002). Anthropogenic background is defined as "natural and human-made substances present in the environment as a result of human activities," but that are not associated with releases from the subject site (U.S. EPA 2002). Anthropogenic background that is representative recognizes ongoing chemical inputs to a site from point and non-point sources, such as those found in urban runoff, in discharges from municipal and industrial outfalls, in sediment transported from off-site, and from atmospheric deposition.

Approaches for developing and using background concentrations to support remediation projects have not been consistent. For example, the 2014 ROD for the Lower Duwamish site inappropriately requires remedial goals to achieve <u>natural</u> background levels (2 ppb for PCBs, for example, compared to what other experts believe should be 40-50 ppb), which are not achievable due to anthropogenic conditions. Likewise, at the Lower Passaic River site, U.S. EPA has selected remediation goals that are $1/10^{th}$ of background levels for mercury and PCBs. These are just two examples of where U.S. EPA has failed to properly consider background concentrations in its decision. In some instances, these extremely low background numbers are the result of the technically inappropriate deletion of legitimate data points simply because they had higher concentrations than other samples taken from the background study areas, and justifying their deletion as "outliers." There is a well-accepted statistical basis for determining "outliers" and it needs to be incorporated in U.S. EPA's Guidance on this critical issue. By setting standards below anthropogenic background, U.S. EPA is not only violating its own policies, but just as importantly, is setting the remedy up to be perceived as a failure because the remedial goals are impossible to meet over the long term.

At sediment sites, the goal is to derive representative background values, which are equivalent to anthropogenic background for man-made chemicals and the combination of naturally occurring and anthropogenic backgrounds for naturally occurring chemicals. Once established, technically defensible, representative background values should be applied as

cleanup levels at sites where these derived background concentrations are greater than risk-based cleanup levels. "The reasons for this approach include cost-effectiveness, technical practicability, and the potential for recontamination of remediated areas by surrounding areas with elevated background concentrations" (U.S. EPA 2002). This approach, outlined in U.S. EPA policy, highlights the importance of deriving representative background values that are technically defensible, otherwise achievable and sustainable cleanup goals. In many cases, the derived representative background values become the *de facto* cleanup levels, thereby setting the scope and scale of the remedy.

REQUEST FOR ACTION: U.S. EPA should issue clear guidance providing a methodology for the identification and use of background conditions and outlining key considerations in establishing a reliable and scientifically based representation of background at impacted sediment sites, including methods for incorporating true anthropogenic background and the proper statistically valid approach to evaluate potential "outliers." Guidance is needed because technically defensible, representative background values are critical in establishing an appropriate remedial response that is achievable and maintainable over the long term, which will help ensure remedy success.

4. U.S. EPA Must Insist that its Regions Comply with the National Contingency Plan's (NCP) Requirement that Selected CERCLA Remedies Are Cost Effective, Including a Specific Requirement that a "Proportionality" Between Incremental Risk Reduction and Incremental Cost Be Demonstrated. In Addition, U.S. EPA Should Issue a Guidance Document Requiring All Contaminated Sediment Remedy Decisions to Undergo a Rigorous and Transparent Cost-Effectiveness Proportionality Analysis and Should Provide a Methodology for Doing So.

CERCLA requires that any remedial action that is selected must be "cost-effective." 42 USC 9621(a). The NCP states, "[e]ach remedial action selected shall be cost-effective, provided that it first satisfies the threshold criteria set forth in § 300.430(f)(1)(ii)(A) and (B). Cost-effectiveness is defined as when "costs are proportional to [the remedial alternative's] overall effectiveness." 40 CFR §300.430(f)(1)(ii)(D).

As U.S. EPA stated in its Superfund Guidance, "cost-effectiveness is concerned with the reasonableness of the relationship between the effectiveness afforded by each alternative and its costs compared to other available options." U.S. EPA 1999. Moreover, "if the difference in effectiveness is small but the difference in cost is very large, a proportional relationship between the alternatives does not exist." U.S. EPA 1990, Preamble to NCP.

These proportionality requirements were reiterated by U.S. EPA in the Sediment Guidance. Regions must select remedies that are cost effective (p. 7-17) and should "compare and contrast the cost and benefits of various remedies." (p. 7-1).

U.S. EPA Regions have frequently failed to adequately evaluate the cost-effectiveness proportionality requirement of proposed remedies as required by CERCLA and the NCP and have failed to transparently provide any explanation of their evaluation, if any, of the proportionality of the remedy selected in RODs or Action Memos. This failure has catastrophic impact at large sediment sites, where remedies are being inappropriately selected in ranges of dollars in the billions, such as the ROD for the Lower Willamette River. At virtually all but a couple of sediment sites, there has not even been a mention of the NCP Proportionality Requirement in the ROD or Action Memo. However, in one site that actually mentioned the NCP proportionality requirement by name, Region 2 failed to undertake a legitimate cost-effectiveness/proportionality "evaluation" in its March 2016 Record of Decision for the Lower Passaic River. The ROD's proportionality discussion consisted of six sentences for this estimated $1.4 billion remedy and constituted a simple conclusory statement that the effectiveness of the selected remedy was "determined to be proportional to cost." The "evaluation" provided no details as to how cost-effectiveness or proportionality were determined and failed to address how the cost-effectiveness of the selected remedy was compared to other alternatives, as required by the NCP.

Similarly, in the 2016 Proposed Plan for the San Jacinto River Waste Pits Site, U.S. EPA Region 6 estimated the cost of the Proposed Plan to be $87 million. However, another alternative (Alternative 3aN) was expected to cost only $24.8 million. The SMWG commented on the Proposed Plan in January of this year and pointed out that Alternative 3aN was likely to be as protective, and likely, more protective, of human health and the environment than the Proposed Plan, which involved substantial anticipated risks of releases during dredging. Therefore, the Proposed Plan recommended by U.S. EPA Region 6 was not cost-effective, contrary to CERCLA and the NCP. In fact, the Texas Commission on Environmental Quality submitted strong comments about the Region's Proposed Plan's lack of compliance with the NCP cost-effectiveness requirement and even pointed out its opinion that Region 6 had significantly understated the likely costs of the more expensive remedy recommended by the Region.

One rare example of the correct application of the cost-effectiveness criterion is the 2016 Proposed Plan Revision for the Nyanza Chemical Waste Dump Site OU4. At this site, the U.S. EPA's comparison of the anticipated incremental risk reduction to be provided by Enhanced Natural Recovery and its cost (at $8.5 million), compared to the incremental anticipated risk reduction and cost for Monitored Natural Recovery ($1 million) in Reach 3 of the Sudbury River was consistent with CERCLA, the NCP and the Sediment Guidance. It speaks volumes that U.S. EPA was willing to engage in realistic evaluation of cost-effectiveness on the Nyanza site remedy, which is being paid for with Superfund monies, but not at sites funded by private parties.

The application of the NCP's requirement to use a cost-effectiveness proportionality test has been ignored at virtually all the other sites. Consequently, it is critical in the future to require all CERCLA decisions to undertake a thorough and proper cost-effectiveness/proportionality

evaluation and to transparently describe it its decision documents the analysis and justification of cost-effectiveness, including proportionality between incremental cost and incremental risk-reduction, if any.

REQUEST FOR ACTION: The U.S. EPA Task Force should direct OLEM to issue Guidance requiring all sediment remedies to include a detailed and transparent analysis justifying compliance with the NCP's Cost-Effectiveness Proportionality Requirement and setting forth a detailed methodology for doing so.

5. U.S. EPA Should Apply Realistic Risk Assessment in Areas of Great Uncertainty that Have an Overwhelming Impact on Remediation Goals, the Prime Example Being Fish Consumption Assumptions at Contaminated Sediment Sites

U.S. EPA guidance for determining "how clean is clean" for Superfund sites requires a number of extremely conservative assumptions about the potential exposure pathways. Those assumptions unnecessarily drive down the cleanup levels beyond that which is reasonably necessary to protect human health –sometimes even below background levels. Instead of this extremely conservative approach (called a deterministic approach), U.S. EPA should use realistic risk assessment to determine Superfund cleanup objectives. The most obvious example of how realistic risk assessment could improve decision-making is in the analysis of remedial goals derived from fish consumption risks. The consumption of impacted fish tends to be the exposure scenario that is driving the cleanup of a number of Superfund mega-sites such as Portland Harbor.

Since 2012/2013 the fish consumption rates that U.S. EPA has used for some Superfund sites have been based on the most exposed individual, rather than the general population. The consumption rate being applied is based on a 2002 study of Northwest Tribes the Columbia River Inter-Tribal Fish Commission (CRITFC) Study, based on data from 1994. This study evaluated consumption rates for tribes in the northwest (consequently, applying it nationwide is not accurate and is highly conservative).

In 2016, U.S. EPA Region 10 developed an even more conservative policy by applying assumptions that raised the levels of fish consumption from the CRITFC study based on interviews that speculated on the consumption rates when the tribal treaties were signed in the 1850's. This policy assumed that any difference between the historical and current fish consumption rate was due to "suppressed" consumption due to fear of contamination of fish. This supposed suppression was not distinguished from suppression due to loss of habitat, restricted access to fishing locations, fish population reductions due to overfishing or simply changing cultural and societal preferences. The basis for assuming that a reduction in contamination could in any way allow 1850 level fish consumption rates to be restored was not discussed.

To illustrate this point with a real-world example, the original policy for setting fish consumption exposures at Portland Harbor was based on reducing risk to between $1x10^{-5}$ and $1x10^{-6}$ for the 90% UCL of the general population. U.S. EPA has consistently stated that both levels present *de minimis* risks and both are acceptable to protect human health. With regard to subpopulations that had higher exposure, the policy was that the median risk for subpopulations could not exceed $1x10^{-4}$. The new policy is that tribal target level is now at $1x10^{-6}$ for the 95% UCL of that subpopulation. The risk assessments conducted in a deterministic manner (compounding extremely conservative fish consumption rates with other extreme exposure assumptions) are based on hypothetical individuals with exposure characteristics that do not currently and most probably never existed (e.g., the tribal female who for 19 years prior to giving birth eats the highest level of fish identified in the study, with all fish from hot spots in the Willamette River).

At Portland Harbor, the reality is that protecting the general population at a level of $1x10^{-6}$ also protects tribal members at $1x10^{-5}$ (at fish consumption levels in the CRITFC study) and protects the assumed 1850 level consumption rates of 1750 gm/day at $1x10^{-4}$, a risk level consistent with prior U.S. EPA policy for highly exposed subpopulations. Finally, the cleanup goals for most contaminants in fish that cause risk for high end consumers (high end tribal consumers) such as As, Hg and PCBs are often below background levels and, consequently, cannot be achieved by remediation. U.S. EPA's new policy serves to lower cleanup goals by orders of magnitude (to levels which cannot be achieved) without legal, scientific or historical basis while ignoring background and economic issues.

Using a probabilistic approach compared to a deterministic assessment improves the situation by evaluating the range of exposures and uncertainty in values; the key factors (data gaps) can be clarified and the data gaps filled. Thus a fish consumption study to determine who eats fish and how much can determine true risk to the population and how best to conduct risk management for those who are still at risk when background is achieved. In addition, different areas of the river can be evaluated identifying which areas (hot spots) can be remediated first to reduce overall risk most efficiently. This will accelerate the remedy.

Realistic risk assessment is more scientifically sound than deterministic assessments since it uses all exposure data, links risk targets with environmental concentrations and improves transparency. Realistic risk assessment-based standards can result in much better alignment of costs and benefits of a proposed remedy and can be a valuable tool.

REQUEST FOR ACTION: The U.S. EPA Superfund Task Force should recommend that realistic risk assessment should be utilized at contaminated sediment sites on risk issues that involve great uncertainty and that are likely to have a significant impact on remediation goals, such as with regard to fish consumption assumptions.

6. U.S. EPA Should Formally Incorporate Sustainability Analysis in its CERCLA Remedy Analysis and Decisions

Originally, CERCLA held the basic premise that a site would simply be cleaned up. It was either clean or not. With the growth of risk assessment, however, the realization emerged that there was a spectrum rather than absolutes. This shift to risked-based decisions meant that long-term stewardship would need to be considered concurrently. Sustainability incorporates consideration of social and economic impacts as well as environmental impacts into the remedial alternatives analysis over the life cycle of the remedial action. It is, therefore, a useful concept under which risk and long-term stewardship fit well.

A "reset" of regulations and regulatory approaches has been suggested[2] as a way to adopt disruptive—as opposed to incremental—change. In 2014 the National Research Council (NRC) conducted a Study for U.S. EPA on integration of Sustainability studies into regulatory programs. The result was a recommendation by the NRC for inclusion of the sustainability concept in major regulatory decisions (such CERCLA mega-site RODs). A sustainability evaluation would provide a more transparent evaluation of the uncertainties surrounding environmental decisions and the cost and benefits to society. Parameters typically considered in a sustainability analysis include: (a) time to implement the remedy; (b) the volume of material removed (and waste generated); (c) the total cost of the proposed remedy; (d) the magnitude of disruption to the surrounding community during remedy implementation; and (e) the benefits of quickly making the area around the waterbody available and attractive for beneficial redevelopment. This transparency would also lead to greater consensus regarding remedy decisions and thereby facilitate implementation of the selected remedy (speeding remediation). By explicitly identifying uncertainties (e.g. fish consumption rates and urban background levels of key COCs) and their impact on remedy, U.S. EPA can focus future funding on the key issues that would provide long term improvement to watersheds.

Although Executive Order 13563 (January 18, 2011) called upon U.S. EPA and other agencies to consider Net Environmental Benefits Analysis (NEBA) in major decisions, U.S. EPA has only moved forward with guidance supporting "green and sustainable" remedy implementation but not remedy selection (e.g. using biodiesel in trucks transporting waste vs. dealing with amount of waste produced to begin with). In addition, U.S. EPA has failed to follow through and demonstrate support for implementing sustainability in remedy decisions through the use of NEBA tools. For example, in May 2015 U.S. EPA's Carlos Pachon at the Battelle Remediation Conference in Miami announced that U.S. EPA would move forward with integration of NEBA into remedy selection starting at two pilot sites (one in New Jersey and one watershed scale site in Idaho); however, later that same year Mr. Pachon reported that progress had stalled because funds had yet to be appropriated. Additionally, although a NEBA evaluation

[2] Craig Benson, University of Wisconsin and Consortium for Risk Evaluation with Stakeholder Participation, in 2014 NRC Discussion of "Best Practices;" Workshop 2.

was included in PRP-funded draft FS for Portland Harbor and U.S. EPA Region 10 had originally included funding to conduct a NEBA, the Region later reversed its position and removed the NEBA from its evaluation. Therefore, the PRPs conducted their own sustainability study including not only a NEBA but also an economic analysis that corrected the incomplete studies previously conducted and a social benefit analysis. This study has been presented over that last two years at multiple scientific conferences as well as to Oregon DEQ and U.S. EPA on several occasions and was submitted during proposed plan comments to U.S. EPA. Nevertheless, this U.S. EPA Region 10 did not consider this study during ROD selection. Similarly, the Lower Passaic River PRP group has asked and been repeatedly told they could not conduct a sustainability analysis. Newtown Creek PRPs were originally told that they could conduct a sustainability analysis (which was also supported by the NGOs to which it has been presented to date), but in May 2017 were told by U.S. EPA Region 2 that they could not. As these examples demonstrate, U.S. EPA has stated repeatedly it is moving in this direction yet has failed to put its words into action.

U.S. EPA has on several occasions stated that integrating sustainability evaluations into the Superfund program can be done without legislative change to CERCLA. The table below illustrates how sustainability criteria correspond to the nine NCP criteria. Thus, sustainability evaluation could be included without revising CERCLA for remedy selection. The SMWG also concurs that a sustainability framework can fit into CERCLA without requiring any regulatory change and will increase stakeholder engagement and consensus while minimizing litigation and accelerating remedy implementation and should be implemented in the CERCLA program immediately. For sites where RODs have been issued but not constructed, a revisit of the sustainability principles driving design certainly would be appropriate. The SMWG urges U.S. EPA to immediately commence full utilization of sustainability in CERCLA remedy evaluation and suggests that contaminated sediment sites would be an excellent place to start.

Sustainability Metrics	Threshold Criteria		Balancing Criteria					Modifying Criteria	
	Protection of human health and the environment	Compliance with ARARS	Long-term Effectiveness	Reduction in Toxicity, Mobility, or Volume	Short-Term Effectiveness	Implementability	Cost	State Acceptance	Community Acceptance
Community Impacts & Cohesiveness	X	X	X		X	X		X	X
Cost of Remedy							X	X	X
Criteria Pollutant Emissions	X	X	X		X			X	X
Ecological Impacts	X	X	X	X	X	X	X	X	X

Economic Impacts						X	X	X	X
Ecosystem Functions and Services	X	X	X		X	X		X	X
Energy Consumption					X		X	X	X
Environmental Justice								X	X
GHG Emissions			X		X			X	X
Human Health Risks	X	X	X	X	X	X		X	X
Noise Impacts					X			X	X
Public Safety	X	X			X	X		X	X
Recreational Impacts			X		X			X	X
Resource and Material Consumption			X		X		X	X	X
Traffic					X			X	X
Waste Generation and Management			X	X	X	X	X	X	X
Water Impacts/Use			X	X	X		X	X	X
Worker Safety	X	X			X		X	X	X

Based on US Navy 2012.

REQUEST FOR ACTION: Application of Sustainability Principles has been endorsed and should be considered in all aspects of the remedy decision process.

7. Develop a Public-Private Partnership Model Similar to the Highly Successful Great Lakes Legacy Act Program to Facilitate Remedy Decisions and Implementation Nationwide

The public-private partnership model for contaminated sediment sites that is currently utilized by the Great Lakes National Program Office ("GLNPO") under the Great Lakes Legacy Act has several advantages over the remedy decision process that is employed by EPA Regions at CERCLA contaminated sediment sites. In particular, GLNPO has demonstrated an ability to work collaboratively with private PRPs to implement cost-effective and timely remedies. GLNPO has shown an ability to base its decisions on realistic risk assessment assumptions and with due consideration of the relative costs and benefits among remedial alternatives. The SMWG urges U.S. EPA to create a similar public-private collaborative program using the very successful Great Lakes Legacy Act program as its model, including exploring alternative funding methods for remedial actions.

REQUEST FOR ACTION: U.S. EPA should use its existing authorities to develop an approach to remediation based on greater collaboration with PRPs such as that demonstrated by GLNPO in sediment cleanups under the Great Lakes Legacy Act.

8. Correcting the Misuse of Principal Threat Waste Policy at Contaminated Sediment Sites

We request that the U.S. EPA amend, revise or supplement the Office of Solid Waste and Emergency Response (now known as the Office of Land and Emergency Management (OLEM)) Superfund Publication 9380.3-06FS, November 1991, titled "A Guide to Principal Threat and Low Level Threat Wastes" (referred to herein as the "PTW Publication") to correct the misuse and misapplication of the concept of "Principal Threat Waste" (PTW) at Superfund sites involving contaminated sediments.

The concept of PTW set forth in the National Contingency Plan (NCP) and the PTW Publication is a narrow one of highly limited applicability. It pertains only to "source material," defined as material containing hazardous substances that "act as a reservoir for migration of contamination" to environmental media. It reflects a preference for treatment (not removal) only of *certain* "source material": that which "cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur." The PTW Publication specifically acknowledges that "*other* source materials *can* be safely contained and that treatment for all waste will *not* be appropriate or necessary to ensure protection of human health and the environment, nor cost effective." (Emphasis added.)

Recently, however, we have seen U.S. EPA stretch the application of PTW beyond its intended scope, and, moreover, we have seen U.S. EPA use this inflated scope of PTW to require increasing mass removal (*i.e.,* dredging) and not containment or treatment. Recent examples include the 2016 Record of Decision (ROD) for the Lower Willamette River and the 2016 Proposed Plan for the San Jacinto River Waste Pits site. This use of the PTW designation is inappropriate for several reasons, including:

a. Not all sites necessarily have PTW. Only sites at which waste meets the narrow definition of PTW should have waste with PTW designation. At many sites there are no remaining "source materials," and, even if there are, they may be source materials that can be reliably contained or do not present a significant risk to human health or the environment should exposure occur.
b. PTW designation does not override the NCP's remedy selection process – The selection of an appropriate waste management strategy is to be determined solely through the remedy selection process outlined in the NCP.
c. PTW designation establishes a preference for treatment, not removal, and even then the preference for treatment may be overcome in specific situations that are common at sediment sites.
d. PTW designation applies only to that source material which "cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur", which does not apply to most contaminated sediments.
e. The Sediment Guidance, which is more recent, more detailed and more specifically applicable to sediment sites, states that PTW designation is frequently inapplicable to sediment sites.

At the Lower Willamette Site, the U.S. EPA's Record of Decision (ROD) provided no analysis of how the sediment meets the definition of source material, which is key because PTW only applies to source material. To be source material, it must "act as a reservoir for migration of contamination." (PTW Publication). In addition, U.S. EPA Region 10 inappropriately chose to ignore the PTW Publication's criterion that PTW is source material that cannot be "reliably contained" for purposes of identifying PTW. Instead, the Region only evaluated the containability of contaminants of concern in sediment after first designating the sediment as PTW.

Because U.S. EPA Region 10 dispensed with the "reasonably containable" PTW criterion at the Lower Willamette Site, it relied heavily on the identification of "highly toxic" material to designate PTW. However, the PTW Publication explicitly warns against making PTW determinations based solely on potential risk (emphasis added):

> [P]rincipal and low level threat waste should not necessarily be equated with the risks posed by site contaminants via various exposure pathways.

Moreover, Region 10's analysis – which concluded that some sediments presented a risk greater than 10^{-3}, is contrary to the evidence in the Baseline Human Health Risk Assessment, which found no risks greater than 10^{-3} for dioxin/furan TEQ for any scenario evaluated.

Although risk greater than 10^{-3} was found for PCBs at the Lower Willamette Site, that risk was based on fish consumption scenarios. However, the use of this type of indirect exposure route to designate PTW is contrary to the definition of "source material," which states:

> "Source material" is defined as material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, to surface water, to air, or acts as a source for *direct exposure*. (Emphasis added.)

U.S. EPA's misapplication of the PTW Publication has resulted in cleanup decisions that are flawed and inconsistent with U.S. EPA decisions at other comparable sites.

At the San Jacinto site, U.S. EPA's Proposed Plan justified its recommendation to remove a successful, U.S. EPA-approved existing $10 million cap with a proven protectiveness record, in part based on an inappropriate designation of those sediments as PTW. The existing armored cap was installed at the site in 2011, after a lengthy and detailed evaluation of alternatives. In reviewing the reports generated at the San Jacinto Site since that time, except for routine (and expected) maintenance, the cap has remained in place and effectively contained the underlying contaminants. In more than 5 years, less than 0.6% of the cap surface area armor has received maintenance pursuant to the monitoring and maintenance plan developed by the potentially responsible parties (and no disturbance of the membrane or isolation layer has been reported).

Capping at upland sites, as well as at sediment sites, is a widely used and accepted remedial technology. In the context of contaminated sediment sites capping has been successfully used to manage contaminated sediments for more than 20 years. Experience has shown that, although a certain amount of monitoring and maintenance is required for any cap, capping technology is both safe and effective. In fact we at SMWG are not aware of any instance in which an armored cap, such as that currently in place at the San Jacinto River Waste Pits site, has ever failed resulting in a release of contained contaminants to the environment. The application of a PTW designation to justify a risky and costly removal of a functioning cap at the San Jacinto Site is inappropriate.

Such uses of PTW designations to drive remediation decisions at contaminated sediment sites is both inappropriate and inconsistent with the PTW Publication and other, more authoritative U.S. EPA guidance, as discussed below.

a. Not All Sites Contain PTW

As an initial matter, not all sites contain material that meets the narrow definition of principal threat waste, and there is no requirement that U.S. EPA stretch to designate material as PTW unless it clearly meets the PTW criteria. Indeed, U.S. EPA has recognized that in some site-specific circumstances, the classification of waste as principal threat/low level threat will not be applicable:

> The identification of principal and low level threats is made on a site-specific basis. In some situations site wastes will not be readily classifiable as either a principal or a low level threat waste, and thus no general expectations on how to best manage these source materials of moderate toxicity and mobility will necessarily apply. [NOTE: In these situations waste do not have to be characterized as either one or the other. The principal threat/low level threat waste concept and the NCP expectations were established to help streamline and focus the remedy selection process, not as a mandatory waste classification requirement.]

PTW Publication at p. 2. Accordingly, for sites at which materials do not satisfy the criteria for PTW, the only appropriate action is for U.S. EPA not to designate material as PTW. As discussed below, such circumstances are often the case at sediment sites.

b. PTW Determination Does Not Override the NCP Remedy Selection Process

As discussed in the PTW Publication, "remedy selection decisions are ultimately site-specific determinations based on an evaluation of the nine evaluation criteria" in the NCP. PTW Publication at p. 1. The purpose of PTW designation, when applicable, is simply to "streamline and focus the remedial investigation/feasibility study (RI/FS) on appropriate waste management options." Certain past remedy decisions have placed great significance on the designation of contaminated sediments as PTW. However, the designation of contaminated sediment as PTW may not result in a different remedy selection decision than would result from the NCP remedy selection process. Therefore, if a PTW designation is applied to contaminated sediments, the Administrator or other decision maker must take measures to ensure that the NCP remedy selection process has been followed and that the remedy selection criteria have been properly applied. In particular, the "preference for treatment" that a PTW designation entails does not justify choosing a remedy that involves more mass removal (which is not a form of "treatment"). The remedy selection decision ultimately must be justified on the bases of the nine NCP criteria and PTW designation should not be used to override these criteria and the NCP.

c. The PTW Designation Establishes A Preference For Treatment, Not Removal, And That Preference Can Be Overcome In Appropriate Circumstances, Which Are Often Found At Sediment Sites

The PTW Publication clearly states that the designation of material as PTW creates an "expectation" or "preference" for treatment. However, in recent instances, U.S. EPA Regions have cited PTW designation to support *removal* of sediments (i.e., dredging), rather than treatment. This is a clear misuse of the PTW designation. In the case of sediments, in many cases the most applicable "treatment" technique is in situ treatment (e.g., activated carbon amendments). While in situ methods may not be feasible in all instances (as discussed below), when in situ treatment is indicated, the PTW Publication, if anything, expresses a presumption that such in situ methods be used *in preference to removal*. Thus, U.S. EPA Regions that have used PTW designations to support removal remedies are acting in contravention of U.S. EPA's own policy.

The PTW Publication is equally unambiguous that the preference for treatment is **not determinative**: "These determinations, and the application of the expectations, serve as general guidelines and do not dictate the selection of a particular remedial alternative." PTW Publication at p. 3.

The PTW Publication identifies several situations where waste that has been identified as PTW may nonetheless be contained rather than treated "due to difficulties in treating the wastes." Id. Specific examples of such situations include:

- Treatment technologies are not technically feasible or are not available within a reasonable time frame;
- The extraordinary volume of materials or complexity of the site may implementation of treatment technologies impracticable;
- Implementation of a treatment-based remedy would result in greater overall risk to human health and the environment due to risks posed to workers or the surrounding community during implementation; or
- Severe effects across environmental media resulting from implementation would occur.

PTW Publication at p. 3

Each of these situations commonly occurs at sediment sites. As noted above, in many instances, in situ treatment technologies are either not applicable or have not been demonstrated to be effective. Contaminated sediment sites are also notorious for being among the largest and most complex sites (often extending over 20 miles and thousands of acres), with enormous volumes of impacted materials that make implementation of treatment technologies impracticable. In addition, dredging operations frequently involve greater overall risk to human health and the environment than capping or Monitored Natural Recovery (MNR). Finally,

dredging (and the risk of resuspension and re-release) is known to carry a great risk of severe effects across environmental media.[3]

d. PTW Designation Applies Only To That "Source Material" Which "Cannot Be Reliably Contained or Would Present a Significant Risk to Human Health or the Environment Should Exposure Occur," Which Does Not Refer To Most Contaminated Sediments At Contaminated Sediment Sites

As discussed above, a PTW designation applies only to a limited subset of the term "source material."[4] "Source material," is defined as "material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, to surface water, to air, or acts as a source for direct exposure." PTW is only that source material that "cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur." At contaminated sediment sites, the contaminants of concern are generally embedded beneath layers of additional sediment accumulation. Whether through natural sediment accumulation or by the installation of amended or un-amended caps, it is often the case that contaminated sediments do not serve "as a reservoir for the migration of contamination" or "as a source for direct exposure." Moreover, such materials can be reliably contained and do not present a significant risk to human health or the environment should exposure occur. Therefore, in general, contaminated sediments do not fall within the definition of PTW.

e. The Sediment Guidance, Which Is Both More Recent And More Focused Than The PTW Publication, Discourages The Application Of PTW Designations At Sediment Sites

U.S. EPA's Contaminated Sediment Remediation Guidance for Hazardous Waste Sites, U.S. EPA 540-R-05-012, OSWER 9355.0-85 (December 2005) (the Sediment Guidance) embodies national policy on contaminated sediment and should be followed at all contaminated sediment sites. The Sediment Guidance was issued for use "by federal and state project managers considering remedial response actions or non-time-critical removal actions" under CERCLA (p. 1-1). It was developed over a period of eight years (1998-2005) and was the

[3] For a discussion of the risks posed by resuspension and re-release and other considerations, see *The 4 Rs in Sediment Management: A Synopsis and Overview*, Fifth International Conference on Remediation of Contaminated Sediments (2009).

[4] Although the PTW Publication lists examples of "source materials" including "contaminated sediments and sludges," the context makes clear that this refers to sediments and sludges that have accumulated in tanks or impoundments, and not contaminated sediments in rivers, harbors, estuaries, etc. that are part of the general environment. In this regard, it is important to note that the PTW Publication was released in 1991, long before U.S. EPA had significant experience with contaminated sediment sites, and 14 years before the publication of the Sediment Guidance.

subject of comments by the U.S. EPA Regions and the public. The Sediment Guidance provides a risk management decision-making framework to assist with selecting appropriate remedies at contaminated sediment sites. As such, the Sediment Guidance constitutes U.S. EPA's most comprehensive and authoritative policy guidance on remedial decisions at contaminated sediment sites. The Sediment Guidance is 14 years more recent than the PTW Publication, and at over 200 pages, is far more comprehensive and authoritative than the 3-page PTW Publication.

On the subject of PTW, the Sediment Guidance states:

> For the majority of sediment removed from Superfund sites, treatment is not conducted prior to disposal, generally because sediment sites often have widespread low-level contamination, which the NCP acknowledges is more difficult to treat. However, pretreatment, such as particle size separation to distinguish between hazardous and non-hazardous waste disposal options, is common. Although the NCP provides a preference for treatment for "principal threat waste," treatment has not been frequently selected for sediment. High cost, uncertain effectiveness, and/or (for on-site operations) community preferences are other factors that lead to treatment being selected infrequently at sediment sites.

Sediment Guidance at Section 6.7 (emphasis added).

The increasingly prominent role that PTW designations have made in recent remedy decisions at contaminated sediment sites is directly contrary to recognition in the Sediment Guidance that contamination at sediment sites is frequently wide-spread and low level and therefore inappropriate for PTW treatment. Moreover, the Sediment Guidance states "in-situ containment can also be effective for principal threat wastes, where that approach represents the best balance of the NCP nine remedy selection criteria" (Sediment Guidance, p. 7-4).

For all of these reasons, PTW designations at sediment sites should not commonly be used to justify dredging as a remedial element.

REQUEST FOR ACTION: The U.S. EPA Superfund Task Force should direct that the Agency issue new guidance on PTW specifically applicable to contaminated sediment sites that restores the appropriate limited role of PTW principles to sediment sites.

For all the reasons discussed above, it is critical to remove the unnecessary and counter-productive impediment to efficient and cost-effective evaluation and remediation of contaminated sediment sites posed by the inappropriate elevation of the simple, well-intended historical Superfund PTW Guidance. The new sediment site-specific PTW Guidance should restore the original concept of PTW as a helpful waste management tool and underscore that

PTW is not to be used to override the NCP's remedy selection criteria, as has been the case at several sites at which PTW was used as an inappropriate justification to require significant dredging even though dredging was not technically justified or consistent with the NCP remedy selection requirements

9. U.S. EPA Should Clarify The Applicability Of The PCB Remediation Waste Disposal Requirements (40 CFR 761.50) To Contaminated Sediments

Polychlorinated biphenyls (PCBs) have been a predominant chemical of concern at contaminated sediment sites, including the Hudson, Fox, Housatonic and Kalamazoo Rivers among many others. Generally speaking, remediation waste generated by PCB cleanups that contains more than 50 parts per million (ppm) PCBs must be disposed of in a Toxic Substances Control Act (TSCA) licensed landfill at considerable expense. Until about five years ago, the universal practice has been to determine if the material must be disposed in a TSCA landfill or in a more available and significantly less costly Resource Conservation and Recovery Act (RCRA) Subtitle D facility by sampling the staged dredged sediment onshore after dewatering and/or stabilization or other treatment have occurred in order. Numerous completed contaminated sediment dredging remedies have followed this environmentally sound approach, including the U.S. EPA-implemented Manistique Harbor cleanup, which involved some 187,000 cubic yards of PCB-impacted sediment.

Prior to its merger into the Office of Solid Waste and Emergency Response (now the Office of Land and Emergency Management or OLEM) U.S. EPA's TSCA Branch (OPPT), had taken the position that the appropriate landfill disposition of PCB contaminated sediment must be based on the PCB concentrations "as found" in the in-situ sediment. U.S. EPA is today applying the same "as found" requirement to characterize PCBs found in contaminated sediment for disposal, even though that requirement is, as shown below, contrary to U.S., EPA's own regulations. In some cases, U.S. EPA has required the TSCA/non-TSCA disposal determination to be made based on the highest historical sample, even if that sample was collected many years previously and is no longer representative of actual site conditions.

This procedure is scientifically unsound, contrary to existing regulations and does not provide any incremental environmental benefit. There is even no guarantee that the historical in-situ concentrations if the waterbody are even present in the staged sediments onshore. On the contrary, this approach creates significant unnecessary expense and delays in implementing cleanups at contaminated sediment sites. The following discussions explains these points in greater detail.

a. Applicable Regulations Indicate That The Appropriate Disposal Method For PCB Contaminated Sediments Should Be Based On The Concentration Of PCBs In The Sediment After It Has Been Dredged And Dewatered And/or Stabilized Or Otherwise Treated

40 C.F.R. 761.3 defines "PCB Remediation Waste" to include, among other things "dredged materials, such as sediments, settled sediment fines, and aqueous decantate from sediment." It is noteworthy this definition refers to "dredged" sediment, not in-situ sediment that is "to be dredged." Accordingly, PCB contaminated sediment becomes PCB Remediation Waste only after it has been dredged and, therefore, it is inappropriate to classify the sediment for disposal based on its in-situ (pre-dredging) concentration. Moreover, this definition recognizes the separation of dredged sediments into liquid and solid phases for characterization.

In fact, 40 C.F.R. 761.1(b)(4)(iii) requires the separation of phase in non-liquid/liquid material, and the sampling of each phase separately. Disposal of each phase is then governed by the concentration of PCBs in that phase (40 C.F.R. 761.1(g)(4)(iv)). See also 2001 TSCA PCB Question and Answer Document (at 76), which states:

> **Q: How do I determine the concentration of multi-phasic PCB remediation waste such as sludges?**
>
> **A:** Separate the multi-phasic waste and sample each phase separately. You may either dispose of each phase separately based on the as-found concentration in that phase, or dispose of the waste without separating it based on the highest as-found concentration of any phase." See also *Id*. at 4-5.

Likewise, 40 C.F.R. 761.61(b)(3) authorizes the disposal of material containing less than 50 ppm PCB that has been dredged or excavated from waters of the United States at a non-TSCA facility, subject to approval from the United States Army Corps of Engineers, when applicable.

Accordingly, U.S. EPA's position that PCB remediation waste must be characterized for disposal based on the in-situ concentration of PCBs in the sediment is contrary to other U.S. EPA PCB regulations.

b. Requiring PCB Remediation Waste At Contaminated Sediment Sites To Be Characterized For Disposal Based On The In-Situ Concentration Of The Sediment Is Scientifically Unsound, Provides No Incremental Environmental Benefit And Results In Substantial Increased Expense And Delay

There are numerous problems with the requirement to characterize PCB Remediation Waste at contaminated sediment sites based on the in-situ "as found" concentration, including:

- The in-situ data are often old, unreliable and not reflective of current conditions, let alone the ex-situ concentrations

- The in-situ data do not accurately reflect the contents of the staged materials, which are the materials that will actually be sent for disposal

- The safest, most accurate and environmentally sound approach is to analyze current samples of the material when it is ready to be disposed

- Because the older in-situ data tend to have higher concentrations, this artificially and significantly increases disposal costs, because significantly more material ends up in a TSCA landfill

- TSCA landfill space is scarce and it does not make sense to use this limited resource on waste not requiring TSCA landfilling

- No incremental environmental benefit results from disposing of material containing less than 50 ppm PCBs in a TSCA landfill

- At large contaminated sediment sites, the incremental disposal costs can run in the millions of dollars and significant delays have and will continue to occur

- At smaller sites, the incremental cost can be considerable and delays also can be expected

c. The Incremental Cost Of Disposal Can Be Excessive

The following example is based on the tipping (landfill disposal) fee alone – it does not include the cost differential that may result from having to transport TSCA material a greater distance than non-TSCA material due to the limited availability of TSCA landfills (assuming TSCA disposal at $110/ton (we have seen a range of $65 to $150/ton for TSCA facilities) and non-TSCA disposal at- $15/ton) (we have seen a range of $15 to $35/ton):

Volume (tons)	**TSCA**	**Non-TSCA**	**Incremental Cost**
50,000	$5,500,000	$750,000	$4,750,000
100,000	$11,000,000	$ 1,500,000	$9,500,000
250,000	$27,500,000	$ 3,750,000	$ 23,750,000

The figures below are based on actual confidential sites (Incremental difference between remedies based on in-situ data vs. ex-situ data, based on estimated TSCA landfill costs of $150/cy):

Site	Increase in CY as TSCA Waste	Added Cost
1	500,000	$75,000,000
2	900,000	$ 135,000,000

REQUEST FOR ACTION: The U.S. EPA Superfund Task Force should direct OLEM to issue a clarification guidance or simple directive that the determination of the landfill type for disposal of dredged sediments should be based on the PCB concentrations present in ex-situ samples of the dredged materials in the staging area, following dewatering and stabilization and/or other treatment.

Efforts to resolve this important issue, which arose in about 2004, have never borne fruit. Representatives in OLEM at HQ have indicated that they agreed with this important change, but felt stymied because of a concern that a formal rule-making process would be needed to implement this much needed change. However, all the underpinnings are already present in the various existing rules, regulations, guidance and Q & A cited above. The "multi-phase" sampling quoted above is just one such example. Therefore, a simple new Guidance document or even a new "Q & A" should be sufficient to fix this wasteful and unsustainable requirement. Resolution of this issue is urgently needed because this issue is creating unnecessary delays and significantly increasing costs without any environmental benefit.

Accordingly, we request that U.S.EPA's OLEM issue a clarification that existing TSCA rules, guidance and Q&As permit ex-situ sampling of dredged sediments for disposal characterization. The historic practice of ex-situ sampling of dredged PCB contaminated sediments for disposal characterization should be restored. If that is not practicable, then we request U.S. EPA to proceed expeditiously with rulemaking to correct this problem.

10. <u>The Scope and Procedure for U.S. EPA's CSTAG and the NRRB Should Be Changed to Fully Integrate Their Deliberations into the Decision-making Authority by Including a Formal CSTAG Remedy Selection Recommendation to the NRRB and a Formal Remedy Selection Recommendation from the NRRB to the U.S. EPA Administrator at Contaminated Sediment Sites Expected to Cost $50 Million or More.</u>

The complexity of contaminated sediment mega-sites is unparalleled in the Superfund program because these sites are so large and complex, often addressing ten to forty river miles or large lakes or harbors associated with expansive watersheds. Complex issues at these sites include the scope of the appropriate site characterization, risk assessment, calculation of site background concentrations for use in setting cleanup goals, serious remedy feasibility and implementability issues and disregard of the NCP's cost-effectiveness proportionality requirements, among other issues. These complexities have resulted in lengthy and costly Remedial Investigations and Feasibility Studies spanning 10-20 years, running upwards of $100 Million and have become the norm.

These complexities were the reason that CSTAG was created in 2002. The thinking behind CSTAG is to have the Agency's foremost experts on sediment sites nationwide review site remedies nationwide to apply their expertise and ensure consistence and compliance with U.S. EPA national remedy polices. However, the CSTAG review of the Regions' proposed remedy for sediment sites currently is advisory only, and unfortunately, its recommendations have been largely ignored by the Agency's Regions. This combination has led to the unchecked selection of sediment remedies at mega sediment sites at the Regional level that are inconsistent with the NCP and Sediment Guidance, often resulting in remedies that require unachievable cleanup goals that are based on incorrect calculation of site "background." These remedies are also often are predicated on the incorrect assumption that huge quantities of dredging can be legitimately correlated to risk reduction, but in fact, in many instances, such dredging contributes to increased risk due to the inevitable releases of contaminants during the dredging process, despite use of Best Management Practices.

The Administrator's May 9, 2017 change to the Superfund Delegation Authority (No. 14-2) is the first step in requiring accountability and compliance with CERCLA, the NCP and the Sediment Guidance at the Regional level for Superfund sites expected to cost over $50 Million. However, changes in the review process for contaminated sediment sites by CSTAG and the NRRB are necessary to ensure that the Administrator has a strong foundation of information on which to make remedy selection decisions including the specific recommendation on the appropriate remedy by the Agency's two review Boards, one of which, CSTAG, consists of the leading sediment experts at Headquarters and the Regions.

REQUEST FOR ACTION: The procedures for CSTAG and the NRRB should be amended as follows:

1. All contaminated sediment sites with remedies with the potential to cost over $50 Million should be reviewed by CSTAG prior to the NRRB's review. This would restore CSTAG's historical separate remedy review deliberation prior to the NRRB remedy review step for sediment sites. Although CSTAG's separate remedy review procedure was reinstated on January 7, 2017 in Assistant Administrator Stanislaus' Directive, eligibility for remedy review by CSTAG was limited to only sites expected to cost over $500 Million. However, it is essential that the threshold for CSTAG review eligibility should be changed back to $50 Million. This would make the trigger for CSTAG review consistent with the Administrator's May 9, 2017 Superfund Delegation of Authority Memo that requires remedies for all Superfund sites over $50 Million to be approved by the Administrator.

2. CSTAG's current involvement with the Regions of providing comments on miscellaneous significant site issues during the pre-remedy selection phase should be formally expanded to include review and interaction with the Regions on the critical issues impacting the selection of the remedy, including the appropriate scope of the Remedial Investigation, the appropriate assumptions and basis for the Risk Assessment and the review and comment on the Feasibility Study prior to remedy selection.

3. CSTAG's scope and procedure should be amended to include review of the Region's proposed remedy for the site and CSTAG's recommendation of the appropriate proposed sediment remedy to the NRRB. This would make the CSTAG remedy evaluation and recommendation a formal part of the Agency's decision-making process for sediment remedies, as opposed to its current advisory-only status.

4. The NRRB's scope of review should be amended to include review of CSTAG's recommended remedy for contaminated sediment sites and transmittal of the NRRB's own recommendation of the appropriate proposed remedy for the site to the U.S. EPA Administrator. This would make the NRRB remedy evaluation and remedy selection recommendation a formal part of the Agency's decision-making process for sediment remedies, as opposed to its current advisory-only status.

5. States and tribes traditionally have been permitted to make a presentation to the NRRB during the initial semi-public portion of the Board's remedy review deliberations, but oddly, the Potentially Responsible Parties (PRPs) who are frequently the parties with the greatest technical familiarity with the site, and the parties who frequently will be responsible for implementing the remedies, have never been given an opportunity to do so. This distinction is not rational and ignores the important fact that PRPs almost always have assumed the lead on

performing the site work and as a result typically have far more detailed, first-hand knowledge of virtually all facets of the site as a result of having completed the technical work at the site. That lead role often comes with a very large price tag, with RI/FS work running in the tens of millions, upwards of $100 to $150 Million at mega-sediment sites. Shutting out the parties with the greatest technical familiarity and the greatest stake is not only unfair, but it is also a lost opportunity for the NRRB to ensure that it has the best information available on which to base its review and recommendations. This opportunity for PRPs to make a presentation and answer questions should also be added to the CSTAG procedures.

6. At first blush, restoring CSTAG's independent remedy evaluation review as it existed from 2002 to 2011 and a adding a short presentation opportunity for PRPs to the CSTAG and NRRB procedures might appear to cause additional time to complete the remedy selection process. However, the quality of the review and accountability of the Regions for their remedy recommendations to CSTAG, the NRRB and, ultimately, the Administrator is very likely to substantially reduce the unacceptable 10-20 year delays at the Regional level from listing of the site to remedy selection that currently are the norm at contaminated sediment mega-sites.

CONCLUSION

The SMWG has been an active stakeholder on national contaminated sediment technical and policy issues since its inception in 1998 and has offered comments on numerous U.S. EPA sediment-related documents and policies, as well as on issues of national concern in many sediment site Proposed Plans over the years. The SMWG appreciates the opportunity to provide its insights and recommendations to U.S. EPA's Superfund Task Force. The SMWG believes that implementing the recommendations in these comments will further the objectives of the May 22, 2017 memorandum by (a) reducing the amount of time until a site can be determined ready for reuse; (b) realigning the incentives of all parties to foster faster cleanups; (c) supporting the use of risk-management principles in remedy selection at contaminated sediment sites; (d) promoting consistency in remedy selection and (e) promoting more effective use of CSTAG's and NRRB's experience and expertise in an efficient and expeditious manner, as discussed above.

The SMWG would be pleased to answer any questions about these comments. For further information, please feel free to contact the SMWG's Coordinating Director, Steven C. Nadeau, c/o Honigman Miller Schwartz and Cohn LLP, 2290 First National Building, 660 Woodward Avenue, Detroit, MI 48226, (313) 465-7492, snadeau@honigman.com.

Sincerely,

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Exhibit A

SMWG Members

Arconic (f/k/a ALCOA).
Atlantic Richfield (a BP company)
BASF Corporation
Beazer East, Inc.
Boeing Company, The
CBS Corporation
Chevron Energy Technology Company
Dow Chemical Company, The
DTE Energy
E.I. duPont de Nemours and Company
ExxonMobil
Freeport-McMoRan Copper & Gold, Inc.
General Motors Company
Georgia-Pacific Corporation
Glenn Springs Holdings, Inc.
Gunderson Marine
Honeywell International, Inc.
International Paper
Kinder Morgan
National Grid
NW Natural
Schnitzer Steel
Shell Oil Company
Sherwin-Williams Co.
Waste Management
U. S. Steel Group
WE Energies