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Via E-Mail and U.S. Mail

August 20, 2014

Alice Yeh
Remedial Project Manager
United States Environmental Protection Agency, Region II
290 Broadway
New York, NY 10007-1866

Re: Sediment Management Work Group Comments On Proposed Plan For The Lower Eight Miles Of The Lower Passaic River Part Of The Diamond Alkali Superfund Site (the "Proposed Plan")

Dear Ms. Yeh:

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. The SMWG has long advocated a national policy addressing contaminated sediment issues that is founded on sound science and risk-based evaluation of contaminated sediment management options. U.S. EPA's 2005 *Contaminated Sediment Guidance for Hazardous Waste Sites* ("Guidance") was an important first step in that direction. The next key step is uniform and consistent application of the Guidance. The SMWG, as part of the next step, is monitoring whether and how the Guidance is being applied at contaminated sediment sites around the country.

The SMWG previously submitted comments to the National Remedy Review Board ("NRRB") on the Lower Passaic River Restoration Project Draft Source control Early Action Focused Feasibility Study ("FFS") in 2007. The Proposed Plan is similar to the FFS in that neither document provides a meaningful evaluation of a full range of remedial alternatives, which is contrary to the National Contingency Plan ("NCP"). Moreover, like the FFS, the Proposed Plan does not comport with the *11 Risk Management Principles for Contaminated Sediment Sites* (U.S. EPA 2002) nor the Sediment Guidance. The Proposed Plan's inconsistency with the NCP and national sediment policy, as embodied in the Sediment Guidance, concerns the SMWG because these regulations and policies are in place to ensure that site investigations are appropriately scoped, and that the evaluation and selection of remedial alternatives are risk-

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reduction focused and effectively protect human health and the environment, all in a consistent manner at all contaminated sediment sites.

In this instance, the SMWG is very concerned with the direction that the Lower Passaic River Proposed Plan appears to be heading. As proposed by U.S. EPA, this would be the largest sediment removal project in the United States, with an estimated removal of 4,300,000 cubic yards of material. As U.S. EPA notes in the Proposed Plan, 3% of all contaminated sediment dredged would be released back into the waterway, would require thousands of bridge closings, would increase truck traffic in numerous communities, and would expend \$1 billion to \$2.5 billion of funds to implement a flawed clean-up plan that fails to provide any material sustainable risk reduction. Consequently, the SMWG recommends that the Proposed Plan be withdrawn.

The following summarizes our primary concerns with the failure of the Agency's Proposed Plan to follow its own Guidance as well as concerns raised by other governmental experts. Greater detail is included in the body of this document.

1. As a threshold issue, the Proposed Plan is premature and is inconsistent with CERCLA process and the NCP because it the Agency's site characterization is inadequate. It substantially relies on old and incomplete data, despite the availability of significantly more recent detailed data that is now available from the Cooperating Parties Group ("CPG") Remedial Investigation work that cost over \$100 million. Moreover, the CPG's RI/FS will be submitted to the Agency in the near future and it should form the basis of the Agency's evaluation of remedial alternatives and selection of a remedy.
2. U.S EPA's National Contaminated Sediment Policy is embodied in the Sediment Guidance which is intended to be applied nationally in a consistent manner to minimize risks associated with sediment cleanups. Failure to adhere to the Sediment Guidance not only creates uncertainty by undermining national consistency in sediment remedy decisions, but also threatens to create unnecessary risks that the Sediment Guidance is designed to avoid. The Proposed Plan, unfortunately, is inconsistent with the Sediment Guidance.
3. The Proposed Plan significantly deviates from the NCP, the Sediment Guidance and the Eleven Sediment Management Principles in a number of ways including the fact that the FFS and Proposed Plan fail to adequately identify and factor in substantial ongoing sources in the River, as is required by the Sediment Guidance and U.S. EPA's national policy. Thus, recontamination is likely to occur.

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4. EPA is basing many decisions on a transport model that has not been peer reviewed, applies unsupported input factors and is not fully suitable to the site. EPA's own internal experts (NRRB/CSTAG) have raised this concern to the Region, however to date the Agency has failed to make substantive changes to support the remedy.
5. The clean-up goals and risk criteria are based on a conservative screening level Risk Assessment and the Agency has failed to conduct a site-specific Baseline Risk Assessment as required by the NCP and U.S. EPA's own Superfund Guidance.
6. The Proposed Plan inadequately develops and inappropriately evaluates the potential remedial alternatives in contravention of the NCP, the CERCLA RI/FS process and the Sediment Guidance.
 - The FFS and Proposed Plan fail to properly evaluate the potential adverse impact on remedy effectiveness posed by the risks resulting from the inevitable resuspension and release of Chemicals of Concern which occur during all dredging projects.
 - Based on experience from the interim dredging actions previously implemented (the Lister Avenue and River Mile 10.9 dredging projects), numerous bridges and submerged utilities would negatively impact the implementability of the Proposed Plan remedy and should be evaluated prior to selection of a remedy. The existence of numerous bridges and submerged utilities would dramatically adversely impact the implementability of the Proposed Plan remedy and this impact should be evaluated prior to selection of a remedy. In addition, because of the age of the bridges, the likelihood of malfunctions and failures are high. This was evidenced by the substantial bridge malfunctions which shut down the River Mile 10.9 dredging project numerous times and the significant disruption of the heavy metropolitan area's vehicle traffic. Such malfunctions in a full scale multi-year dredging project would result in major disruption of water and land transport and traffic, not to mention the significant delays in completing the dredging.
 - Submerged debris and obstructions were not appropriately evaluated as part of the Proposed Plan's implementation.

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- The Proposed Plan's geotechnical assessment of issues relating to bridge abutments, bulkheads and slope stability, among others, is incomplete and unreliable.
- The Proposed Plan fails to evaluate the comparative net risk reduction potential of the alternatives, pursuant to Section 7.4 of the Sediment Guidance.
- The Proposed Plan inappropriately rejects the use of a confined aquatic disposal ("CAD") facility for disposal of the massive proposed dredging volume. Despite its potential unpopularity, a CAD would result in a significant cost savings (estimated to be \$700 million).
- The Proposed Plan inappropriately includes navigational dredging beyond the scope of CERCLA that increases the potential cost of the project by an estimated \$850 million.
- The Proposed Plan inappropriately attempts to set cleanup standards below anthropogenic background, contrary to CERCLA, the NCP, the Sediment Guidance and long-established U.S. EPA policy.
- U.S. EPA failed to propose a phased or adaptive management approach, even though a site with such complex circumstances as the LPRSA is considered conducive to those approaches.
- An analysis of the Proposed Plan under the NCP's Nine Remedy Selection Criteria results in the conclusion that the Proposed Plan is inconsistent with those requirements and should be withdrawn in favor of the soon to be completed LPRSA RI/FS. In particular, the shortcomings of the Proposed Plan include failure to meet the following NCP criteria: overall protection of human health and the environment, long-term and short-term effectiveness, implementability and cost effectiveness.

In conclusion, rather than following the CERCLA RI/FS process and despite the availability of the LPRSA RI/FS in a few months, U.S. EPA proposes to disregard this \$100 million dollar effort in apparent unfounded need for speed. A review of the Proposed Plan against the NCP Remedy Selection Criteria and the Sediment Guidance clearly reveals that it fails to comply with the basic requirements of these documents. In light of the imminent release of the RI/FS and the Proposed Plan's significant inconsistencies with CERCLA, the NCP, and National Sediment Policy, as embodied in the Sediment Guidance, the Proposed Plan should be

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withdrawn and the Site should follow the CERCLA RI/FS process at this time. This should involve evaluating remedial alternatives and selecting the appropriate remedy for the Site following receipt and review by the Agency of the RI/FS.

The Agency should also consider the CPG's Conceptual Sustainable Remedy because it appears to hold great promise in being fully consistent with the NCP and Sediment Guidance. Moreover it is a potentially workable approach, utilizing sustainable and adaptive management principles to address this complex site.

* * *

The SMWG would be pleased to answer any questions about its comments on the draft FFS. 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,

Steven C. Nadeau

Steven C. Nadeau, Coordinating Director
Sediment Management Work Group

Enclosure

c.

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Sediment Management Work Group
Comments On The United States Environmental Protection Agency's
Proposed Plan For The Lower Eight Miles Of The Lower Passaic River
Part Of The Diamond Alkali Superfund Site

U.S. EPA Region II
August 20, 2014

I. Introduction

The Sediment Management Work Group (“SMWG”)¹ appreciates the opportunity to provide comments to the United States Environmental Protection Agency (“U.S. EPA”) on the Proposed Plan For The Lower Eight Miles Of The Lower Passaic River Restoration Part Of The Diamond Alkali Superfund Site (“Proposed Plan”) dated April 2014, which addresses an eight mile reach in the lower section of the River (“the site” or “FFS Area”). The SMWG has long advocated a national policy addressing contaminated sediment issues that is founded on sound science and risk-based evaluation of contaminated sediment management options. Accordingly, the SMWG has strongly supported the substance of and consistent application of the U.S. EPA’s 2005 *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (U.S. EPA 2005) (the “Sediment Guidance”) to all sediment sites nationally. The SMWG recognizes that the management of sites involving contaminated sediments frequently involves unique and complex scientific and technical issues, including assessment methodologies and evaluation of risk and risk reduction options. The SMWG believes that the Sediment Guidance was an important first step in that direction. In addition, the findings, conclusions and recommendations of the NAS Report, “Sediment Dredging at Superfund Megsites: Assessing the Effectiveness” (NAS 2007) should be factored into the evaluation of options for the Passaic River. As an active participant in the national discussions on sediment management issues, the SMWG welcomes the opportunity to offer comments on the Proposed Plan.

The SMWG previously submitted comments to the National Remedy Review Board on the Lower Passaic River Restoration Project Draft Source control Early Action Focused Feasibility Study (“FFS”) in 2007. The Proposed Plan is similar to the FFS in that neither document provides a meaningful evaluation of a full range of remedial alternatives, which is contrary to the National Contingency Plan (“NCP”). Moreover, like the FFS, the Proposed Plan does not comport with the *11 Risk Management Principles for Contaminated Sediment Sites* (U.S. EPA 2002a) nor the Sediment Guidance. The Proposed Plan’s inconsistency with the NCP and national sediment policy, as embodied in the Sediment Guidance, concerns the SMWG because these regulations and policies are in place to ensure that site investigations are appropriately scoped, and that the evaluation and selection of remedial alternatives are risk-

¹ The Sediment Management Work Group 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. (See Exhibit “A” for a list of its Members.)

reduction focused and effectively protect human health and the environment, all in a consistent manner at all contaminated sediment sites.

The SMWG is fully cognizant that the Lower Passaic River is a highly complex urban waterbody with multiple sources of impacts – both historical and ongoing – that presents unique and complicated challenges. Moreover, the SMWG recognizes U.S. EPA’s attempt to navigate the intersection of the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”) with the Clean Water Act (“CWA”); however, there are certain fundamental principles of the remediation process that have not been followed in arriving at the Proposed Plan. These principles are in place to ensure that a site is fully understood, that the remedy selected is effective, implementable, sustainable, cost-effective, and most importantly, that the remedy selected protects human health and the environment. The NCP requires no less.

II. Executive Summary

The SMWG has been in the forefront of the national arena of contaminated sediment remediation for over 15 years. When the SMWG becomes aware of a guidance document, policy statement, technical issue or proposed remedy relating to contaminated sediment sites which is of national interest and/or concern, it typically submits comments. Those comments have been positive and critical, depending on the substance of the issue or the nature of the proposed remedy in question.

In this instance, the SMWG is very concerned with the direction that the Lower Passaic River Proposed Plan appears to be heading. As proposed by U.S. EPA, this would be the largest sediment removal project in the United States, with an estimated removal of 4,300,000 cubic yards of material. As U.S. EPA notes in the Proposed Plan, 3% of all contaminated sediment dredged would be released back into the waterway, would require thousands of bridge closings, would increase truck traffic in numerous communities, and would expend \$1 billion to \$2.5 billion of funds to implement a flawed clean-up plan that fails to provide any material sustainable risk reduction. Consequently, the SMWG recommends that the Proposed Plan be withdrawn.

The following summarizes our primary concerns with the failure of the Agency’s Proposed Plan to follow its own Guidance as well as concerns raised by other governmental experts. Greater detail is included in the body of this document.

1. As a threshold issue, the Proposed Plan is premature and is inconsistent with CERCLA process and the NCP because it the Agency’s site characterization is inadequate. It substantially relies on old and incomplete data, despite the availability of significantly more recent detailed data that is now available from the Cooperating Parties Group (“CPG”) Remedial Investigation work that cost over \$100 million. Moreover, the CPG’s RI/FS will be submitted to the Agency in the near future and it should form the basis of the Agency’s evaluation of remedial alternatives and selection of a remedy.

2. U.S EPA's National Contaminated Sediment Policy is embodied in the Sediment Guidance which is intended to be applied nationally in a consistent manner to minimize risks associated with sediment cleanups. Failure to adhere to the Sediment Guidance not only creates uncertainty by undermining national consistency in sediment remedy decisions, but also threatens to create unnecessary risks that the Sediment Guidance is designed to avoid. The Proposed Plan, unfortunately, is inconsistent with the Sediment Guidance.
3. The Proposed Plan significantly deviates from the NCP, the Sediment Guidance and the Eleven Sediment Management Principles in a number of ways including the fact that the FFS and Proposed Plan fail to adequately identify and factor in substantial ongoing sources in the River, as is required by the Sediment Guidance and U.S. EPA's national policy. Thus, recontamination is likely to occur.
4. EPA is basing many decisions on a transport model that has not been peer reviewed, applies unsupported input factors and is not fully suitable to the site. EPA's own internal experts (NRRB/CSTAG) have raised this concern to the Region, however to date the Agency has failed to make substantive changes to support the remedy.
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6. The Proposed Plan inadequately develops and inappropriately evaluates the potential remedial alternatives in contravention of the NCP, the CERCLA RI/FS process and the Sediment Guidance.
 - The FFS and Proposed Plan fail to properly evaluate the potential adverse impact on remedy effectiveness posed by the risks resulting from the inevitable resuspension and release of Chemicals of Concern which occur during all dredging projects.
 - Based on experience from the interim dredging actions previously implemented (the Lister Avenue and River Mile 10.9 dredging projects), numerous bridges and submerged utilities would negatively impact the implementability of the Proposed Plan remedy and should be evaluated prior to selection of a remedy. The existence of numerous bridges and submerged utilities would dramatically adversely impact the implementability of the Proposed Plan remedy and this impact should be evaluated prior to selection of a remedy. In addition, because of the age of the bridges, the likelihood of malfunctions and failures are high. This was evidenced by the substantial bridge malfunctions which shut

down the River Mile 10.9 dredging project numerous times and the significant disruption of the heavy metropolitan area's vehicle traffic. Such malfunctions in a full scale multi-year dredging project would result in major disruption of water and land transport and traffic, not to mention the significant delays in completing the dredging.

- Submerged debris and obstructions were not appropriately evaluated as part of the Proposed Plan's implementation.
- The Proposed Plan's geotechnical assessment of issues relating to bridge abutments, bulkheads and slope stability, among others, is incomplete and unreliable.
- The Proposed Plan fails to evaluate the comparative net risk reduction potential of the alternatives, pursuant to Section 7.4 of the Sediment Guidance.
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- U.S. EPA failed to propose a phased or adaptive management approach, even though a site with such complex circumstances as the LPRSA is considered conducive to those approaches.
- An analysis of the Proposed Plan under the NCP's Nine Remedy Selection Criteria results in the conclusion that the Proposed Plan is inconsistent with those requirements and should be withdrawn in favor of the soon to be completed LPRSA RI/FS. In particular, the shortcomings of the Proposed Plan include failure to meet the following NCP criteria: overall protection of human health and the environment, long-term and short-term effectiveness, implementability and cost effectiveness.

In conclusion, rather than following the CERCLA RI/FS process and despite the availability of the LPRSA RI/FS in a few months, U.S. EPA proposes to disregard this \$100 million dollar effort in apparent unfounded need for speed. A review of the Proposed Plan against the NCP Remedy Selection Criteria and the Sediment Guidance clearly reveals that it fails to comply with the basic requirements of these documents. In light of the imminent release of the LPRSA RI/FS and the Proposed Plan's significant inconsistencies with CERCLA, the NCP, and National Sediment Policy, as embodied in the Sediment Guidance, the Proposed Plan should be withdrawn and the Site should follow the CERCLA RI/FS process at this time. This should involve evaluating remedial alternatives and selecting the appropriate remedy for the Site following receipt and review by the Agency of the LPRSA RI/FS.

The Agency should also consider the CPG's Conceptual Sustainable Remedy because it appears to hold great promise in being fully consistent with the NCP and Sediment Guidance. Moreover it is a potentially workable approach, utilizing sustainable and adaptive management principles to address this complex site.

III. Threshold Issue – The Proposed Plan Is Premature And Is Inconsistent With The CERCLA Process And The National Contingency Plan. It Should Be Deferred In Favor Of The Remedial Investigation/Feasibility Study For The Entire Lower Passaic River Area That Is Nearly Complete.

As an initial matter, SMWG notes that the Proposed Plan is based primarily on the FFS, which was largely conducted prior to 2007 and is focused on only a portion of the Diamond Alkali Superfund Site. We understand that the Cooperating Parties Group ("CPG"), consisting of some 60 companies who are working cooperatively with U.S. EPA under three settlement agreements, has undertaken and nearly completed a comprehensive Remedial Investigation/Feasibility Study (the "LPRSA RI/FS") for the entire 17 mile stretch of the Lower Passaic River below the Dundee Dam, including the eight miles that are the subject of the Proposed Plan. The LPRSA RI/FS has been conducted under the supervision and direction of U.S. EPA at a cost of well over \$100 million. Whatever perceived benefit there was in 2007 with proceeding with the FFS for the lower eight miles no longer exists now that the LPRSA RI/FS is nearly complete. It would be inconsistent with the policies of CERCLA, the NCP and the Sediment Guidance to proceed with the Proposed Plan's partial site remedy before completion of the LPRSA RI/FS, which covers the entire site. At this site, the substantial additional site data collected by the CPG, its evaluation of site risks and potential remedies in the RI/FS to be submitted later this year, should be completed and evaluated by U.S. EPA prior to selection of any remedy.

In addition, the NRRB and CSTAG, in their joint Recommendations for the Diamond Alkali Superfund Site, Lower Eight Miles of the Lower Passaic River (Focused Feasibility Study Area) (U.S. EPA 2014, the "Joint Comments") observed that the Region has failed to explain how the Proposed Plan will be consistent with the remedy to be selected in the future for the entire LPRSA. "The Boards recommend that the decision documents clearly explain its rationale for concluding that the proposed FFS remedy would be consistent with the remedy to be selected in the future for the entire river." Joint Comments at p. 7. The requirement that an interim remedy be consistent with the final remedy is, of course, one of the basic tenets of CERCLA (Section 104(a)(2)) and the NCP (40 C.F.R. 300.430(a)(ii)(3)).

Therefore, the SMWG urges the Region to withdraw the Proposed Plan and defer selection of a remedy until the RI/FS for the entire Site is fully reviewed and evaluated.

IV. U.S. EPA's National Contaminated Sediment Policy, As Embodied In The Sediment Guidance, Must be Applied Nationally In A Consistent Manner as a Matter of U.S. EPA Policy

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 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.

There are at least eight key overarching remedy selection principles in the Sediment Guidance applicable to this site:

- Confirmation that the site is ready for remediation by controlling sources to the greatest extent practicable before commencing remediation (p. 2-20, 7-17)
- The focus of remediation should be on risk reduction, not mass removal. (p. 7-1, 7-16). Likewise, the focus should be on contaminated sediment that is bioavailable and bioaccessible. (p. 7-3)
- A realistic, site-specific evaluation of the potential effectiveness of each sediment management option, including dredging, capping, and monitored natural recovery, should be incorporated into the selection of remedies at a site (p. 7-3). At large and/or complex sites, consideration of the use of combinations of remedies may be appropriate (p. 7-3).
- The Sediment Guidance expressly reiterates and applies the NCP's Nine Remedy Evaluation Criteria (p. 7-2, 7-7 to 7-13) (Highlight Box 7-3). Of particular relevance at this site are the inconsistencies in the Proposed Plan with the NCP Criteria of protectiveness, short-term and long-term effectiveness, implementability and cost-effectiveness.
- Specifically, the remedy must comply with the provisions of CERCLA and the NCP on cost effectiveness by comparing and contrasting the costs and benefits of the various remedial alternatives as part of the risk management decision-making framework (p. 7-1).
- An appropriate evaluation should be conducted of the expected comparative net risk reduction of the various sediment management options, including a realistic evaluation of their respective advantages and site-specific limitations, especially their risk of remedy potential. For example, at this site, risks that inevitably will result from resuspension and release of COCs during the contemplated dredging

of an estimated 4.3 million cubic yards of contaminated sediment, much of which is not currently bioavailable or bioaccessible. (p. 7-13, 7-14).

- Adaptive management concepts, which recognize the need for reconsideration of the original remedy chosen where new data and/or results of pilots or the initial implementation of the remedy suggest the appropriateness of revising the original approach, should be applied (p. 2-22, 3-1, 7-16).

In essence, these principles all focus on risk reduction, which the Sediment Guidance reinforces by indicating that contaminated sediment that is not bioavailable or bioaccessible and that is reasonably stable does not necessarily contribute to site risks (p. 7-3). These principles, if applied appropriately, will lead to protective remedies that are also cost-effective as required by CERCLA and the NCP.

In its *National Consistency in Superfund Remedy Selection* (U.S. EPA 1996), EPA emphasized the “critical importance of maintaining appropriate national consistency in the remedy selection process.” (p. 2). In this context, appropriate consistency means “applying decision-making processes recommended in national policies and guidance using the criteria they lay out, and exercising the built-in flexibility as appropriate to address site-specific circumstances.” (p.2).

V. The Proposed Plan Significantly Deviates From the NCP and U.S. EPA’s National Contaminated Sediment Policy

The Proposed Plan deviates from NCP and the Sediment Guidance in a number of critical areas. The SMWG’s comments highlight some, but not all, of the many areas where the Proposed Plan deviates from the basic tenets of CERCLA, as detailed in the NCP, as well as U.S. EPA’s national contaminated sediment policy as embodied in the Sediment Guidance.

A. The Agency’s Site Characterization Is Inadequate And Fails To Comply With The NCP and Sediment Guidance.

Sediment site characterization activities are intended to provide the information necessary to permit competent remedial alternatives to be developed, evaluated, and selected. Site characterization is performed through the Remedial Investigation (“RI”).

In contrast to the sound policy set forth in detail in the Sediment Guidance, the detailed information from the nearly-completed RI being conducted by the CPG obviously has not been utilized in the remedy evaluation. We understand that hundreds of sediment cores and thousands of data points for sediment, surface water and biota in the LPRSA have been collected since 2007, yet the Region has not incorporated all of that data into its Proposed Plan. In fact, we understand that U.S. EPA has failed to take into account the data from at least 8 different data collection programs under the LPRSA RI/FS. All of the data necessary to optimize the evaluation of remedial alternatives should have been fully utilized.

Because so much of the critical data collected under the LPRSA RI/FS apparently have not been fully considered, the Proposed Plan largely relies on incomplete and often outdated data to characterize the site, and to develop and screen the remedial alternatives. This is inconsistent

with the analyses and decision-making required by the Sediment Guidance. The significance of the missing information can be illustrated through a few examples where additional information is required to develop and screen sound remedial alternatives. These examples are discussed below.

1. Failure To Identify Ongoing Sources Is In Contravention Of The Sediment Management Principles, The Sediment Guidance And U.S. EPA's CERCLA Policy.

Early control of sources has long been a U.S. EPA priority at contaminated sediment sites. In its *Contaminated Sediment Management Strategy* (1998), the U.S. EPA stated that “before initiating any remediation, active or natural, it is important that point and nonpoint sources of contamination be identified and controlled.” (emphasis added) This strategy identified specific point sources as potential contaminant sources, including “municipal treatment plants, combined sewer overflows (“CSOs”), storm water discharges from municipal and industrial facilities, direct industrial discharges of process waste, runoff and leachate from hazardous and solid waste sites, agricultural runoff, runoff from mining operations, runoff from industrial manufacturing and storage sites, atmospheric deposition of contaminants, and contaminated groundwater discharges to surface water.”

The need to control sources early is emphasized in the Sediment Guidance (as well as in the *11 Risk Management Principles*, U.S. EPA 2002a). The Sediment Guidance provides:

“Identifying and controlling contaminant sources typically is critical to the effectiveness of any Superfund sediment cleanup. Source control generally is defined for the purposes of this guidance as those efforts are taken to eliminate or reduce, to the extent practicable, the release of contaminants from direct and indirect continuing sources to the water body under investigation.”
(p. 2-20)

The Sediment Guidance continues by reiterating that “significant upland sources (including ground water, NAPL, or upgradient water releases) should be controlled to the greatest extent possible before sediment cleanup.” (p. 2-21) The Sediment Guidance calls for these potential continuing sources to be identified (see Highlight 2-2) and for a source control strategy to be developed before sediment cleanup begins.

While the Proposed Plan references “source control,” it fails to identify sources with any specificity or propose measures to control them. The Proposed Plan does not provide an inventory of upland sources, as the Sediment Guidance requires, even though the FFS acknowledges, in passing, that combined sewer overflows, storm water discharges, permitted discharges, and contaminated groundwater discharges all exist within the lower eight miles of the Passaic River. Of equal concern is the virtual certainty that ongoing, uncontrolled sources upstream of the lower eight miles of the Passaic River will recontaminate the downstream section of the River once the Proposed Plan has been completed.

The NRRB and CSTAG recognized the likelihood of recontamination in their Joint Comments (U.S. EPA 2014): “the Boards note that recontamination could prevent the attainment and maintenance of the 5 ppt of dioxin in sediment over time; potential sources of recontamination include, but are not limited to, resuspension caused by the cleanup itself and transport from the yet-to-be remediated parts of the LPR and Newark Bay.” Joint Comments at p. 6.

We are aware that the site *Pathways Analysis Report* (“PAR”) (Battelle 2005) reported that 32 COPCs and 56 COPECs exceeded screening level risk values in the Passaic River sediments, based on historical data. Yet, the very limited source information contained in the FFS and its Conceptual Site Model (“CSM”) addressed only seven of these contaminants and contaminant classes. Even if one accepted the implausible conclusion that analyses of CSO discharges in other waterways were somehow representative of the discharges into the FFS Area, the potential for recontamination by these other 25 COPCs and 49 COPECs would remain unaddressed, contrary to the Sediment Guidance. In fact, Shear et al. (1996), Huntley et al. (1997), and Iannuzzi et al. (1997) published site-specific data showing that the CSO discharges are likely to recontaminate the FFS Area quickly if any of the remedies proposed were constructed.

Moreover, the threat of recontamination is not just theoretical. Recontamination following remediation has been observed at other sediment sites. Nadeau and Skaggs in their “Analysis of Recontamination of Completed Sediment Remedial Projects” in the Proceedings of the Fourth International Conference on Remediation of Contaminated Sediments (2007) analyzed twenty sediment sites that had become recontaminated after remediation and reported that more than 50% of these sites had become recontaminated from CSO and public storm water sources.

The Sediment Guidance advises site managers to factor the potential for recontamination into the remedy selection process, such as by including source control measures (p. 2-21, Highlight 4-5, Highlight 5-4, Highlight 6-11). The Sediment Guidance also emphasizes that phasing of remedy construction may be useful when the effectiveness of source control is in doubt (p. 2-22). The Sediment Guidance concludes, “By knowing the effectiveness of source control prior to implementing sediment cleanups, the risk of having to revisit recontaminated areas is greatly reduced.” (p. 2-22) Unfortunately, the Proposed Plan does none of these things, contrary to the Sediment Guidance.

An evaluation of ongoing source loading and potential for sediment recontamination should be conducted before any early action is considered. Where, as here, recontamination is likely, a plan for controlling or reducing sources should be developed.

2. Failure To Characterize The Site Adequately Is Inconsistent With CERCLA, the NCP And The Sediment Guidance.

Sediment site characterization activities in an RI should provide the information necessary to permit effective remedial alternatives to be developed, evaluated, and selected. The Sediment Guidance emphasizes the importance of thorough site characterization. Site characterization includes collecting data to develop a conceptual site model, conducting risk

assessments, understanding sediment and contaminant fate and transport, and identifying sources (Section 2.1). These data necessarily form the basis of the feasibility study, which then informs the remedial decision (Sections 3, and 7). Thus, the key to informed decision-making at contaminated sediment sites is thorough site characterization and developing a good understanding of what is driving the risk at the site via development of a conceptual site model.

In contrast to the policy set forth in the Sediment Guidance, we understand that much of the information generated as part of the LPRSA RI under the Agency's watchful eye, was not a part of the Agency's decision-making process. As a result, a significant amount of the available data necessary to appropriately develop a feasibility study inappropriately were either not considered by the Agency, or were inappropriately disregarded. These data will be evaluated and presented later this year in the LPRSA RI/FS evaluation of the remedial alternatives. Moreover, collection or evaluation of these data during design is not a substitute for collection and incorporation of these data into the remedy evaluation phase.²

3. *Failure To Utilize Peer-Reviewed Sediment Fate And Transport Models Suitable To The Site Is Inconsistent With The Sediment Guidance And In Direct Disregard Of The NRRB/CSTAG Comments To The Region.*

The Sediment Guidance emphasizes the importance of assessing the fate and transport of sediment and contaminants at sediment sites (Section 2.8) because information on sediment and contaminant fate and transport is valuable for assessing the exposure and risk associated with the contaminants and for evaluating the protectiveness of remedial alternatives (p. 2-23, 2-32). Proper modeling is required to assess sediment and contaminant fate and transport, (p. 2-25). At large or complex sites, the Sediment Guidance emphasizes the importance of using mathematical modeling:

“Mathematical modeling generally is recommended for large or complex sites, especially where it is necessary to predict contaminant transport and fate over extended periods of time to evaluate relative differences among possible remedial approaches.”
(p. 2-36)

Neither the Proposed Plan nor its supporting documents follows this Sediment Guidance provision. Instead they use what the FFS describes as the “Empirical Mass Balance Model.” The EMBM is a simple observational tool that relies on unverified assumptions for inputs as a substitute for real data due to the inadequacy of site characterization. Neither the EMBM methodology generally, nor its application (calibration, verification) in the FFS has undergone external validation or peer review as called for in Section 2.9.4 of the Sediment Guidance.

² Even if an accelerated approach is viewed as necessary, proceeding with an early action without adequate data also would be inconsistent with the Sediment Guidance. Based on the site description and circumstances as described in the FFS and the Proposed Plan, however, there appears to be no justification to rush to conduct an early action in the absence of source control and adequate data to evaluate the appropriateness of an early action, particularly when the LPRSA RI/FS will be available in the near future.

The NRRB and CSTAG, in their Joint Comments, agree that the modeling methodology utilized by the Region requires peer-review and recommended that the model be subject to peer-review before the Proposed Plan was released, a recommendation that was ignored by the Region: “The Boards recommend that the Region’s schedule allow sufficient time to address external peer reviewer’s and the CSTAG’s comments on the Region’s sediment transport, organic carbon, and contaminant transport and fate models before the proposed plan is released.” Joint Comments at p. 7.

The failure to provide appropriate, peer-reviewed modeling for the site in the FFS, coupled with the inadequate site characterization, precludes an effective remedial alternatives evaluation process as required by the NCP and the Sediment Guidance. At a highly complex site with alternative remedies ranging from \$0.9 - \$2.3 billion (U.S. EPA estimates that appear to be substantially low), a comprehensive understanding of contaminant fate and transport under current and proposed post-remedy conditions is a necessity requiring a more sophisticated modeling tool than the EMBM. More discussion of remedial alternative development is included below.

4. *Utilization Of A Screening Level Risk Assessment And Failure To Conduct A Site-Specific Baseline Risk Assessment Is Contrary To The NCP And The Superfund Guidance On Risk Assessments.*

The Proposed Plan and FFS rely on screening level risk assessment approaches rather than developing a site-specific baseline risk assessment. The use of screening criteria in remedial decision-making (especially on this scale -- \$ 0.9 to 2.3 billion) is contrary to sound practice as well as the provisions of the NCP, U.S. EPA’s 1997 *Ecological Risk Assessment Guidance For Superfund: Process For Designing And Conducting Ecological Risk Assessment* (“ERAGS”), and the Sediment Guidance (Sections 2.3 and 2.4).

The NRRB and CSTAG Joint Comments noted that the FFS Ecological Risk Assessment “is largely a conservative, literature-based” risk assessment and that such generic risk assumptions were not justified in all cases: “literature-based numerical, chemical-specific ecological preliminary remediation goals (PRGs) do not appear to be necessary for all identified contaminants in this proposed remedial action.” Joint Comments at p. 4. Moreover, the NRRB and CSTAG were concerned that the FFS ERA assumptions could be inconsistent with the results of the ongoing Baseline Ecological Risk Assessment undertaken in conjunction with the LPRSA RI/FS.

The Sediment Guidance notes that screening and baseline risk assessments are essential to evaluate the potential threat to human health and the environment and to aid in developing risk-based remediation goals (p. 2-9). Screening risk assessments are used to identify COPCs while baseline risk assessments are a critical part of “the framework for developing risk-based remediation goals.” (p. 2-9). Additionally, risk assessments should “provide information to evaluate risks associated with implementing various remedial alternatives that may be considered for the site.” (p. 2-9). Although U.S. EPA claims to have “refined” the inadequate baseline risk assessment since the 2007 draft FFS, the Proposed Plan(?) ecological risk assessment continues to rely primarily on generic reference values and not on the available site-specific data, as

required by ERAGS. Thus, remedial alternatives should not have been developed until the site had been properly characterized and a proper baseline risk assessment completed.

B. The Proposed Plan Inadequately Develops And Inappropriately Evaluates The Potential Remedial Alternatives In Contravention Of The NCP And The Sediment Guidance.

The Sediment Guidance's requirement of evaluating the remedy's likely ability to reduce risk on a site-specific basis, and to provide realistic cost comparisons also was not followed in developing the FFS and the Proposed Plan (see Sections 2.1, 2.3, 3.1, 3.4, and 3.5 of the Sediment Guidance). The FFS and Proposed Plan fail to develop and provide adequate information and analyses to support the so-called "early action" remedial program that it proposes, which is realistically a 6-10 year, or even longer, project.

Under both the NCP and the Sediment Guidance, the current level of development of the remedial alternatives is wholly inadequate to support the remedial alternative selected in the Proposed Plan, particularly when the projected cost is in the billions of dollars.

Examples of the inadequate development and inappropriate remedy evaluation in the FFS and the Proposed Plan follow below:

1. The FFS and Proposed Plan Fail To Appropriately Evaluate The Impact Of Remedy Effectiveness Risks From Resuspension And Releases.

The Sediment Guidance recognizes that "[s]ome contaminant release and transport during dredging is inevitable." (p. 6-22) Therefore, the Sediment Guidance requires resuspension losses and releases to be estimated as part of the remedy evaluation process:

"To the extent possible, the project manager should estimate total dredging losses on a site-specific basis and consider them in the comparison of alternatives during the feasibility study. " (p. 6-23)

Reasonable estimates of the resuspension and releases that would result from each remedial alternative are necessary to permit reasoned comparisons of the net risk reduction associated with each alternative. The risks associated with resuspension and releases may be substantial because, as the Sediment Guidance notes, sediment resuspension losses "generally range from less than one percent to between 0.5 and 9 percent." (p. 6-23) These estimates and their incorporation into the remedy evaluation process are mandated by the Guidance (Sections 6.2, 6.5.5, 6.5.6, 6.5.7, Highlight 6-11, and Highlight 7-3).

Although the FFS assume that the resuspension rate will be 3 percent of solids removed (FFS p. 5-24), nowhere are the risks and impacts from the differing resuspension rates associated with the different alternatives considered. Considering that the Proposed Plan calls for an estimated 4.3 million cubic yards of material to be removed, the failure to evaluate the potential impact of an estimated 129,000 cubic yards of resuspension loss is a critical oversight. In addition, a number of factors suggest that losses from the Proposed Plan project may be greater than U.S. EPA has assumed for at least the following reasons:

- The large amount of debris and obstructions will increase resuspension losses and releases³;
- The draft FFS Appendix E concludes that neither sheet pile nor silt curtain containment can be used in this setting; and
- Substantial vertical concentration gradients exist, with the COPCs and COPECs increasing greatly with depth.

Thus, the failure to estimate risks and impacts due to resuspension and releases increases the uncertainty about the expected risk reduction associated with each remedial alternative.

2. *Numerous Bridges And Submerged Utilities Will Dramatically Impact Implementability of The Proposed Plan Remedy And The Magnitude Of These Project-Threatening Issues Should Be Re-Evaluated Prior To Selection Of The Remedy.*

In addition to failing to adequately take into account the difficulties posed by submerged debris, the Proposed Plan entirely fails to consider issues relating to the more than 30 utility crossings in the lower eight miles. There is no discussion of how to obtain the consent of the utility owners for dredging above or near their utility crossing, if it can even be obtained, nor of the likely additional expense and restrictions on such areas that can be dredged. This was a problem during the River Mile 10.9 dredging project, and is an important implementation issue that should be addressed at the remedy selection phase.

Even more significantly, the Proposed Plan will require bridges over the Lower Passaic River to be opened an estimated 20,000 to 25,000 times during the course of the project. There is no evidence that these bridges are mechanically capable of withstanding such heavy use and the likelihood that one or more of them will malfunction, resulting in obstructions either to navigation or to important surface transportation arteries, has not been considered. The numerous instances of bridge opening and closing failures during the River Mile 10.9 project in 2013-14 clearly underscore the real-world implementability and cost issues that would be magnified a hundred fold with the Proposed Plan's contemplated Passaic River dredging volume.

The numerous bridges and submerged utilities will drastically affect the implementability of the Proposed Plan and will exponentially increase its cost, rendering it inconsistent with the NCP's cost effectiveness requirement. Proper characterization of obstructions is an important predicate to remedial evaluations in an urban waterway site like the Passaic River at the remedy selection phase. Unfortunately, the FFS and Proposed Plan fail to adequately evaluate this critical issue.

3. *Submerged Debris And Obstructions Were Not Appropriately Evaluated.*

The Sediment Guidance directs project managers to evaluate the impact of debris on sediment resuspension and releases during dredging (Sections 6.2, 6.3, and 5.5) as well as on residuals (Sections 6.2, 6.3, and 6.5.7). Understanding debris and its impact is important to

³ The Guidance notes that debris conditions often increase resuspension losses and releases during dredging (p. 6-22, 6-26).

evaluating remedial alternatives because, as the Sediment Guidance explains, one condition conducive to effective dredging at a site is one where there is little debris (Highlight 6-2). The Sediment Guidance notes that dredging production rates are likely to be lower and the magnitude of resuspension and releases is likely to be higher at sites containing substantial debris. Moreover, the 2007 NRC report *Sediment Dredging at Superfund Megsites: Addressing the Effectiveness* mentions debris as inhibiting dredging effectiveness more than 60 times. For example:

“Low sediment bulk density and the presence of debris and hardpan or bedrock all tend to increase resuspension and residuals.” (p. 82)

The FFS describes submerged debris by referencing a 2004 side-scan sonar survey that “identified 47 large objects, 16 of which had the signatures of automobiles” over the entire area. (p. 4-19) A shipwreck has also been identified. Appendix J of the FFS estimates that between 2000 and 8000 tons of debris will be removed during the course of the entire project. However, these quantities are likely to be a significant underestimation because they are inconsistent with observations made elsewhere (see below). The Agency inappropriately suggests deferring a video survey to characterize and locate debris to the pre-design investigation. However, deferring critical site characterization data to the “pre-design” phase is inconsistent with the Guidance (Sections 2.1, 2.3, 3.1, 3.2, 3.4, 7.1, 7.3, and 7.4) and sound practice, because the missing information can often lead to the selection of a different remedy or approach. Furthermore, at a site with such high projected volumes of sediment to be dredged, a significant debris problem could result in increased costs in the hundreds of millions of dollars, which should be considered under the NCP during the remedy selection phase, not the design phase.

The inadequacy of this debris information is illustrated in other documents:

- TAMS (2005) conducted a geophysical debris survey of portions of a 1000 foot long area in the Harrison Reach of the Passaic River. This survey reported that the entire northern shoreline was populated by debris including tires, rocks, poles, and other objects. Within this limited area, this survey identified two other areas with multiple debris targets, plus other discernible targets including a 15’ tree, a 26 foot long piling, a 37 foot long piling, several areas of organic debris, and 14 other objects. (p. 16)
- Endesco (2005) recorded that “as-dredged Passaic sediments may contain many different types of debris including wood, tires, telephone poles, fencing materials, white goods, trash, etc.” (p. 18)
- In Appendix H of the draft FFS, Biogenesis reported that the Passaic River sediments delivered to their test process contained “an unusually high amount of trash and debris”. The trash and debris noted by BioGenesis was smaller in size and was of a nature that would not have been detected by geophysical means such as those employed by TAMS.

Therefore, the SMWG urges that before a remedy is selected for the site, a comprehensive debris survey should be undertaken. The anticipated cost impact of the presence of debris to the project should be estimated, and the implementability and cost implications should be factored into the remedy selection, consistent with the Sediment Guidance provisions referenced above, rather than being deferred to the remedial design phase.

4. *The Proposed Plan's Geotechnical Assessment Of Implementability Issues Relating To Bridge, Bulkhead and Slope Stability, Among Others, Is Incomplete And Unreliable.*

Section 5.5 of the Sediment Guidance requires evaluation of geotechnical considerations in the feasibility study, which is key to determining the implementability of different remedial alternatives (p. 5-11, Highlight 7-3). While the FFS makes passing reference to slope stability with respect to a cap scenario, this assessment did not provide assurance that any of the remedial alternatives could be technically implemented or constructed. The SMWG understands that the site poses several issues with the purported slope stability assessment, including: use of textbooks' soil data (based on the USCS soil classification) because no site specific geotechnical data were available; apparent assessment of post-construction conditions only, even though limiting geophysical conditions will almost certainly occur during dredging construction, rather than at its completion; and, analysis which did not extend to informing the project manager about the potential stability of bridge abutments, shoreline buildings and bulkheads, or the safety of underground utilities that pass beneath the areas proposed for dredging, among others.

As noted in the Sediment Guidance, once site-specific geotechnical data are collected to properly characterize a site, a site-specific geotechnical assessment will be necessary to assess the stability and implementability of the various remedial alternatives being considered (Highlight 7-3). This should be a pre-remedy selection study that should be factored into the implementability evaluation of the remedial alternatives.

5. *The Proposed Plan Fails To Evaluate Comparative Net Risk Reduction Pursuant To Section 7.4 Of The Sediment Guidance.*

U.S. EPA has failed to evaluate the comparative net risk reduction of its preferred alternative compared to the other remedial alternatives. The Sediment Guidance states that "Project managers are encouraged to use the concept of comparing net risk reduction between alternatives as part of their decision-making process for contaminated sites, within the overall framework of the NCP remedy selection criteria" (p. 7-13). To ensure that "all positive and negative aspects of each sediment management approach" are considered, the Sediment Guidance strongly encourages the use of comparative net risk in decision making (p. 7-13). This approach previously had been recommended by the National Academy of Sciences Committee on Remediation of PCB-Contaminated Sediments (NRC 2001).

This should include an evaluation of the risks from remedy implementation:

"Consideration should be given not only to risk reduction associated with reduced human and ecological exposure to contaminants, but also to risks introduced by implementing the

alternatives. The magnitude of implementation risks associated with each alternative generally is extremely site-specific, as is the time frame over which these risks may apply to the site. Evaluation of both implementation risk and residual risk are existing important parts of the NCP remedy selection process. By evaluating these two concepts in tandem, additional information may be gained to help in the remedy selection process.” (p. 7-13)

As part of the Comparative Net Risk evaluation, the Sediment Guidance notes that “[e]ach approach to managing contaminated sediment has its own uncertainties and potential relative risks.” (p.7-13). These risks may include:

- Contaminant releases during sediment removal, transport, or disposal (or capping)
- Continued exposure to contaminants currently in the food chain
- Other community impacts (e.g., accidents, noise, residential or commercial disruption)
- Worker risk during sediment removal and handling (or cap placement)
- Residual contamination following sediment removal
- Releases from contaminants remaining outside dredged/excavated area (movement through the cap)
- Disruption of benthic community

“Sample Elements for Comparative Evaluation of Net Risk Reduction.”(p. 7-14)

The Proposed Plan fails to provide sufficient information to determine what, if any, net risk reduction may be associated with any of its alternatives. In light of the NAS Report (2007), the ability of several of the alternatives under consideration to be successful in reducing risk is seriously doubtful. Nor would the NAS Report (2007) support proceeding with such a significant remedial action without a complete understanding of site conditions. Further, the risks that would be introduced by the implementation of each alternative remedy were neither described nor quantified. The failure to perform this analysis is inconsistent with the Guidance.

One of the risks of remedy implementation for dredging projects is the risk of worker injuries and deaths. The risk would be necessarily increased with the increasing size of the extremely large remedial alternatives considered in the Proposed Plan. The NRC (2007) also noted the importance of considering such risks in selecting site remedies:

“Other ‘implementation risks’ (risks potentially imposed by the implementation of a remediation strategy) such as worker and community health and safety, equipment failures, and accident rates associated with an active remediation are given little consideration in EPA’s feasibility studies at Superfund sites (Wenning et al. 2006). Cura et al. (2004) identify several challenges associated with comparative risk assessment, given data limitations and the unavoidably subjective nature of quantifying

some risks associated with dredged-material management decisions. However, ignoring those types of risk in comparisons of remedial options is not the solution and may have undesirable consequences, particularly when the cost of being wrong is high (Bridges et al. 2006).” (p. 159)

Leigh and Hoskin (2000) developed and published the methodologies and the five year average worker risk incidence rates for those worker classes that would be involved in a theoretical 427,000 cubic yard dredging project. Leigh and Hoskin’s project was defined as using a combination of mechanical and hydraulic removal techniques. Leigh and Hoskin concluded that the probability of at least one fatality occurring in this project was about 1 in 2.4.

The dredging alternatives presented in the FFS are all similar to but comparatively much larger than, Leigh and Hoskin’s project. Implementation risks must to be calculated and included in the remedial decision-making process.

Under the Comparative Net Risk concept set forth in Section 7.4 of the Sediment Guidance, the potential effectiveness of a remedy must be considered in the context of the risks associated with that remedy’s implementation. With respect to the Proposed Plan, which contains a substantial dredging component, it is likely to increase potential harm to human health and ecological receptors by increasing exposure to contaminants resuspended and/or released in surface water (USEPA 2005; NRC 2007; Bridges et al. 2008). These risks can occur even with the effective use of Best Management Practices (“BMPs”). In recent years, the effectiveness of silt curtains in controlling releases has been questioned (Bridges et al. 2008). For example, approximately 2.2 percent of the mass of contaminants dredged were released downstream at the Fox River Deposit 56/57 dredging project, despite using silt curtains (Steuer 2000).

U.S. EPA’s Sediment Guidance provides: “Some contaminant release and transport during dredging is inevitable and should be factored into the alternatives evaluation and planned for in the remedy design.” The Guidance goes on to state that “Generally, the project manager should assess all causes of resuspension and realistically predict likely contaminant releases during a dredging operation.” (p. 6-22). At this site, the risk of releases during dredging is clearly present despite use of BMPs due to the huge proposed dredged volume, the large number of years to complete it (anticipated to be 6 to 10 years [which seems unrealistically low compared to the other mega site dredging projects]), and the numerous obstructions and debris in the waterway. In other words, this is no “short-term spike” in concentrations of COCs. For example, the dredging in Commencement Bay in Seattle in 2004 caused a spike in fish tissue concentrations that persisted for years (Patmont, et al., Battelle 2013). Simply hoping to “do a better job” dredging than in all past projects is not a realistic expectation and does not constitute sound decision-making.

At this site, U.S. EPA estimates that approximately 3% of the dredged mass of nearly 4.3million cubic yards in the Proposed Plan is likely to be resuspended. Based on the Agency’s own estimate that 3% of the COCs contained in the 4.3 million cubic yards of COCs dredged would be released during such dredging, this would be result in significant adverse consequences to the waterbody. It would create both short-term issues and long-term issues as well, as a result of the expected (long) number of years to complete the project, and the spread of COCs

elsewhere in the waterbody as resuspension and releases settle downstream. As noted in the Sediment Guidance and the NRC Dredging Effectiveness Report (2007), resuspension and release is inevitable in any dredging remedy. Here, the Proposed Plan's "bank-to-bank" remedy would subject the waterbody to an unprecedented volume of dredging, which would be far worse than other more targeted removal options, such as the CPG's Sustainable Remedy. Applying the principles of the Comparative Net Risk of Section 7.4 of the Sediment Guidance, the net risk reduction of the Proposed Plan's remedy is far less than the stated effectiveness due to risks introduced by remedy implementation. Therefore, the Proposed Plan should be withdrawn and the array of alternatives in the soon to be released LPSRSA RI/FS, should be carefully evaluated for risk of remedy issues. This comparative net risk reduction analysis should then be incorporated into the evaluation of remedial alternatives under the NCP's Nine Criteria.

6. *The Proposed Plan Improperly Excluded Consideration Of The Use Of A Confined Aquatic Disposal Facility*

The Region has apparently excluded consideration of the use of a confined aquatic disposal ("CAD") facility even though its own consultant concluded that one was technically feasible based on anticipated opposition. The Region should have included a CAD as part of the remedy, especially considering that the use of a CAD could reduce remedy costs by an estimated \$700,000,000.

7. *The Proposed Plan Improperly Includes Navigational Dredging As A Component Of The Remedy, Which Is Beyond The Scope Of CERCLA*

We understand that, under the Proposed Plan, approximately 48% of the dredging (approximately \$850 million) would be undertaken in order to accommodate anticipated commercial and recreational navigation. However, dredging for navigation purposes is beyond the scope of CERCLA, which is concerned with abating risks from the releases of hazardous substances. It is significant to note that the NRRB previously reached the same conclusion at the Waukegan site that it is inappropriate to use CERCLA remediation authority to assist the Army Corps in addressing its navigational obligations (U.S. EPA 2008). Furthermore, it is our understanding that this proposed dredging is not necessary to achieve the cleanup standards. In addition to the issue of the lack of authority, considering the costs associated with the proposed environmental dredging, there is no justification for including navigational dredging of clean sediments as part of the CERCLA remedy.

8. *The Proposed Plan's Attempt To Set PRG's Below Anthropogenic Background Is Contrary To U.S. EPA's Long-Established CERCLA Guidance And The Sediment Guidance*

U.S. EPA's 2002 policy, *Role of Background in the CERCLA Cleanup Program* (U.S. EPA 2002b) notes that "the CERCLA program, generally, does not clean up to concentrations below natural or anthropogenic background levels." More specifically, this policy states:

Generally, under CERCLA, cleanup levels are not set at concentrations below natural background levels. Similarly, for anthropogenic contaminant concentrations, the CERCLA program

normally does not set cleanup levels below anthropogenic background concentrations. 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. (Citations omitted.)

The NRRB and CSTAG, in their Joint Comments, noted that the Proposed Plan inappropriately sets cleanup goals below background: “site-specific modeling suggests that the preferred alternative may yield post-remedy concentrations that are below background levels post multi-year remedy implementation. The Boards recommend that the Region clearly explain in its decision documents, how, considering EPA guidance, information regarding background was taken into account when developing RAOs, PRGs and final cleanup levels.” Joint Comments at p. 6 (emphasis added). Unfortunately, the Region failed to address the Board’s concern.

9. U.S. EPA Failed To Propose A Phased Or Adaptive Management Approach.

Experience at other large sediment sites with high degrees of complexity and uncertainty regarding design and implementation of appropriate remedial action points to the value of using adaptive management strategies, as recommended by the Sediment Guidance, NRC (2007), and other independent, scientific peer reviews of sediment sites throughout the country (U.S. ACE 2008). The Sediment Guidance expounds on the usefulness of a phased or adaptive management approach:

Phasing in remedy selection and implementation may be especially useful at sites where contaminant fate and transport processes are not well understood or the remedy has significant implementation uncertainties. Phasing may also be useful where the effectiveness of source control is in doubt. By knowing the effectiveness of source control prior to implementing sediment cleanups, the risk of having to revisit recontaminated areas is greatly reduced. High remedy costs, the lack of available services and/or equipment, and uncertainties about the potential effectiveness or the risks of implementing the preferred sediment management approach, can also lead to a decision to phase the cleanup. At some sites, it may be advantageous to pilot less invasive or less costly remedial alternatives early enough in the process that performance could be tracked. If performance does not approach desired levels, then more invasive or more costly approaches could be pursued. (pp. 2-21 to 2-22)

In its recently released Superfund Remedial Program Review (U.S. EPA 2013), U.S. EPA acknowledges that times have changed and that costly Remedial Investigations should no longer be acceptable, particularly in the face of serious limitations in agency personnel and resources. This practical philosophy is further reflected in the remedy implementation phase, with a renewed emphasis on starting remedial actions earlier and encouraging utilization of the concept of “adaptive management.” U.S. EPA defines adaptive management at Superfund sites as:

. . . an iterative approach to site investigation and remedy implementation that provides the opportunity to respond to new information and conditions throughout the lifecycle of a site. Adaptive management assumes there is an explicit intent to respond to new information and conditions, and to the extent it can be done under CERCLA and the NCP site decision making, formal remedial decision documents as well as other project plans and reports incorporate appropriate language that enables efficient planning and execution of adaptive management techniques (USEPA 2013).

Adaptive management requires that “questions critical to the success of a project are identified early and decision points included at key steps in the process allow sampling activities or RA to be terminated or modified based on the results of data analysis.” (USEPA 2013 at p. 9, emphasis added.) Moreover, adaptive management allows U.S. EPA to “evaluate remedy effectiveness and track progress toward attainment of remedial action objectives (RAOs) using performance metrics and data derived from site-specific remedy evaluation. The remedy effectiveness information is then used to actively manage site operations and refine remedial strategies” (USEPA 2013 at p. 7)

The benefits of an adaptive management approach include, among other things, an enhanced ability to effectively manage human health and environmental risks:

Another major concept [of Adaptive Management is] to focus actions on managing project completions to control site risk. Projects would address human and ecological exposures and control migration of contaminated media to stabilize site conditions such that achievable contaminant concentrations are met to provide risk reductions and reach other practicable endpoints in situations where the desired RAOs have not yet been achieved in the near term. (USEPA 2013 at p. 7) (emphasis added)

U.S. EPA’s Proposed Plan for the FFS Study Area is the largest proposed remedy for any CERCLA site, ever, and there is significant uncertainty associated with the design, feasibility and implementation of the remedy. Consistent with its own guidance, at a minimum, U.S. EPA should have developed and evaluated an alternative that encompasses a phased remedial approach that can be adapted to ensure acceptable progress towards remedial goals while more effectively managing human health and environmental risks. Of course, that alternative should be consistent with the NCP and the Sediment Guidance, and the Proposed Plan clearly is not, so the Proposed Plan should not be the basis of formulating an Adaptive Management Solution.

VI. A Detailed Review Of The Proposed Plan Against The NCP's Nine Remedy Selection Criteria Demonstrates That The Proposed Plan Is Inconsistent With Those Criteria And Should Be Withdrawn In Order To Appropriately Follow The Traditional CERCLA RI/FS Process, By Utilizing The LPRSA RI/FS As The Basis for Remedy Selection At This Site.

A detailed review of the Proposed Plan in comparison to the NCP's Nine Remedy Selection Criteria demonstrates at least the following deficiencies and inconsistencies:

Criterion #1: Overall Protection of Human Health and the Environment

The Proposed Plan concedes that the PRGs it proposes to utilize (which themselves are inconsistent with CERCLA, the NCP, U.S.EPA's Risk Assessment Guidance and the Sediment Guidance) can never be achieved because the PRGs are below anthropogenic background. In addition to being contrary to U.S. EPA guidance regarding the role of background in CERCLA cleanups (U.S. EPA 2002b), this means that the PRGs are below the concentrations of COCs in sediment in the upper 9 miles of the river and even below the concentrations of COCs found above the Dundee dam. The further unacceptable consequence of implementing the Proposed Plan's remedy is that it is a virtual certainty that the FFS Area will be recontaminated at concentrations well above the proposed PRGs because of significant on-going uncontrolled sources, including CSOs and SSOs in the watershed.

In addition, the huge volume proposed to be dredged in the Proposed Plan of nearly 4.3 million cubic yards, a quantity far exceeding the existing two largest dredging projects in the Hudson and Fox Rivers, will lead to excessive resuspension and releases of COCs compared to more reasonable combination remedial options with a narrower and more focused dredging footprints (such as the CPG's conceptual Sustainable Remedy as one example). The unprecedented volume of the Proposed Plan's dredging will inevitably result in dredging resuspension and release losses, which will render it unprotective, not only on a short-term during the many years of anticipated dredging but also on a long-term basis, both in the context of the number of years during which the dredging occurs, but also on a permanent basis, as those COC releases travel and redeposit or de-solubilize throughout the water body.

Criterion #2: Compliance with ARARs

The Agency concedes in the Proposed Plan that its proposed remedy will not be able to ever achieve the State's surface water quality criteria. Consequently, the Proposed Plan's remedy would need a CERCLA Technical Impracticability waiver for this criteria.

Criterion #3: Long-Term Effectiveness

The Proposed Plan will not achieve long-term effectiveness as noted in the discussion above on the Overall Protectiveness criterion. First, the proposed PRGs simply are not achievable because they fail to follow CERCLA, the NCP, the Sediment Guidance and U.S. EPA policy (U.S. EPA 2002b) requirements to use anthropogenic background when the risk assessment-derived numbers are below background. Second, the Proposed Plan's estimate of releases of 3% of the 4.3 million cubic yards specified in the proposed remedy confirms that the remedy cannot be effective on a long-term (or a short-term) basis. This is a classic case of the

extreme nature of the proposed unprecedented huge “mass removal” causing more harm than good. As noted above, this also fails to comply with the Sediment Guidance’s Comparative Net Risk Reduction in Section 7.4 of the Guidance. Finally, with upstream COC concentrations greater than the proposed PRGs, recontamination is inevitable.

Criterion #4: Reduction of Toxicity, Mobility and Volume through Treatment

The Proposed Plan does not distinguish itself in any way with respect to potential reduction of toxicity, mobility and volume through treatment compared to the other remedial options under consideration, and as such, this criterion is not likely to be driving the remedy selection.

Criterion #5: Short-Term Effectiveness

For purposes of short-term effectiveness, due to the inevitable significant risks posed by the resuspension and releases to the environment during the dredging component of the Proposed Plan remedy (see Sections 6.5.5 [Resuspension and Releases] of the Sediment Guidance and Bridges, et al. 2008) the Proposed Plan remedy simply will not be protective from a short-term effectiveness perspective. Worker safety risks, greenhouse gas, particulate matter emissions, and ozone impacts are all likely to far exceed the amount of adverse impact than other alternatives, including the CPG’s conceptual Sustainable Remedy.

Criterion #6: Implementability

The list of implementability issues with the Proposed Plan is a long one. Most of the significant, and likely “game-changing” issues are discussed in greater detail above. They include:

1) Non-functioning, old and virtually non-repairable bridges: During the comparatively small River Mile 10.9 2013-4 dredging project, bridge operability issues and breakdowns crippled the project. These lessons learned must be taken into account in evaluating the Proposed Plan and other remedial options. This evaluation is critically important to the remedy selection, and must not be pushed down the road to the remedial design phase, or worse, to the construction phase.

2) Utility crossings: The presence of hundreds of utility crossings means that the dredging must be “offset” (not implemented) for a substantial distance on each side of the utility, typically over 100 yards buffer at all these locations.

3) Infrastructure stability: Geotechnical issues with the stability of the numerous seawalls, docks, piers, etc. have not been appropriately addressed and will pose another whole host of implementation problems.

4) Debris: Significant amounts of debris has been documented and will pose many difficult issues during dredging, which will be greatly magnified compared to other smaller dredging footprint options.

5) Navigation: Navigational constraints will be significant and will invariably lead to significant delays.

6) Numerous other implementability issues are inevitable, especially in the context of an urban river.

Criterion #7: Cost-Effectiveness

The Proposed Plan is not cost-effective as required by CERCLA, the NCP and the Sediment Guidance. CERCLA requires that any remedial action that is selected must be “cost-effective.” 40 USC 9621(a). The NCP states, “Each 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 its [the remedial alternative’s] overall effectiveness.” (40 CFR §300.430(f)(1)(ii)(D)).

As 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 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).

In disregard of both the NCP and Section 7.1 of the Sediment Guidance, the Region’s remedial alternative evaluation fails to appropriately evaluate and compare the relative benefits and costs for the remedial alternatives. In addition, the Agency concedes that if implemented, the Proposed Plan remedy would not achieve the Plan’s PRGs. Despite this serious shortcoming, according to the Proposed Plan, the remedy proposed would cost in the range of billions. Therefore, it would appear on its face to fail to meet the definition of cost-effectiveness in the NCP and the Sediment Guidance.

Criteria 8 and 9: Modifying Criteria

State acceptance and community acceptance have yet to be determined and are not addressed in this analysis.

VII. The CPG’s Sustainable Remedy Should Be Further Evaluated Before Any Other Remedy Is Implemented For The FFS Area

We understand the CPG has communicated its “Sustainable Remedy” on a conceptual level to U.S. EPA. We further understand this remedy would focus on dredging areas of bioavailable and bioaccessible impacted sediment, rather than the Proposed Plan’s bank to bank approach. Removal of the impacted sediment would result in optimal protectiveness by effectively reducing risk, while the decrease in the volume of dredged sediment would significantly reduce the unintended resuspension and releases which the Sediment Guidance

notes are “inevitable” in any dredging project as part of the LPRSA. This would also reduce both the short-term and the long-term risk posed by the implementation of the remedy itself, satisfying the Sediment Guidance’s requirement to evaluate the Comparative Net Risk of the remedial alternatives under consideration (Section 7.4). It would appear that the Sustainable Remedy also would meet the proportionality test for cost-effectiveness under the NCP and the Sediment Guidance. The Sustainable Remedy also appears to be fully consistent with the directives of CERCLA, the NCP’s Remedy Selection Nine Criteria and the Sediment Guidance based on the preliminary information we have received. Consequently, it would be appropriate to further evaluate this remedy as part of the LPSRA RI/FS and it would be inappropriate for the Agency to proceed with the Proposed Plan until the full LPSRA RI/FS has been fully reviewed and evaluated.

VIII. Conclusion

Rather than following the CERCLA RI/FS process, despite the scheduled availability of the LPSRA RI/FS in a few months, U.S. EPA in fact proposes to disregard this \$100 million effort which it required be undertaken, apparently out of an unfounded need for speed. In the meantime, at least two significant interim actions have already been performed, including both the Tierra Phase I Removal Action at the Lister Avenue site, which removed 40,000 cubic yards of the most contaminated material known to be present in the LPSRA, and the River Mile 10.9 dredge/cap operations that were undertaken in 2013 and 2014, which removed an additional 20,000 cy of contaminated sediments along the Lyndhurst shoreline. Rather than evaluating the effect of these significant interim remedial measures through data collection and analysis before deciding on the next step, as phased or adaptive management would require, the Agency is now proposing to disregard the principles of adaptive management and to prematurely select a record-breaking final dredging remedy for the lower 8 miles of the LPSRA.

U.S. EPA should not implement a decision so clearly contrary to its own policies. Instead of continuing its current course, the Agency should follow the NCP and the Sediment Guidance by selecting a remedy for the FFS Study Area based on the ongoing RI/FS for the full 17 miles. This decision could be supplemented by the additional information and analysis needed to create a technically accurate understanding of current conditions in the LPSRA and the likely effects of various remedial alternatives, and implement the iterative (adaptive management) approach specified in U.S. EPA’s guidance.

The Sediment Guidance provides a scientifically sound, risk-based approach to addressing contaminated sediment sites. Sediment sites present challenging problems, but following the policy and procedures in the Sediment Guidance uniformly across the country is necessary to assure that an appropriate remedy is selected which is capable of being successful in reducing risk based on site-specific conditions. In contrast, the draft FFS and Proposed Plan for the Lower Passaic River deviate from CERCLA, the NCP and the Sediment Guidance in several critical ways including proceeding with a lack of source control information which inevitably will result in recontamination, incomplete site characterization, and inadequate and inappropriate remedy evaluation. Accordingly, the Proposed Plan should be withdrawn and the LPSRA RI/FS should be allowed to proceed to completion and to serve as the basis for selection of a remedy for the entire site which is fully consistent with CERCLA, the NCP and the Sediment Guidance.

The SMWG would be pleased to answer any questions about its comments on the draft FFS and Proposed Plan for the Lower Passaic River. 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.

Respectfully submitted,

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Exhibit A

Membership in the Sediment Management Work Group

Alcoa, Inc.	Space and Naval Warfare Systems Center
Ashland Inc.	U.S. Army Corps of Engineers
AstraZeneca Pharmaceuticals LP	U.S. Army Engineer Research &
BASF Corporation	Development Center
Beazer East, Incorporated	United States Navy
BP America, Inc.	Utility Solid Waste Activities Group
CBS Corporation	
Chevron Corporation	
Covidien	
DTE Energy Company	
DuPont Co.	
E.I. du Pont de Nemours & Co., Inc.	
ExxonMobil	
Freeport-McMoRan Copper & Gold, Inc.	
General Motors LLC	
Georgia Pacific, LLC	
Glenn Springs Holdings, Inc.	
Honeywell International, Inc.	
International Paper Company	
Kinder Morgan, Inc.	
Monsanto Company	
National Grid	
NW Natural	
Port of Portland	
Shell	
Sherwin-Williams Co.	
The Boeing Company	
The Dow Chemical Company	
The Greenbrier Companies, Inc.	
Tierra Solutions, Inc.	
U. S. Steel Corporation	
We Energies	
American Chemistry Council	
American Forest and Paper Association	
American Gas Association	
American Petroleum Institute	
Centre for Advanced Analytical Chemistry	
CSIRO	
Council of Great Lakes Industries	
Electric Power Research Institute	
International Zinc Association	
National Council of Paper Industry for Air & Stream Improvement	
Norwegian Institute for Water	

