

Appendix A
Focused Feasibility Study

**Comments on Behalf of the Lower Passaic River Study Area Site
Cooperating Parties Group on the Proposed Plan and Feasibility Study for the
Lower Eight Miles of the Lower Passaic River Study Area Portion of the
Diamond Alkali Superfund Site**

Overview of Comments

Region 2's 8-mile Proposed Plan is based on a technically deficient and poorly supported Focused Feasibility Study (FFS) analysis that does not meet the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), does not support the legitimate selection of a preferred remedial alternative, and must be withdrawn.

Summary Comment: Region 2's development and screening of remedial alternatives in the FFS is technically flawed and inconsistent with the NCP, resulting in a defective and biased set of remedial alternatives that are retained for detailed evaluation.

Discussion: The FFS does not include an appropriate set of alternatives to support a meaningful evaluation and comparison: (1) there is no bank-to-bank alternative developed that does not include restoration of the Federal Navigation Channel (FNC), which is not within the scope of the U.S. Environmental Protection Agency's (EPA) authority under the Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. 9601 et seq.) (CERCLA) and should not be part of the remedy (see Comment I.A.1); (2) the design of EPA's alternative for targeted removal (Alternative 4) is flawed, leading to a significant underrepresentation of its benefits and a premature dismissal from the comparative evaluation (see Comment I.A.4); (3) the FFS does not meaningfully consider adaptive management, as recommended by EPA guidance, and EPA's proposed alternative is fundamentally at odds with the core principles of adaptive management (see Comment I.A.2); and (4) the FFS does not adequately evaluate and compare relative costs and benefits to characterize the cost-effectiveness of the proposed remedy (see Comment I.A.3). Without an appropriate set of remedial alternatives, EPA decision-makers and the public cannot fully evaluate the costs, benefits, community impacts, and environmental impacts of various approaches to cleaning up the Lower Passaic River (LPR).

Summary Comment: Region 2's FFS presents an incomplete and misleading evaluation of remedial alternatives based on the nine evaluation criteria defined in the NCP. As a result, Region 2 has failed to adequately determine the feasibility of several aspects of its preferred alternative. Therefore, the preferred remedy identified in the 8-mile Proposed Plan can only be considered as highly conceptual and not properly evaluated. Region 2 has postponed evaluating the feasibility of its preferred alternative until the Remedial Design phase and has stated such in public meetings and forums (i.e., Region 2's May 22 Public Meeting and Montclair State's June 2, FFS Forum). The Region has intentionally failed to adequately consider critical implementation issues that will substantially increase the time, difficulty, and cost of completing the cleanup. As a result, the remedy, as currently conceived, will far exceed Region 2's current estimates of cost and duration, and it will create far greater levels of community disruption and environmental impacts than Region 2 acknowledges in the FFS and Proposed Plan.

Discussion: The NCP requires consideration of nine evaluation criteria to support the evaluation and selection of a preferred remedial alternative. The detailed evaluation of remedial alternatives in the FFS relative to several of the NCP evaluation criteria is inadequate and presents information and conclusions that lack foundation and are erroneous, misleading, and incomplete. Most importantly, the preferred alternative does not meet the CERCLA criteria for overall protection of human health and the environment. Region 2 is proposing the largest cleanup in CERCLA history without acknowledging the uncertainties and limitations of the proposed remedy to achieve EPA's target risk levels.

Region 2's proposed cleanup goals for the lower 8 miles of the LPR are inconsistent with the final remediation goals that will be developed for the entire LPR and are unattainable. Region 2 used different risk assessment methods and assumptions than have been developed in the remedial investigation and feasibility study (RI/FS) process for the LPR and ignored regional background concentrations in the selection of cleanup goals, contrary to EPA guidance. The effectiveness of any remedy will be limited by ongoing contamination from background sources, which will lead to recontamination of the remediated sediments. Region 2 also fails to acknowledge that the implementation of the preferred alternative will not achieve New Jersey water quality standards due to regional background sources of contamination and falsely suggests that the final remedy for the 17-mile LPRSA will achieve the standards (see Appendix A, Comment I.B.2).

Region 2 does not adequately evaluate the impacts of the preferred alternative to the community and the environment, resulting in a deficient evaluation of short-term effectiveness. Contrary to EPA policy and principles, Region 2 ignores key metrics, including energy use, greenhouse gas emissions, and resource consumption (see Appendix A, Comment I.B.5.a). The impacts of traffic and rail disruptions due to the thousands of bridge openings necessary to move sediments down the river are not evaluated; the preferred alternative will result in traffic delays and associated greenhouse gas emissions from idling cars, and potentially passenger and freight rail delays (Region 2 did not evaluate the feasibility of the frequent bridge openings that will be required under its preferred alternative; see Comment I.B.5.b). This inadequate evaluation neglects a reality that may make it effectively impossible to implement Region 2's preferred alternative in the manner contemplated in the FFS and Proposed Plan, and it misleads the community as to the true challenges and impacts associated with Region 2's plan.

The evaluation of the implementability of the preferred alternative is incomplete and does not provide an adequate basis to evaluate the alternative relative to the NCP criteria. Region 2 ignores site-specific experiences regarding technical feasibility gained during the River Mile (RM) 10.9 removal action performed by the Cooperating Parties Group (CPG) and the Lister Avenue Facility Phase I removal action performed by Occidental Chemical Corp. (through Tierra Solutions, Inc.). Region 2 leaves significant evaluations to the design phase, including:

- The mechanical and administrative feasibility of frequent bridge openings to transport sediments down the river
- The navigational constraints limiting equipment sizing and timing of barge movement
- The technical and administrative challenges of dredging in the more than 30 utility crossings in the study area
- The design requirements, logistics, and available sites for a processing facility sufficient to handle the volume of sediments generated by the preferred alternative
- The capacity of the rail system to transport processed sediments for off-site disposal
- Dredge schedule constraints and impacts associated with fish migration window restrictions
- The comparative risks, benefits, and costs of a confined aquatic disposal (CAD) and off-site disposal.

By ignoring site-specific constraint and performing incomplete evaluations, Region 2 significantly overestimates the achievable dredge production rates and underestimates the project duration. Region 2's incomplete and misleading evaluation of the technical feasibility of the preferred alternative does not provide the level of solid, realistic information needed to evaluate the true duration, cost, and impacts of the remedy (see Appendix A, Comment I.B.6).

Region 2's cost estimates for the remedial alternatives in the FFS use an unrealistic and out-of-date discount rate and do not include an appropriate sensitivity analysis. Region 2 uses a discount rate of 7%, which dates back to a rate published by the federal Office of Management and Budget in 1993 and does not reflect more recent trends in interest rates, realistic rates of return for private funds reserved for future

remediation costs, and EPA's own recognition of the appropriateness of rates more reflective of current economic conditions (see Appendix A, Comment I.B.7).

Summary Comment: Region 2's FFS and Proposed Plan do not satisfy the NCP's public participation expectations (40 CFR § 300.430(f)(1)(ii)) because they present incomplete and misleading information.

Discussion: As mentioned above, Region 2 has failed to provide an adequate analysis of the feasibility of its preferred alternative and has significantly underestimated the duration, cost, difficulty, and impacts of the project by failing to take into account the urban setting of the LPR and site-specific conditions such as bridge mechanical and operational conditions, navigational constraints, existing infrastructure, and fish window restrictions that will impact the duration of the remedial activities. Region 2 misleadingly characterizes the impact of different approaches to cleaning up the river on bridge operations and associated traffic and rail transportation delays, stating “[a]ll of the active alternatives would be equally affected by the need to open the bridges.” In reality, the massive removal in the Proposed Plan will have a significantly greater need to open bridges compared with a smaller, targeted removal. Region 2 disregards the lessons learned during the RM 10.9 Removal Action, where the constraints of performing remedial activities in the LPR approximately doubled the planned construction duration of the removal action. For all of these reasons, Region 2's FFS and Proposed Plan do not provide decision-makers or the community with accurate and sufficient information to make an informed decision regarding cleanup of the lower 8 miles of the LPR, and therefore fail to meet the requirements of the NCP.

I. REGION 2'S PROPOSED PLAN FOR THE LOWER 8 MILES OF THE LPRSA IS BASED ON A TECHNICALLY DEFICIENT AND POORLY SUPPORTED FFS ANALYSIS THAT DOES NOT MEET THE REQUIREMENTS OF THE NCP, DOES NOT SUPPORT THE LEGITIMATE SELECTION OF A PREFERRED REMEDIAL ALTERNATIVE, AND MUST BE WITHDRAWN.

The FFS and the Proposed Plan fail to meet NCP requirements (1) to develop an appropriate set of remedial alternatives necessary to support the selection of an appropriate remedy (40 CFR § 300.430(e)(1)); (2) to conduct an appropriate evaluation of remedial alternatives according to the nine evaluation criteria defined in the NCP (40 CFR § 300.430(e)(9)(iii)), and (3) to provide the public with appropriate opportunities for involvement in remedy selection (40 CFR § 300.430(c)(2)(ii)(A)). These points are developed further below.

Overall, Region 2's approach to the development of remedial alternatives in the FFS, its subsequent detailed and comparative evaluation of alternatives, and the identification of a preferred remedy ignores a multitude of critical technical uncertainties (e.g., modeling predictions, implementation constraints, ongoing sources, community and environmental impacts), while discounting the benefits of a phased or targeted approach that would allow a more measured use of resources and monitoring, which could in turn be used to inform future adjustments to the remedy. The scale and cost of the FFS study area cleanup dictates a far more rigorous approach to the development and screening of remedial alternatives, their comparative analysis, and accounting of overall costs and benefits than has been presented.

In the absence of an adequate FFS evaluation that conforms to the NCP, Region 2 does not have sufficient information or a legitimate basis to put forth a Proposed Plan, select a remedy, and develop a Record of Decision (ROD). As described in the following sections, substantial revisions to the FFS and additional technical evaluations would be necessary to meet the NCP requirements for development and evaluation of remedial alternatives and the identification of a preferred alternative. Therefore, the Proposed Plan is premature and deficient and must be withdrawn and allow for the completion of the 17-mile RI/FS from which a remedy decision for the LPR Study Area (LPRSA) can be based.

A. *Region 2's development and screening of remedial alternatives in the FFS is technically flawed and inconsistent with the NCP, resulting in a defective and biased set of remedial alternatives being retained for detailed evaluation.*

Section 4.4 of the FFS develops and screens four remedial alternatives for detailed evaluation. As a direct result of several deficiencies and errors in Region 2's approach to remedial alternative development and screening, the FFS retains a flawed and biased set of alternatives for detailed evaluation. This fundamental defect in the FFS makes it impossible for Region 2 to select an appropriate preferred remedial alternative for the FFS study area on the basis of a technically sound analysis that complies with CERCLA and the NCP.

1. The FFS does not meet the NCP requirement to develop and evaluate an appropriate set of remedial alternatives (40 CFR §300.430(e)(1)), including an alternative that would provide for bank-to-bank remediation without restoration of the FNC.

Region 2's preferred alternative includes provisions for additional dredging and removal of contaminated sediments to deepen the FNC from RM 0 to RM 2.2. In the Proposed Plan and in other public communication documents, however, Region 2 states that it "...will provide focused public outreach on... whether shallower depths might accommodate reasonably-anticipated future use in the lower 2.2 miles of the river" (Proposed Plan, p. 2). Notably, Region 2's FFS and Proposed Plan do not develop and evaluate bank-to-bank remedial alternatives with shallower channel depths—including an alternative that would provide for bank-to-bank remediation without any deepening of the FNC from RM 0 to RM 2.2—that would give Region 2 decision makers and the public the information needed to evaluate this question in a meaningful way. The Region has not identified the portion of the dredging volume attributable to the CERCLA remedy and the portion attributable solely to dredging for navigational purposes. Therefore, the additional volume to be dredged and associated cost due to navigation has not been clearly articulated, and an alternative with just the CERCLA component has not been identified as an option. Because of this omission, the FFS falls short of the NCP requirement "that appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action options can be presented to a decision-maker and an appropriate remedy selected" (40 CFR §300.430(e)(1)). It also means that the FFS and Proposed Plan fail to meet the NCP expectation that the public be afforded appropriate information to support meaningful public involvement in the remedy selection decision (40 CFR § 300.430(f)(1)(ii)).

The FFS fails to present critical information about the channel deepening component of the preferred alternative, including the facts that channel deepening below RM 2.2 alone accounts for 48% of the estimated dredged sediment volume for the entire 8.3 miles of the Proposed Plan/FFS remedy, accounts for approximately \$850,000,000 of the undiscounted project capital costs, will substantially lengthen the construction schedule, will increase impacts on the community and environment during construction, and will result in no additional risk reduction. Region 2 does not acknowledge the physical constraints identified by USACE (2010) that will limit use of the restored channel, including narrow bridge openings and insufficient channel width to accommodate a turning basin required for larger vessels. The justification to deepen the FNC is based on a study performed by the U.S. Army Corps of Engineers (USACE) in 2010. A few of the waterway users who responded to a survey conducted to support the USACE study expressed interest in use of the deeper navigation channel if restored. From 1997 to 2006, 97% of tons transported came from only six companies and one sewerage commission, and over the past 17 years, 6 of the 22 berths were not used at all. Despite the limited number of users who might benefit from the channel deepening, Region 2 uses this information to conclude that there is a need for the restoration of the FNC. However, the USACE study states: "Future maintenance dredging by USACE is subject to receipt of funding through the federal appropriation process. This project would be competing for funds with other projects nationally, with priority for funding given to projects that provide the greatest benefits relative to the cost of maintenance. The decision to maintain the navigational channel would also be influenced by the commitment from the terminal operators to maintain their berths." The 2010 survey does not establish that sufficient demand for expanded shipping in the LPR exists to justify deepening of the FNC.

Region 2 has failed to provide economic justification for the additional dredging to support navigation needs. USACE has not performed a cost-benefit analysis of the channel restoration, as required for consideration of Congressional funding for federal projects under the Water Resources Development Act. Nevertheless, Region 2 claims in the Proposed Plan/FFS that the channel deepening component would accommodate reasonably anticipated future use depths between RM 0 and RM 2.2, while failing to acknowledge that the future commercial demand that would support the need for navigation channel deepening is highly uncertain, its economic justification has not been demonstrated according to federal requirements, and there is no evidence that USACE has committed to perform maintenance dredging of a deepened channel in the future.

Given uncertainty in future use and the major increases in remedy scope, complexity, and cost associated with the channel deepening component of Region 2's preferred alternative, a bank-to-bank alternative without channel deepening should have been developed and evaluated in the FFS. Region 2's failure to do so is inconsistent with the NCP because its absence makes it impossible for a decision-maker to consider the cost-benefit tradeoffs associated with channel deepening and, therefore, to have a sufficient basis to justify the selection of an appropriate remedy. Further, it does not afford the public with information that would be needed for appropriate public involvement in the remedy selection decision.

2. Region 2 fails to consider a phased or adaptive management approach in the development of alternatives.

Experience at other large sediment sites that involve high degrees of complexity and uncertainty in the design and implementation of appropriate remedial action points to the value of using adaptive management strategies, as recommended by EPA guidance (USEPA 2005), NRC (2007), and other independent, scientific peer reviews of sediment sites throughout the country (USACE 2008a,b; Cannon 2005). In its recently released Superfund Remedial Program Review (USEPA 2013a), EPA acknowledges that times have changed and that long delays in completing remedial actions and significant increases in RI/FS costs over the past decade 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." 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 2013a).

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 to allow sampling activities or RA to be terminated or modified based on the results of data analysis" (USEPA 2013a, p. 9). Moreover, adaptive management allows 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 2013a, 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 2013a, p. 7).

Although Region 2, on the last page of the Proposed Plan, gives brief acknowledgment to the role of adaptive management in sediment remedial actions, the term adaptive management and its underlying concepts are entirely absent from the FFS itself, Region 2's selection of a bank-to-bank remedial approach as the preferred alternative for the FFS study area is fundamentally at odds with the core principles of adaptive management. These involve recognition of project-related uncertainties and risks, phased approaches to implementation, active learning, and multiple decision points that allow for opportunities to respond to new information and make informed course corrections. Region 2's commitment to a bank-to-bank approach fails to recognize the numerous uncertainties, challenges, and risks that conditions in the LPR pose with respect to remedy implementation and overall effectiveness, and affords few if any opportunities to make significant modifications to the approach during remedy design and implementation. Given that Region 2's Proposed Plan is the largest proposed remedy for any site in the history of CERCLA, Region 2, consistent with EPA guidance, should have given greater consideration in the FFS and Proposed Plan to alternatives that are based on a phased remedial approach and that can be adapted to ensure acceptable progress towards remedial goals while more effectively managing human health and environmental risks.

3. Region 2's screening of alternatives fails to adequately evaluate and compare relative costs and benefits (i.e., cost-effectiveness).

CERCLA requires that any remedial action that is selected must be "cost effective" (40 USC 9621(a)). More specifically, CERCLA directs that

In evaluating the cost effectiveness of proposed alternative remedial actions, the President shall take into account the total short- and long-term costs of such actions, including the costs of operation and maintenance for the entire period during which such activities shall be required.

Accordingly, 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)...A remedy shall be cost-effective if its costs are proportional to its overall effectiveness." (40 CFR §300.430(f)(1)(ii)(D)). Cost-effectiveness is determined by evaluating the following three of the five balancing criteria noted in § 300.430(f)(1)(i)(B) to determine overall effectiveness: long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, and short-term effectiveness. Overall effectiveness is then compared to cost to ensure that the remedy is cost-effective. A remedy shall be cost-effective if its costs are proportional to its overall effectiveness.

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" (USEPA 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" (Preamble to NCP)¹.

These proportionality requirements were reiterated by EPA in its sediment guidance (USEPA 2005). 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).

¹ 55 Federal Register 8728. March 8, 1990.

EPA's cost guidance for feasibility studies (USEPA 2000) states, "[s]creening-level cost estimates are used to screen out disproportionately expensive alternatives in determining what alternatives should be retained for detailed analysis." The NCP states the following with respect to the role of cost in screening of alternatives: "The costs of construction and any long-term costs to operate and maintain the alternatives shall be considered. Costs that are grossly excessive compared to the overall effectiveness of alternatives may be considered as one of several factors used to eliminate alternatives." (40 CFR 300.430(e)(7)(iii))

In its screening, Region 2 fails to adequately evaluate and compare the relative benefits and costs for the remedial alternatives. For example, Table 5-4 of the FFS illustrates that the environmental benefits for Alternatives 2 and 3 are effectively equivalent, while the cost of Alternative 2B (\$3,246,000,000) is nearly twice the cost of Alternative 3B (\$1,731,000,000). In the absence of any substantive incremental benefits between Alternative 2 and 3, Alternative 2 should be screened out of the FFS on the basis of disproportionate cost.

4. Region 2's design of Alternative 4 is flawed, does not represent an optimized focused capping alternative and significantly underpredicts the benefits of such a remedy.

See Appendix B, Comments V.D and VI

B. The FFS presents an incomplete and misleading evaluation of remedial alternatives based on the nine evaluation criteria defined in the NCP.

A feasibility study performed under the NCP (40 CFR § 300.430(e)(9)(iii)) and associated guidance (USEPA 1988) requires consideration of nine evaluation criteria to support the evaluation and selection of a preferred remedial alternative. These nine evaluation criteria are categorized into three sets of criteria that serve as the basis for conducting the detailed analyses and for subsequently selecting an appropriate remedial action:

Threshold Criteria

Under the NCP, each remedial alternative must meet the following two threshold criteria to be eligible for selection as the preferred alternative:

- Overall protection of human health and the environment
- Compliance with applicable or relevant and appropriate requirements (ARARs).

Primary Balancing Criteria

The five primary balancing criteria established in the NCP are used, in combination, to weigh effectiveness, implementability, and cost tradeoffs among alternatives. These criteria, which represent the main technical criteria upon which alternative evaluation is based, include:

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, and volume through treatment
- Short-term effectiveness
- Implementability
- Cost.

Modifying Criteria

The following modifying criteria are applied by EPA to evaluate public acceptance of the preferred remedial alternative (or other alternatives) after the Proposed Plan is released for regulatory and public review and may influence final remedy selection in the ROD:

- State acceptance
- Community acceptance.

The detailed evaluation of remedial alternatives in the FFS relative to several of the NCP evaluation criteria is inadequate and presents information and conclusions that lack foundation and are erroneous, misleading, and incomplete. Specific deficiencies in the FFS evaluations relative to the NCP criteria are discussed below.

1. Region 2's FFS and Proposed Plan overstate the overall protectiveness of the preferred alternative.

The CERCLA threshold criterion of overall protection of human health and the environment addresses the degree to which the alternative achieves and maintains protection of human health and the environment, in both the short- and long-term, from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site by eliminating, reducing, or controlling exposures to levels established during development of remediation goals.

The FFS asserts that the preferred remedial alternative, in conjunction with monitored natural recovery and institutional controls, would attain the CERCLA threshold criterion of overall protection of human health and the environment (FFS, p. 5-30; FFS, Table 5-4). The Proposed Plan, in its discussion of this threshold criterion, states that the preferred alternative “would address the unacceptable risks due to COCs [contaminants of concern] in the FFS Study Area sediments...” (Proposed Plan, p. 27). These claims are inaccurate and misleading. Region 2's risk analysis presented in the FFS and summarized in the Proposed Plan indicates that, in the 30 years following construction of the remedy, residual cancer risks to human health from consumption of fish and crab would remain higher than EPA's target range of 1×10^{-6} to 1×10^{-4} . Noncancer health hazards due to fish and crab consumption would remain higher than EPA's goal of 1 (i.e., 13 to 18 for children, and 6 to 8 for adults). According to the FFS, ecological hazards would also remain higher than acceptable levels 30 years after construction. To the extent that the preferred alternative would rely on institutional controls in the form of fish consumption advisories and enhanced public outreach to achieve protectiveness, the uncertainty associated with these measures is not recognized or clearly articulated. The FFS and Proposed Plan are deficient and inconsistent with the NCP because they fail to acknowledge these uncertainties and limitations in the ability of the preferred alternative to meet the CERCLA threshold criterion of overall protection of human health and the environment. This contributes to an exaggerated and ultimately false impression of the cost-effectiveness of Region 2's preferred alternative in comparison to targeted removal approaches that can be implemented much more readily and at substantially lower cost, and that will rely on adaptive management to attain overall protectiveness.

2. The FFS and Proposed Plan fail to acknowledge that an ARAR waiver for New Jersey's promulgated surface water quality standards will be required for any remedial action in the LPRSA due to regional/urban background sources of contamination.

The FFS acknowledges that implementation of Region 2's preferred alternative will not attain surface water quality standards, but does not identify the need to obtain an ARAR waiver for implementation of a remedial action for the FFS study area as required under CERCLA Section 121(d) and the NCP (40 CFR § 300.430(f)(1)(ii)(C)). The statement in the Proposed Plan that Region 2's preferred alternative for the lower 8 miles of the LPRSA is an “interim action” for the water column does not relieve EPA of this requirement.

Furthermore, Region 2's claims in the FFS and Proposed Plan that the final remedy for the 17-mile LPRSA will result in a greater likelihood of attaining surface water quality ARARs (FFS, p. 5-32) are technically unsupported and misleading. The FFS does not acknowledge the water column data that were collected during the remedial investigation in the LPR and above Dundee Dam. These data (Table A.1) indicate that background water column concentrations observed above Dundee Dam exceed New Jersey Surface Water Quality Standards (N.J.A.C. 7:9B) for several of the COCs (2,3,7,8-TCDD, 4,4-DDE, 4,4-DDT, and total PCBs). Flows over Dundee Dam comprise more than 80% of the freshwater inflow into the LPRSA; these waters mix with tributary inflows and tidal flows exchanged with Newark Bay. The water column concentrations in the tributaries and in Newark Bay also exceed water quality standards for several COCs, and will not provide dilution of water coming over Dundee Dam. Water column concentrations in the LPR can never be lower than those in the incoming water from above Dundee Dam.

It is misleading for Region 2 to claim that the 8-mile bank-to-bank removal cannot meet water quality standards, but that additional remedial actions above RM 8 could meet these standards. Region 2 must acknowledge that background water column concentrations have a significant influence on water quality in the LPR, and that, even after a remedy for the entire 17-mile LPRSA is implemented, the waters of the LPR will not attain New Jersey's surface water standards due to urban background levels of contamination, and an ARAR waiver will be required for any remedial action. There is recent precedent for utilizing a technical impracticability ARAR waiver due to ongoing urban/industrial influences. With respect to the ambient water quality criteria ARAR for the Lockheed Martin West Seattle Superfund Site, EPA Region 10 proposed a technical impracticability waiver because the site's surface water "will continue to be impacted by the flow of surface water in Elliott Bay and the Lower Duwamish Waterway," which are urban/industrial waterways (Region 10's Response to National Remedy Review Board [NRRB] Recommendations for Lockheed West Seattle Superfund Site). At the LPR, due to the continued urban/industrial influence, including upstream and lateral loads of COCs, the Proposed Plan will not result in meeting the ARARs for water quality. Thus, the limitations of what can be achieved in the LPRSA due to its location should be recognized and, appropriately, a technical impracticability waiver should be proposed and approved for the ARARs for water quality. This ARAR waiver would be consistent with EPA's 2002 policy, *Role of Background in the CERCLA Cleanup Program* (USEPA 2002), which notes that "the CERCLA program normally does not set cleanup levels below anthropogenic background concentrations" for reasons that include "cost-effectiveness, technical practicability, and the potential for recontamination of remediated areas."

3. Region 2's evaluation of long-term effectiveness fails to present a meaningful and technically supportable recontamination evaluation, with the result that Region 2's estimates of long-term effectiveness and risk reduction of Region 2's preferred alternative may be overstated.

See Appendix B, Comment IV.

4. Region 2's proposed remediation goals are inconsistent with the baseline human health and ecological risk assessments being developed for the 17-mile LPRSA RI/FS by the CPG under EPA oversight, are unattainable, and sidestep EPA's own policy and guidance requiring that remediation goals must take background concentrations into account.

See Appendix C, Comment I.D and Appendix D, Comment II.B.2

5. Region 2's evaluation of short-term effectiveness is deficient because it does not adequately evaluate impacts to the community and the environment.

a) *The FFS presents a poorly developed analysis of environmental impacts of the remedial alternatives and ignores key metrics, including energy use, greenhouse gas emissions, and resource consumption that are recognized under EPA's green remediation principles and Region 2's Clean & Green policy.*

The short-term effectiveness evaluation presented in the FFS briefly mentions impacts of sediment suspension and contaminant release on workers, fish, and biota, adverse air quality impacts, potential for accidents, and quality of life concerns (odor, noise, lighting, traffic, and impacts to navigation, aesthetics, and recreation). However, the evaluation does not address key metrics identified in EPA Region 2 Clean and Green Policy (USEPA 2012b), EPA's Methodology for Understanding and Reducing a Project Environmental Footprint (USEPA 2012a), and the Naval Facilities Engineering Command (NAVFAC) Department of Navy Guidance on Green and Sustainable Remediation (Battelle 2012). These metrics were developed to evaluate the potential to enhance environmental benefits of federal cleanup programs by promoting technologies and practices that are sustainable. Specific metrics that were not evaluated include air emissions, energy consumption, carbon footprint, resources consumed and disposal capacity utilized. A qualitative evaluation of air emissions is presented in the FFS, stating: "During remedial design, existing emission sources should be considered when assessing short term impacts on the resident population which may already be stressed by current emission." (App F, p. 4-14). The other metrics are not addressed at all in the FFS. Due to the scale and duration of the alternatives being evaluated in this densely populated setting, a quantitative evaluation of these metrics should have been included in the FFS to provide an adequate and meaningful assessment of the impacts of the remedial alternatives on the environment.

The CPG has developed an approximate quantification of these metrics to characterize some of the expected environmental impacts of the preferred alternative. Inputs included dredge volume (4.3 million cy) and cap and armor material volumes (2.9 million cy) as reported in Table 1-6 in Region 2's FFS Appendix H as well as production rates and durations assumed by EPA. Assumptions for other inputs (e.g., equipment sizing, transport distances, disposal location) not readily apparent in Region 2's FFS were incorporated based on professional judgment and site knowledge.

Based on this analysis, the CPG estimates that Region 2's preferred alternative would result in greenhouse gas (GHG) emissions of approximately 350,000 metric tons of CO₂. For comparison, average per capita annual GHG emissions in the U.S. are estimated at 17.6 metric tons (World Bank 2014). It was also estimated that the energy required (4.7×10^9 megajoules) to dredge, treat and transport the sediments and transport and place capping material over the life of the project for Region 2's Alternative 3 equates to the average annual residential energy use of approximately 160,000 New Jersey homes (EIA 2013). The carbon footprint was estimated to be approximately 140,000 acre-years, where one acre-year represents the annual amount of CO₂ sequestered by 1 acre of average U.S. forest.

b) *Region 2's analysis of traffic and rail disruptions associated with the proposed remedy is incomplete, flawed and misleading.*

Region 2 does not address the impact of the multiple bridge openings, estimated to be 20,000 to 25,000 individual openings over the duration of the project, on local traffic and rail. The very brief references to traffic disruptions in the FFS include increased road traffic, primarily due to construction activities and processing site operations (commuting workers, delivery of supplies), with the most significant impact expected to be associated with the construction of the upland processing facility. Region 2 fails to identify or address the number of bridge openings necessary to transport the sediment, and obfuscates the major differences among the alternatives with respect to impacts from bridge openings with the statement, "All of the active alternatives would be equally affected by the need to open bridges." (Proposed Plan, p. 37) This statement obscures the fact that larger, bank-to-bank remedial alternatives would require

significantly more bridge openings than more limited removals. There is no mention in the FFS of traffic and rail disruptions due to bridge openings in the FFS.

The large number of bridge openings will have a significant impact on local traffic, causing delays associated with each barge movement on numerous roadways. An evaluation of existing traffic patterns conducted by the CPG indicates that the bridge openings required to implement the Proposed Plan will cause major traffic backups on local streets, with a delay for individual motorists of at least 15 minutes in addition to current traffic delays. The resulting congestion following *each* bridge opening could take between one-half to two hours to dissipate, resulting in cumulative driver and passenger delays in the hundreds of hours at each bridge. Successive bridge openings (to accommodate barge movement upstream or downstream) could increase the congestion where local bridges are close together (e.g., Bridge Street Bridge and Clay Street Bridge). The idling cars will add to GHG emissions.

Bridge openings on the LPR due to barge movements would also impact some of the nation's busiest passenger rail lines, with the potential to disrupt all trans-Hudson passenger rail traffic between New Jersey and New York City. During peak weekday periods, approximately 88 trains an hour utilize the three rail crossings over the LPR (NJ Transit Newark-Harrison [Morristown Line] bridge and the Amtrak Dock Bridge and PATH Dock bridge). Although US Coast Guard regulations prohibit opening these bridges during peak rush hours (see comment 6.b below), train volumes on both sides of these peak periods are also very high. For the one-hour "shoulder peak" periods on each side of the peak periods, a 15-minute bridge opening could delay approximately 13 trains across the Amtrak and PATH bridges, carrying approximately 8,000 to 9,000 passengers, with ripple effects into New York Penn Station and Newark Penn Station, indirectly affecting the operations of other trains throughout the region. Additional delays during the shoulder peak periods would be caused with the opening of the Morristown Line Bridge. Bridge openings would also disrupt the region's busy freight network and services.

6. The evaluation of implementability of the remedial alternatives is technically deficient and poorly supported and does not provide an adequate basis for an NCP-compliant evaluation of the alternatives.

The NCP states (40 CFR § 300.430(e)(9)(iii)(F)):

The ease or difficulty of implementing the alternatives shall be assessed by considering the following:

(1) Technical feasibility, including technical difficulties and unknowns associated with the construction and operation of a technology, the reliability of the technology, ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of the remedy.

(2) Administrative feasibility, including activities needed to coordinate with other offices and agencies and the ability and time required to obtain any necessary approvals and permits from other agencies (for off-site actions);

(3) Availability of services and materials, including the availability of adequate off-site treatment, storage capacity, and disposal capacity and services; the availability of necessary equipment and specialists, and provisions to ensure any necessary additional resources; the availability of services and materials; and availability of prospective technologies.

In the FFS (pp. 4-43 and 4-44), Region 2 states:

"Alternative 3 would be readily implementable from both the technical and administrative standpoints. The remedial action as envisioned above could be constructed, operated, and maintained within the site-specific and technology-specific regulations and constraints. Debris removal, dredging, backfilling, engineered capping, CAD placement, dewatering, treatment, local and off-site treatment, disposal, and beneficial use could be implemented with proper planning of the logistics and challenges involved in handling the large volumes of dredged materials. Depending on the facility location that is eventually selected, dewatering, water treatment, and transfer facilities with good rail access and suitable wharf facilities are expected to be available or

could be developed. The remedial design would include procedures to more precisely locate utilities in the FFS Study Area and determine appropriate dredging off-sets, as well as coordination with bridge authorities regarding opening movable bridges when necessary.”

While the remedial technologies (dredging and processing) included in the Proposed Plan have proven reliable and effective at other sites, the technical and administrative difficulties and unknowns associated with their use on the LPR are not sufficiently considered in the FFS, and Region 2’s overall conclusions regarding the implementability of its preferred alternative are both insufficiently supported and false.

a) Region 2’s claim that its proposed remedy can be implemented in five years is misleading, wrong, and unsupported and is inconsistent with other sites.

Region 2 estimates that its preferred alternative can be completed in five years with a dredging production rate of ~1 million cubic yards per year (cy/yr) and a capping rate of ~ 660,000 cy/yr.² This is a significant underestimation of duration, and does not take into account the site-specific constraints of the LPRSA, discussed below. The construction duration estimate is based on a dredging production rate of 1 million cy/year, and is inconsistent with production rates at other large sediment sites. On the Hudson River, where considerably fewer urban constraints were encountered, an annual production of approximately 600,000 cy/yr has been achieved. In the feasibility study for the Lower Duwamish River (where urban constraints may be similar to those on the LPR), dredging production estimates are approximately 100,000 cy/yr for two of the larger alternatives (USEPA 2013b). In comparison with other large sediment sites, Region 2 has clearly overestimated the dredging production rate and underestimated the duration of the proposed remedy. Had EPA adequately considered site-specific factors, the analysis would have resulted in a lower production rate and longer duration, consistent with those achieved at other sites. The underestimated construction duration is misleading to the community, where impacts due to construction (e.g., traffic disruptions, air emissions [see Comment I.b.5]) will be experienced throughout the construction of the remedial action.

Region 2’s FFS disregards fish window restrictions, which will significantly reduce the annual construction season and nearly double the total project duration. A fish migration window restricts dredging on the LPR for 17 weeks (March 1 to June 30) each year. Region 2 assumes dredging will occur for 40 weeks each year, with 12 weeks of no dredging to “...account for equipment maintenance, weather and a period during which work may halt to allow for fish migration (known as a fish window)” (Proposed Plan, p. 19). Region 2 states that “a fish migration study would be conducted to better define the fish window,” which clearly assumes that the “better defined” fish window will waive or considerably modify the existing migratory fish window restrictions developed by the National Oceanic and Atmospheric Administration and its National Marine Fisheries Service. There is no justification provided to support Region 2’s assertion that the fish window can be minimized, and the inclusion of the mandatory fish window, in addition to weather and maintenance delays (which could be conservatively estimated at 12 weeks a year in addition to the 17-week fish window) will extend the estimated construction durations.

b) Region 2’s implementability analysis in the FFS does not address the realities on the river (including lessons learned during the RM 10.9 Removal Action) that will significantly increase the technical and administrative difficulty, construction duration, and cost of Region 2’s preferred alternative.

The urban setting of the LPRSA introduces significant challenges and constraints to the implementability of dredging and transport, including multiple bridges that must open to permit barge movement, navigation constraints that limit sizing and timing of barge movement (including bridges, shallow water, and fast currents), numerous utility crossings that create no dredge zones, and failing shoreline structures that limit the extent of safe removal activities. These constraints were encountered during the RM 10.9 Removal Action and approximately doubled the planned construction duration of the removal action (see RM 10.9 Lessons Learned for a detailed summary).

² Construction time is specified as 5 years in the Proposed Plan, FFS report, and Appendix H, but as 3.9 years in Appendix F.

Bridge Openings—Region 2’s preferred alternative will require 20,000 to 25,000 individual bridge openings to transit barges up and down the river, which could result in seven or eight openings per bridge per day. Bridge opening delays can be expected due to operational or mechanical issues, which will impede barge movement and extend the duration of the remedial action. Operationally and administratively, several bridges have restrictions on openings, due to rush hour (the Amtrak Bridge and the New Jersey Transit Stickle Bridge) or due to community events at local venues (e.g., the Red Bull Arena in Harrison). CFR Title 33 Part §117.739 specifically defines the notification times and requirements associated with bridge openings. In addition, Part §117.739 states that the following bridges are not required to open during certain hours:

(e) The draw of the Amtrak Dock Bridge, mile 5.0, at Harrison, shall open on signal after at least a twenty-four hour advance notice is given by calling the number posted at the bridge; **except that, from 7:20 a.m. to 9:20 a.m. and from 4:30 p.m. to 6:50 p.m., Monday through Friday, except Federal holidays, the draw need not be opened for the passage of vessel traffic (emphasis added)**. At all other times, a bridge opening may be delayed no more than ten minutes for the passage of rail traffic, unless the draw tender and the vessel operator agree to a longer delay.

(g) The draw of the NJTRO Newark-Harrison (Morristown Line) Bridge, mile 5.8, at Harrison, New Jersey shall open on signal if at least one hour advance notice is given to the drawtender at Upper Hack Bridge mile 6.9, across the Hackensack River at Secaucus, N.J. In the event the HX drawtender is at the Lower Hack Bridge, mile 3.4 on the Hackensack River, at Jersey City then up to an additional half hour delay in opening is permitted. After the signal to open is given, the opening may be delayed no more than ten minutes. **From 7:15 a.m. to 9 a.m. and from 4:30 p.m. to 6:50 p.m., Monday through Friday except federal holidays, the draw need not open (emphasis added)**.

(p) The draw of the Route 1 & 9 (Lincoln Highway) Bridge, mile 1.8, between Kearny and Newark, shall open on signal if at least a four hour advance notice is given; **except that, the draw need not open for the passage of vessel traffic between 6 a.m. and 10 a.m. and between 2 p.m. and 6 p.m., Monday through Friday, except holidays (emphasis added)**. Tide dependent deep draft vessels may request bridge openings between 6 a.m. and 10 a.m. and between 2 p.m. and 6 p.m., provided at least a twelve hour advance notice is given by calling the number posted at the bridge.

The restrictions on bridge openings could result in limited opportunities to transit barges up and down river, which would limit the amount of material that could be transported in a given day, and extend the overall duration of the remedial action.

Mechanically, the bridges on the LPR are aged and the majority are deemed structurally deficient,³ resulting in the potential for inoperable bridges for periods of days or months, restricting barge movement and dredging activities upriver of the inoperable bridge. During the RM 10.9 Removal Action, bridge mechanical failures, delayed repairs, and restricted opening schedules impacted the removal schedule by more than 9 weeks over the course of the 9-month project.

Region 2 does not realistically consider the impact of opening bridges on project duration and technical and administrative difficulty of remedy implementation, but states “[t]he FFS incorporates the assumption that the necessary coordination, which may include assisting bridge authorities with engineering evaluations and maintenance of the bridges, would occur during the remedial design phase of the project” (Proposed Plan, p. 37). This language suggests Region 2 may consider technical assistance to bridge authorities to be a legitimate CERCLA response cost. Maintenance of bridges so as not to impede river navigation is a legal responsibility of the bridge operators alone. Further, Region 2 is misleading in its characterization of the impact of the number of bridge openings associated with the preferred alternative, but states “[a]ll of the active alternatives would be equally affected by the need to open the bridges”

³ National Bridge Inventory Database, accessed 4/25/14 (<http://nationalbridges.com/>).

(Proposed Plan, p. 37). In reality, significantly more bridge openings are required for the bank-to-bank dredging alternatives.

Navigational Constraints—Tides, currents, channel width and depth, limited bridge clearances, obstructions, shoals, and outcrops restrict navigation and impact equipment sizing and timing of barge movement, which will result in a considerably longer duration and technical implementation challenges than estimated by Region 2. Region 2 does not address the navigational constraints and the impact on production: “For FFS cost estimation purposes, the production rate was conservatively assumed to be 2,000 cy per 24-hour day. This rate accounts for periods where a smaller secondary dredge would operate at a lower production rate around obstructions such as bridge abutments and bulkheads” (App. F, p. 2-8). The FFS does not address the conditions encountered in the RM 10.9 Removal Action (which had an average production rate of 500 cy per day): barges can only be moved at high tide, due to shallow depth and a rock outcropping; narrow bridge openings restrict the barge size; and high currents between bridge abutments necessitate a sufficiently powered tugboat (restricting the opportunity to use smaller vessels) and likely eliminate the ability to transport multiple barges with a single tug. The production rates presented in the FFS erroneously assume the use of larger equipment than can be safely and feasibly employed on the LPR above RM 4.6; use of smaller equipment will result in a lower production rate and extended duration of the remedial action.

Utilities—Region 2 does not present an evaluation of utilities or consider their impact on remedy implementation in the FFS. The FFS downplays the technical and administrative difficulties associated with dredging in utility crossings under the preferred remedial alternative. For example, no provision is included in the cost estimate for the preferred alternative for utility protection, and necessary work to locate utilities in the FFS study area and determine appropriate dredging offsets is deferred to remedial design. More than 30 utility crossings have been identified in the lower 8.3 miles of the LPRSA. Accurate location of utilities will be a challenge, and utility owners will require an offset or no dredge zone on either side of the utility crossing. During the RM 10.9 Removal Action, a sub-bottom profile survey and a magnetometer survey were performed to determine the lateral location and depth of two buried water lines. The depths and lateral location were not accurately determined due to poor ability to detect the concrete-jacketed lines by the sub-bottom survey, and there was uncertainty regarding the lateral location. The location as determined by the magnetometer survey lateral location was offset approximately 10 ft from the mapped location for one of the water lines. Due to the uncertainty in the survey results, the utility was unwilling to rely on the geophysical survey when determining where the setbacks should start from, and not willing to reduce the buffer to less than 30 ft on either side of the estimated pipeline alignment.

The current estimated utility corridors (based on extensive inquiry during the remedial investigation) cover 133 acres, approximately 20% of the lower 8.3 miles. Region 2 makes no attempt to map or otherwise identify these utility corridors. These areas will require extensive surveying to attempt to locate utilities, and no dredge zones will be identified. Region 2 assumes that dredging can occur above deeper utilities: “Dredging for Alternative 2 would affect more utilities than dredging for Alternative 3, because Alternative 2 would involve much deeper dredging than Alternative 3” (Proposed Plan, p. 37). Based on the experience at RM 10.9, it is unlikely that utility owners will permit dredging above the utility or agree to narrow no-dredge zones in the vicinity of their utilities, and unlikely that dredging contractors will be willing to violate these property interests and accept the resulting liability. The logistics of locating utilities, negotiating no dredge zones, and ensuring safe dredging operations will require planning and likely slow operations, potentially extending the duration of remedial action.

c) Region 2's FFS does not give any consideration to limitations on rail transport of processed sediment for off-site disposal.

In the Proposed Plan, Region 2 assumes treated sediments will be transported by rail to an off-site disposal facility; the discussion of rail transport is limited to identifying the presence of rail in the vicinity of the potential processing sites and to the disposal facilities. In addition, Region 2 fails to consider the availability of railcars and the capacity of regional rail. On the Hudson River, the availability of railcars

was a rate-limiting factor of total production rates (as indicated above, the FFS assumes a production rate almost 50% higher than those achieved on the Hudson River). The ability to move the significant sediment volumes generated by Region 2's preferred alternative out of the region in a timely fashion must be evaluated in the development of production rates.

d) Region 2 does not adequately evaluate the design requirements and logistics of a processing facility, and does not sufficiently evaluate the ability to site a processing facility capable of handling the large volume of sediments generated by the preferred alternative.

Region 2 relies on a study performed by USACE (2007) to identify and evaluate potential sediment processing facility sites in the FFS. The USACE study was a desktop survey that identified and ranked vacant properties for potential use as a dredged material public processing facility and/or public storage facility in the Port of New York and New Jersey. The objective of the USACE study was to identify potential sites for a single public processing facility sized to process 1.5 million cy of fine grained silty dredged material removed during regular maintenance dredging every year in the harbor. Of the sites identified in the USACE study, EPA lists 12 high potential sites for the FFS processing facility. The FFS does not provide any additional analysis of the potential upland processing facility sites beyond what is presented in the 2007 study. Region 2's analysis of potential processing sites is deficient, as it underestimates the minimum acreage needed for a processing site, it does not consider the proximity of the potential sites to the LPR, and it does not confirm the current availability or future development plans of the sites. The FFS includes only the alternative to construct a new, public facility, and does not evaluate the option of using one or more existing, private facility(ies) to process LPR sediments.

Region 2 assumes a 26-acre site will be sufficient to build the necessary components of the processing facility, including storage, sediment processing, water treatment, and rail siding. This acreage is insufficient to support the required facilities. Region 2 assumes 10.5 acres for roads and load-out areas, with no provisions for railcar staging and train assembly areas. The needs for railcar staging and train assembly sidings are critical components of an efficient transportation system. Region 2 states that 4.5 acres will be required for temporary storage of material waiting processing (Appendix G, Table 3-4). Using Region 2's average dredge rate, and assuming a 5-ft height of stockpiled material and an additional 30% area for travel paths and wall clearance, storage for 6 months of dewatered dredged material would require approximately 20 acres (Region 2's maximum assumed dredge rate in the FFS of 6,600 cy per day, which is 50% greater than the average and assumed to occur for more than 2 years of the project, would necessitate an even larger storage area). Experience at other comparable processing sites also indicates that Region 2's estimate of required acreage is inadequate. The Tierra Solutions, Inc., Phase I removal included a processing facility that treated an average of 500 cy of sediment per day (compared with an estimated 4,000 cy for Region 2's preferred alternative) with a footprint of 10.4 acres. The Hudson River dredging project has a 110-acre processing and staging site to process a peak annual production of 650,000 cy (compared with ~1 million cy/yr for Region 2's preferred alternative under EPA production assumptions). While a direct scaling of production rate and facility size is not appropriate (i.e., the FFS production rate that is 8 times higher than the Phase I rate does not equate to a processing site that is 8 times larger), experience from other sites suggest that the acreage at the smaller sites evaluated in the FFS and the 2007 USACE study (i.e., Kearney Point) is not sufficient to support the processing facility to handle the large volumes of sediments estimated for the preferred alternative.

Of the 12 sites identified by EPA, five of these are located at least 20 miles from the FFS study area (Table A.2); two in New York, which would require participation from the state of New York) and three in New Jersey on the Raritan River, south of Staten Island. Use of any of these sites involves additional transportation costs of moving the sediments long distances for processing, and some include the potential additional logistical complications of using an out of state location for a processing facility. Of the seven remaining sites within 20 miles of the FFS study area, four are outside of the Diamond Alkali Superfund Site (which contains the FFS study area) and use of these sites for construction of a processing facility to accept LPR sediments is inconsistent with the CERCLA Off-Site Rule (§121(d)(3)), which regulates the transport of contaminated material. Transport of hazardous material to a new facility

off-site would require permitting of a new Resource Conservation and Recovery Act-compliant facility, an alternative that is not generally supported by EPA regional offices.

Of the three remaining sites located within the Superfund site, two (Bergen Point and Kearney Point) have been sold since the 2007 study, and appear to be in varying stages of redevelopment. The remaining site, Port Newark, is currently under expansion by the Port of New York/New Jersey to provide container capacity following completion of the Panama Canal expansion next year, and may not be available due to long-term leases. There are no sites in Region 2's evaluation that are within the Diamond Alkali Superfund Site that appear to meet the requirements for the processing facility site.

Outside of the Superfund site, several of the proposed sites have been sold and are planned for or in the process of redevelopment. Four potentially available sites are limited in size, and likely have insufficient acreage to accommodate the processing facility and associated activities. One site of the 12 under consideration (Pralls Island Reach) may meet the project requirements in terms of size and availability, although rail access may not be available and it is outside of the Superfund site.

Region 2 defers future screening assessments to the design phase and concludes that “[b]ased on the results of the study, it is anticipated that the NY/NJ Harbor contains several sites for potential development of an upland processing facility” (App G, p. 3-5). However, an updated review of these sites reveals that this is a flawed and unvetted conclusion on the part of Region 2. None of the 12 sites identified in the FFS may be adequate for the siting of a processing facility. It is inappropriate for Region 2 to leave such a large and critical component of the remedy to design phase when significant uncertainty exists around the feasibility of implementation.

e) Region 2's selection of off-site disposal and incineration of dredged materials is not based on technical factors and will lead to significantly greater environmental impacts, construction costs, and project implementation timeframes than construction of a CAD facility in Newark Bay.

The FFS and Proposed Plan present three dredged material management scenarios⁴ (CAD disposal, off-site disposal, and local decontamination); however, off-site disposal is selected for the preferred alternative, despite the \$780,000,000 increase in EPA's cost estimate for off-site disposal over CAD disposal. Region 2 states that a CAD is administratively infeasible based on concerns expressed by the New Jersey Department of Environmental Protection and the Federal Trustees. However, USACE supports a CAD, stating that “...CAD cells can be constructed and utilized with only localized short-term impacts and with the least impacts to the surrounding communities” (Proposed Plan, p. 36)

The Federal Trustees claim that the CAD alternative is “...unprecedented in terms of the potential for adverse implications to aquatic habitat, the high concentrations of contaminants, the volume of sediment and the footprint of the CAD cell...” (Proposed Plan, p. 35). In contrast, USACE states, “...CAD cells have been implemented all over the country including the construction, utilization, and recent capping of the Newark Bay Confined Disposal Facility” (Proposed Plan, p. 36). CADs have provided for large volumes of sediment disposal (e.g., 13 million cy in Hong Kong and 23 million cy in Melbourne, Australia), and multiple CAD cells have been constructed at a given site to provide sufficient capacity (e.g., 11 cells with 2 million cy capacity in Boston Harbor).

Region 2 states that CAD cells in Newark Bay are technically feasible (FFS, p. ES-18). USACE stated that “...the conditions in Newark Bay are favorable based on natural presence of a thick impermeable red-clay shelf over bedrock in a Bay with a well-established, already impacted depositional environment...ensuring the secured and consolidated disposal of contaminated sediments in the long-term. Once filled, CADs are capped to sequester the material from the surrounding environment and following capping recovery of the benthic habitat has typically been observed.” (Proposed Plan, p. 36) A

⁴ Region 2 screens out a confined disposal facility on the basis that implementability is hindered by siting challenges and permanent impacts on aquatic habitat.

screening-level evaluation of risks from dredged material management options in Newark Bay found that the environmental and human health risk associated with CAD cells can be the lower than other disposal options; relative to upland disposal, there is less rehandling of material and fewer ecological and human health exposure pathways (Kane-Driscoll et al. 2002). Given the technical feasibility, limited and short-term (depending of the duration of the remedial action) environmental impact, and significant cost reduction of a CAD, Region 2 should have fully evaluated the potential use of a CAD, including locations other than Newark Bay.

7. Region 2's application of discount rates in the FFS cost analysis is unrealistic and out of date.

Region 2 uses a discount rate of 7% in the NPV [net present value] analysis. This rate is cited in a 1993 Office of Management and Budget guidance document (USEPA 1993), and at the time this rate was established, it was anticipated that the discount rate would be reevaluated periodically; no such update or reevaluation has ever been released. EPA guidance (USEPA 2000) recognizes that it may be appropriate to consider a rate different from 7%, and an explanation for the selection should be provided.

The use of a 7% rate is based on an invalid and outdated analysis and significantly overstates realistic rates of return for private funds reserved for future remediation costs. A Securities and Exchange Commission Staff Accounting Bulletin (5.Y) addresses recognition of environmental remediation liabilities by public companies in their financial statements. SEC SAB 5.Y states that for recognition of an environmental liability on a discounted basis,

[t]he rate used to discount the cash payments should be the rate that will produce an amount at which the environmental or product liability could be settled in an arm's length transaction with a third party" and that "the discount rate used to discount the cash payments should not exceed the interest rate on monetary assets that are essentially risk free and have maturities comparable to that of the environmental ...liability (SEC 2011).

The Financial Accounting Standards Board ("FASB") refers to SAB 5.Y in its Accounting Standards Codification, Sections 410-30-S30 and S35.⁵ The FASB Codification cites the above same statement for the use of a discount factor for reporting of environmental liabilities.

A risk free rate is the "rate available on investments that are considered to have no risk of default" (Hitchner 2003). The most commonly used risk-free rate is the 20-year U.S. Treasury bond (Hitchner 2003). As such, the SEC and FASB state that the discount rate for environmental liability should not exceed the 20-year U.S. Treasury bond rate.

In recent cost evaluations at Superfund sites, EPA itself has used lower discount rates (1.99% to 5%). For the Raritan Bay Slag Superfund Site, EPA used a discount rate of 1.99%, providing the following justification to the NRRB in support of the selected rate: "The 20-year nominal treasury interest rates (OMB, 2010) for the last 6 years (no data is available prior to 2004 for the 20-year interest rate) have generally been less than 6 percent, and inflation over the same period has averaged around 3 percent per year. Thus, the 7 percent real discount rate is not believed to be realistic for alternative evaluation cost estimating" (USEPA 2012c). The 2013 revision to Appendix C of the OMB guidance (OMB 2013) suggests real discount rates for projects of various durations, ranging from -0.7% (3 years) to 1.9% (30 years), based on real rates of return for federal treasury notes and bonds. These rates reflect the changes in economic conditions since the publication of the 7% discount rate; over this period interest rates on 20-year treasury bonds and corporate bonds have dropped by 3% to 4% and money market

⁵ FASB ASC410-30-S30.

yields have dropped to <0.1%. Changes in economic conditions since 1993 do not support Region 2's use of a constant discount rate over the same period.

The FFS presents a very limited cost sensitivity analysis, which includes variations of the discount rate (increased to 10% and decreased to 3%). Other factors considered in the cost sensitivity analysis were volume of sediments removed, thickness of engineered cap, proportion of dredged material requiring incineration, and dredging productivity. Region 2 provides no basis for the variation in discount rate or any of the other cost factors included in the evaluation and did not consider site-specific circumstances or provide supporting documentation or justification of the analysis.

C. The FFS and Proposed Plan do not satisfy the NCP's public participation expectations (40 CFR § 300.430(f)(1)(ii)) because they present incomplete and misleading information.

1. EPA does not present a complete set of remedial alternatives (see Comment I.A).
2. EPA significantly underestimated the duration of the project (see Comment I.B.5.c)
3. EPA did not evaluate the short-term effectiveness the project relative to impacts on the surrounding communities and the environment (see Comment I.B.5.a-b).

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Table A.1. Summary of CPG Chemical Water Column Data

Stations		CPG Small Volume Water Column							CPG High Volume	
		2,3,7,8-TCDD (pg/L)	4,4 - DDE (ng/l)	4,4 - DDD (ng/l)	4,4 - DDT (ng/l)	Mercury Dissolved (ng/l)	Mercury Total (ng/l)	Total PCBs (ng/l)	2,3,7,8-TCDD (pg/L)	Total PCBs (ng/L)
Above Dundee Dam	Mean	4.22	0.55	0.31	0.42	2.70	14.29	3.91		
	Median	4.22	0.58	0.35	0.36	2.43	13.40	4.21		
	Min	4.22	0.16	0.10	0.11	0.60	2.86	0.03	0.01	1.85
	Max	4.22	0.83	0.49	0.87	7.66	36.50	11.10	0.01	2.57
Lower Passaic River	Mean	20.78	1.13	0.98	0.45	6.48	71.64	20.73		
	Median	4.10	0.83	0.76	0.30	2.73	41.80	15.85		
	Min	0.62	0.22	0.15	0.05	0.26	1.01	1.47	2.15	9.54
	Max	1870.00	8.26	6.80	3.82	91.50	995.00	183.00	9.28	23.08
Tributaries	Mean	0.20	2.09	1.05	3.12	3.78	21.01	6.02		
	Median	0.21	1.54	0.62	1.40	2.62	12.15	4.44		
	Min	0.05	0.13	0.14	0.08	0.53	1.25	0.17		
	Max	0.33	7.10	5.40	12.00	17.90	96.50	17.60		
Upper Newark Bay (NB North, NB Northeast, NB Northwest)	Mean	1.88	0.43	0.37	0.14	4.45	28.86	7.91		
	Median	1.66	0.32	0.32	0.12	1.82	23.20	7.40		
	Min	0.22	0.17	0.17	0.05	0.27	0.38	3.16	0.10	1.73
	Max	6.61	1.30	1.20	0.64	53.50	296.00	20.40	2.74	19.52

NJ WQS						
Media	2,3,7,8-TCDD (pg/L)	4,4 - DDE (ng/l)	4,4 - DDD (ng/l)	4,4 - DDT (ng/l)	Mercury Total (ng/l)	Total PCBs (ng/l)
Freshwater (HH)	4.99x10-6 (hc)	0.22 (hc)	0.31 (hc)	0.31 (hc)	49.94 (h)(T)	0.064 (hc)
Saline (HH)	5.09x10-6 (hc)	0.22 (hc)	0.31 (hc)	0.31 (hc)	50.94 (h)(T)	0.064 (hc)
Freshwater (AqC)					1.00 769.12 (d)(s)	13.98
Saline (AqC)					1.00 938.92 (d)(s)	29.96

New Jersey Dept. of Environmental Protection - Surface Water Quality Standards, 2011

Notes:

- HH - Human Health
- AqC - Aquatic Chronic
- (h) Human health noncarcinogen
- (hc) Human health carcinogen
- (s) Dissolved criterion
- (T) Total recoverable criterion

Table A.2. Further Screening of Potential Dredge Material Processing Sites Listed in Table 3-1 of Appendix G of the FFS

Site Name <i>Location</i>	Ranking ^a	Within Diamond Alkali Superfund Site Area	Applicability Comments	Size ^b		Accessibility					Availability ^d					
				Site Acreage	Site Acreage Above Water Line	Water		Rail		Road	Aerial Date	Vacant	Visible changes since 2007 analysis	Property Status	Surrounding Area	
						Approx. Nautical Distance (miles) ^c	Distance to Navigable Channel (m) ^b	Shoreline Frontage (m) ^b	Shoreline Structures ^b	Distance to Rail Line (m) ^b	Distance to Highway Exit Ramp (m) ^b					
Bergen Point <i>Bayonne, NJ</i>	*	Y	· The Site is under a contract of sale and planned for redevelopment · Size is not adequate for all remedial alternatives · Property adjacent to residential areas	43	33	8	448	836	Pier	935	909	11/5/2012	Y	N	The Site is under a contract of sale and planned for redevelopment. Ongoing environmental investigation (by Langan Engineers for Chevron, per NJDEP); LNAPL RI and IRM report due 1/30/2015 and site wide RI report due by 5/7/2016.	Mixed Use
Chelsea <i>Staten Island, NY</i>	**	N	· Size is not adequate for all remedial alternatives · Site is an active sand, gravel and dredge material wharf port facility with lack of expansion potential due to surrounding marshlands · Staten Island has new high capacity rail facilities	31	30	13	505	371	Bulkhead	287	497	11/5/2012	N	N	Industrial; previous assessment identified as owned by Vanbro Corp. Open air stockpiles on site. Marshland to north of site. Site is an active sand, gravel and dredge material wharf port facility.	Industrial
Kearny Point <i>Kearny, NJ</i>	*	Y	· Property sold and in process of redevelopment · Size is not adequate for all remedial alternatives · Adjacent waters noted as shallow by NJDOT	25	25	2	349	590	None	250	3367	11/5/2012	Y	Y	Property was sold and is in process of redevelopment. June 2014 site visit found parcel to be subject to heavy site work.	Industrial
Keasbey/ Bayshore <i>Woodbridge, NJ</i>	*	N	· Greater than 20 miles from Site · Majority of acreage is unavailable	100	91	26	141	869	Bulkhead	239	839	11/5/2012	N	N	Owned by Town of Woodbridge and recycling facilities; trucking facility on site.	Industrial
Military Ocean <i>Terminal Bayonne, NJ</i>	*	N	· Property sold and under development · Majority of acreage is unavailable	672	429	13	142	6819	Bulkhead	85	1864	11/5/2012	N	Y	June 2014 site reconnaissance identified a residential development as well as a memorial park, vehicle shipping facility, and cruise ship terminal.	Mixed Use
National Lead <i>Sayreville, NJ</i>	*	N	· The Site is planned for redevelopment · Greater than 20 miles from Site	302	297	26	166	2248	None	11	716	11/5/2012	Y	N	In May 2014 the City received a \$223M grant to redevelop site as a luxury mall with a 2000 unit residential piece. http://luxurypoint.com/wp-content/uploads/2012/11/sayreville-siteplan_april_2014.pdf	Industrial
Newtown Creek <i>Queens, NY</i>	*	N	· Greater than 20 miles from Site · Size is not adequate for all presented remedial alternatives · Majority of acreage is unavailable	27	27	22	70	622	Bulkhead	155	667	11/5/2012	N	Y	Industrial; site redeveloped as trucking facility.	Industrial
Port Newark <i>Newark, NJ</i>	*	Y	· Majority of acreage is in use through long term lease and unavailable · Narrow operational windows for the movement of non-intermodal rail cars during the night · Significant amount of port traffic: approximately 5,000 boxcars, 3,000 tankers, and 2,000 gondolas annually	211	211	5	150	2858	Bulkhead	248	2148	11/5/2012	N	Y	Container yard for the Port of New York / New Jersey with ongoing expansion; open portions of site currently used by USACE subcontractor DonJon Marine for maintenance dredging dewatering. May 2014 site reconnaissance notes indicated the berth area is narrow and would likely not be large enough for sediment processing.	Industrial
Pralls Island Reach <i>Linden, NJ</i>	***	N	· Large site with expansion potential	92	90	12	93	1150	None	45	2543	11/5/2012	Y	Y	June 2014 site reconnaissance identified actively worked stockpiles and other earthwork operations. Lots 8, 9, and 11 are owned by E.I. DuPont Nemours & Co., and news articles indicate site remediation as recently as 2010.	Industrial
South Amboy (North) <i>South Amboy, NJ</i>	**	N	· Greater than 20 miles from Site, although could be combined with South Amboy (South). · Size is not adequate for any of the remedial alternatives	44	23	23	224	1120	Bulkhead	17	1988	9/6/2013	Y	Y	Building demolition occurred since 2007 analysis.	Mixed Use
South Amboy (South) <i>South Amboy, NJ</i>	**	N	· Greater than 20 miles from Site · Size is not adequate for any of the remedial alternatives, although could be combined with South Amboy (North). · Active Sand and Gravel Operation by GLDDC.	25	25	23	449	252	Pier	160	1994	9/6/2013	N	N	Several large stockpiles of material stored on site. Active Sand and Gravel Operation by GLDDC.	Mixed Use
Tremley Point <i>Linden, NJ</i>	**	N	· Size is not adequate for all remedial alternatives · No restrictions due to zoning, hours, utilities · Water main and electrical access · Overhead pipelines west of site may present a clearance issue for oversize load access by road	32	29	14	85	813	Bulkhead	1	4471	11/5/2012	Y	Y	Site reconnaissance identified no visible activity and the property is for sale. Property records indicate the site is owned by Linden Marine LLC/American Cyanide Co (same as reported by USACE).	Industrial

Notes:

- a Rankings indicate the following:
 - * Probably not a potential dredge material processing site.
 - ** Further analysis needed to determine if potential dredge material processing site.
 - *** Potential dredge material processing site.
- b Information obtained from the 2007 United States Army Corps of Engineers (USACE) report, "Site Evaluation for a Dredged Material Public Processing and Storage Facility".
- c Nautical distance was measured from the Diamond Alkali facility in ArcGIS.
- d The desktop screening summarized herein did not extend to identification of land ownership or confirmation of future development plans. Aerial photography was reviewed in Google Earth in May 2014. Property information was obtained from the 2007 USACE report, notes from previous assessments, and online property record searches performed in May 2014. Several locations were evaluated by drive-by site visits in May and June 2014