UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
LAND AND EMERGENCY
MANAGEMENT

MEMORANDUM

SUBJECT: CSTAG Recommendations on Operable Unit 3, Proposed Early Action, Newtown Creek Superfund Site, New York, New York. Draft Focused Feasibility Study and Tentative Preferred Alternative

FROM: Karl Gustavson, Chair, Contaminated Sediments Technical Advisory Group (CSTAG), Office of Superfund Remediation and Technology Innovation, U.S. Environmental Protection Agency (EPA).

TO: Caroline Kwan and Mark Schmidt, Remedial Project Managers, Superfund and Emergency Management Division, EPA Region 2.

BACKGROUND

OSWER Directive 9285.6-08, Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites (February 12, 2002)[1], established the Contaminated Sediments Technical Advisory Group (CSTAG) to "*monitor the progress of and provide advice regarding a small number of large, complex, or controversial contaminated sediment Superfund sites*", which are known as "Tier 2" sites. CSTAG members are site managers, scientists, and engineers from EPA and the U.S. Army Corps of Engineers (USACE) with expertise in Superfund sediment site characterization, remediation, and decision-making. One purpose of CSTAG is to guide site project managers to appropriately manage their sites throughout the Superfund process in accordance with the 11 risk management principles described in the 2002 OSWER Directive, the 2005 Contaminated Sediment Remediation Guidance for Hazardous Waste Sites (EPA-540-R-05-012)[2], and the 2017 OLEM Directive on Remediating Contaminated Sediments (OLEM Directive 9200.1-130)[3]. The Newtown Creek site is a Tier 2 CSTAG site, and the contaminated sediment actions are subject to CSTAG review per CSTAG's policies and procedures. Operable Unit (OU) 3 of the site is the subject of this review.

BRIEF DESCRIPTION OF THE SITE

Newtown Creek is 3.8 miles long and includes five short tributaries. It forms part of the boundary between Brooklyn and Queens in New York City. Except for the wider turning basin, the typical width is 200 to 300 feet and the waterbody has a tidal range of four to six feet. Almost all the shoreline is bulk-headed or rip-rapped.

Since the 1800s, the Newtown Creek Superfund Site has been industrially developed. Industrial wastes were typically discharged directly to Newtown Creek and its tributaries without treatment in the nineteenth century and early to mid-twentieth century, and spills and releases of various contaminants on upland properties seeped into Newtown Creek and its tributaries. One of the largest oil spills in the United

[1] Available at: https://semspub.epa.gov/src/document/HQ/174512
[2] Available at: https://semspub.epa.gov/src/document/HQ/174471
[3] Available at: https://semspub.epa.gov/src/document/11/196834

States was discovered in the 1970s immediately upland of Newtown Creek and is believed to have leaked between 17 and 30 million gallons of oil and petroleum products over more than 50 years. In addition, New York City (NYC) began dumping raw sewage directly into the creek in 1856, a practice that continues through combined sewer overflows. Several state-sponsored cleanups have taken place at properties in the upland areas of the Site.

In September 2010, Newtown Creek was listed on the National Priorities List. In July 2011, EPA signed an administrative order on consent (AOC) for the remedial investigation (RI) and feasibility study (FS) of the sediments and waters of Newtown Creek and its tributaries with six potentially responsible parties. The respondents to the AOC are NYC and five individual members of the Newtown Creek Group (NCG): ExxonMobil, Phelps Dodge, Texaco, BP, and National Grid. The NCG is conducting the RI/FS activities under EPA oversight. USEPA has approved the baseline human health risk assessment (2017) and the baseline ecological risk assessment (2018) and is currently reviewing a revised draft of the Remedial Investigation Report.

The primary contaminants of concern are polychlorinated biphenyls (PCBs), polycyclic hydrocarbons (PAHs), and metals (lead and copper). These contaminants are found in surface sediments, subsurface sediments, the water column, and biota tissue. Contaminant concentrations in sediment are generally higher in the Turning Basin and the tributaries, and lower in the main channel of Newtown Creek, especially near the mouth. The baseline human health risk assessment found unacceptable risks associated with ingestion of fish and crab from the creek. The baseline ecological risk assessment found that the Study Area sediment, particularly in the Turning Basin and most of the tributaries, is toxic to benthic invertebrates and presents exposure risks for bivalves, blue crabs, fish and birds.

There are three OUs of the site. OU1 includes the entire Study Area as defined in the 2011 AOC. OU2 relates to current and reasonably anticipated future releases of CERCLA hazardous substances from CSO discharges to the Study Area. OU3 refers to an evaluation of a potential interim early action for the lower portion of Newtown Creek from creek mile (CM) 0–2 of the Study Area (excluding the Dutch Kills and Whale Creek tributaries) and is the subject of this review.

SITE REVIEW

In April 2019, the Region 2 Newtown Creek project team submitted the site information package to CSTAG that included a summary of the focused feasibility study (FFS) for OU3, how the eleven principles and sediment guidances were considered in the RI/FS, and a tentative preferred remedy for OU3. On April 29-30, 2020, the Region presented those materials to CSTAG during webinar meetings (not held in person due to COVID-19 restrictions). The Community Advisory Group (CAG), the State of New York, the NCG, New York City, the National Oceanic and Atmospheric Administration, and the Army Corps of Engineers New York District also provided written comments and/or presented to CSTAG during the stakeholder session.

RECOMMENDATIONS

1. Appropriateness of the early action area

CSTAG's role is to "*assist in the management and implementation of nationally consistent sediment characterization and remedial actions across OLEM's remedial programs*" in a manner consistent with sediment remediation guidances and Superfund policy (CSTAG Charter 2020). It is through this lens that CSTAG considers the early action area being evaluated by the Region for remediation at Newtown Creek.

Background. The first goal of EPA's 2018 Superfund Task Force Plan is *Expediting Cleanup and Remediation*. One strategy to achieve that goal is the use of early/interim RODs and removal actions. The Task Force report states:

> *"This approach will be most effective at contaminated sediment and complex groundwater sites where using removals or early actions to address sources or areas of high contamination is highly efficient. US EPA's 2017 Directive (9200.1-130) memo reiterates EPA's stated bias for initiating responses as soon as the information makes it possible to do so and recommends the use of removals or early actions to quickly address high risk areas."*

The 2005 sediment remediation guidance also describes that "*It also may be appropriate to take other early or interim actions, followed by a period of monitoring, before deciding on a final remedy*" (p. 2-22) and the guidance highlights early actions that may be appropriate, including *"Actions taken to reduce risk from highly contaminated sediment hot spots: Capping, excavation, or dredging of localized areas of contaminated sediment that pose a very high risk"* and *"[a]ctions to minimize further migration of contaminated sediment"* such as *"[e]xcavating, dredging, capping, or otherwise isolating contaminated sediment hot spots".*

The 2002 Directive (Principle 5, "*Use an Iterative Approach in a Risk-Based Framework*") discusses early and interim actions, and indicates that *it may be appropriate to take an interim action to control a source, or remove or cap a hot spot, followed by a period of monitoring in order to evaluate the effectiveness of these interim actions before addressing less contaminated areas."*

In 2015, CSTAG visited the Newtown Creek site and reviewed available site materials. At that time, CSTAG recommended *that "the Region should consider using removal actions in order to more quickly remediate the nonaqueous phase liquid (NAPL) sources near the manufactured gas plants, upland source areas not addressed by the State, and discrete hot spots of COPCs [contaminants of potential concern] in the sediment bed that present clearly unacceptable risks."*

Analysis. The Region states: "*the rationale for conducting an EA [early action] in OU3 developed as data collected during the OU1 RI indicated that the CSM [conceptual site model] for OU3 is less complex than that of the rest of the Study Area, so that remedial action could be accelerated in that part of the system, even while the Study Area-wide (OU1) RI/FS continued.*"

The Region provided three reasons why it would be beneficial to move forward with the early action:

- Risk reduction and contaminant mass removal in this portion of the creek;
- An opportunity to gain direct experience working in the creek; and,
- An opportunity to truth test and refine the CSM that is under development as part of OU1.

An early action to expedite remediation is consistent with Superfund Task Force initiatives and sediment guidances that recommend early actions to reduce risks. However, the Superfund Task Force and other guidances focus early actions on high-concentration, high-mobility, upstream source areas, while the Region is proposing an early action in less-contaminated areas downstream and adjacent to more highly-contaminated source areas (e.g., CM 2-3.8 and Dutch Kills). The proposed early action also does not follow CSTAG's 2015 recommendation to consider removal actions of NAPL, upland sources, and COPC hotspots in Newtown Creek.

CSTAG encourages site progress wherever possible and does not wish to dissuade actions when source identification, recontamination, navigational needs, and stakeholder issues are appropriately addressed. In CSTAG's role to evaluate consistency with national guidance, it is compelled to highlight the apparent contradiction between the proposed early action area and guidance on the topic, and to restate previous recommendations. Site-specific issues may override these concerns, but the rationale for selecting what

the Region refers to as an "*unusual candidate for early action*" should be well-supported and well-communicated.

Recommendation

If the Region proceeds with remediating the proposed early action area, CSTAG recommends that the Region provide a more complete rationale for selecting a downstream, less-contaminated reach for an early action, and document why Newtown Creek's NAPL sources and COPC hotspots recommended for early action by CSTAG in 2015 were not selected.

2. Remedial action objectives

The following discussion on remedial action objectives (RAOs) for OU1 and OU3 was provided for CSTAG review:

"While RAOs for the OU1 remedy are not yet finalized, they are expected to generally be consistent with the following:

> *• Reduce risks to human health for people eating fish and crab by reducing the concentrations of COCs [contaminants of concern] in sediment*
>
> *• Reduce risks to ecological receptors by reducing the concentrations of COCs in the sediment*

The potential OU3 interim EA addresses only a portion of the site. While the action will ideally work towards achieving the anticipated site-wide RAOs, the OU3-specific RAO(s) should reflect objectives that the interim EA can achieve and that can be measured. The draft, anticipated OU1 RAOs could not be achieved through any interim action focused solely on CM 0-2. As such, the draft RAO under consideration for OU3 is limited in scope and focused. The current working draft is as follows:

> *• Remediate areas where concentrations of COCs in sediment exceed RALs [remedial action levels] through sediment removal and backfill to a depth necessary to prevent exposure to COCs in underlying sediment in consideration of the current uses of the creek and given our current understanding of the system."*

The 1988 Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA[4] makes the following recommendation for developing RAOs and remedial alternatives:

- *"Develop remedial action objectives specifying the contaminants and media of interest, exposure pathways, and preliminary remediation goals that permit a range of treatment and containment alternatives to be developed…*
- *Develop general response actions for each medium of interest defining containment, treatment, excavation, pumping, or other actions, singly or in combination, that may be taken to satisfy the remedial action objectives for the site."*

That guidance also recommends *"[t]he objectives should be as specific as possible but not so specific that the range of alternatives that can be developed is unduly limited."*

As OU3 is both an early action and interim remedy, CSTAG recognizes the RAO for this OU will be smaller in scope and supportive of the OU1 RAOs. However, the interim, early action should be consistent the final action (NCP 40 CFR 300.430(a)(ii)(B)) and the RAOs should specify how the interim action will support the risk reduction RAOs for OU1. Also, the selection of the remedial technology in the RAO limits the development and evaluation of alternatives.

[4] Available at: https://semspub.epa.gov/work/06/901141.pdf

Recommendations

a. CSTAG recommends that the Region modify the OU3 RAO to specify that the interim action will support site wide risk reductions by reducing COC exposures in CM 0-2.

b. CSTAG recommends that the Region remove the selection of a remedial approach from the RAO.

3. Remedial action levels

Four remedial alternatives were developed: #1 No Action, #2 High RALs, #3 Hybrid RALs, and #4 Low RALs. The information provided by the Region states that RALs were "*generally based on the upper end of the range of concentrations found in reference areas for the site, though the exact RALs (or ranges of RALs) were selected based on best professional judgment*". These reference areas are not hydraulically connected to the site and are not expected to represent OU3's recontamination potential. It is unclear why the highest contamination levels found in contaminated but unremediated waterbodies are considered site-related action levels. The relationship between OU3 interim actions and OU1 risk reduction objectives would be better conveyed by developing or describing RALs based on COC exposure reduction (the recommended RAO) to directly relate the action to COC risk reduction, consistent with a final remedy (See recommendation 5 of the 2017 Directive on Remediating Contaminated Sediments). For example, much information is provided about the dominance of East River input to the sediment bed, and "*long-term equilibrium concentrations consistent with the influence of the East River*", but RALs were not developed in relation to that condition.

Figures 6-1 to 6-4 in the information package provided show the predicted average concentrations in OU3 of the remedial alternatives compared to the reference locations, the East River, and a long-term predicted equilibrium concentration. The predicted average concentrations for each alterative appear indistinguishable, though confidence intervals are not presented for those predictions. For PAHs and PCBs, the proposed RALs and the resultant average concentrations are substantially higher than both the East River and predicted equilibrium concentrations.

Recommendations

a. CSTAG recommends that the Region develop or describe RALs based on site-related conditions and to present and evaluate them in the context of exposure reduction (a recommended RAO).

b. CSTAG recommends that the Region evaluate a wider range of RALs, so the Region and stakeholders can better assess where the proposed remedial actions fit into the broader scope of OU1's CSM and its pending remedial actions and remediation goals. At a minimum, a RAL expected to achieve a SWAC equivalent to East River contaminant levels and a RAL intended to represent an upper percentile of East River concentrations should be included considering the East River's dominance in this section of the creek.

4. Remedial alternatives

Sediments are targeted for remediation based on whether the top 15 cm (6 inches) of sediment exceed the RAL. In those areas, a 2-foot dredge depth (2.5 feet including a 6 inch overdredge allowance) is then used to "*provide long term protectiveness*" and "*for long-term effectiveness*", according to materials provided by the Region. The derivation of the 2-foot dredge depth was not explained in detail, but presented analyses indicated prop wash scour to 12 inches. The bathymetric change map showed a complex pattern of erosion and deposition in OU3, generally one foot or less, although some areas

showed no change, and isolated areas had erosion or deposition up to 3 feet.[5][6] Sediments deeper than 6 inches appear to be more contaminated (at least to 2 feet [60 cm]; figures 2-20 to 2-28 of the site information package) than surface sediments with some stations exhibiting substantial increases at depth and others with minimal increases. The depths and degree of contamination remaining after a 2-foot dredge was not provided. There is an apparent disconnect between not considering contamination below 6 inches and needing to dredge to 2 feet to provide long-term protectiveness and effectiveness, especially considering that the RAO is to remove sediment "*to a depth necessary to prevent exposure to COCs in underlying sediment*". The information provided states that is believed that the remedy will accelerate natural recovery and will achieve, over time, sitewide remediation goals that will ultimately be established in the OU1 ROD. If materials are to be removed to 2 feet for protectiveness (presumably from exposure and transport) and to accelerate natural recovery, then it is logical to also apply the selected RAL to that depth to prevent future exposure and transport of higher level COCs.

Recommendations

a. CSTAG recommends that the Region apply the RALs to a sediment depth at which contaminated sediments may be exposed in the long-term, or the Region should provide a rationale for applying the RAL to the top 6 inches while needing to dredge to 2 feet to ensure long-term protectiveness and effectiveness.

b. CSTAG recommends that a dredge to the depth of RAL exceedance should be described and evaluated or screened so that stakeholders can understand the attributes of that option, as well as the tradeoffs of selecting partial dredge options in terms of subsurface COCs left in place.

c. CSTAG recommends that the Region closely consider the nature of an area's underlying sediments (see NAPL discussion in recommendation 5), potential future uses (see recommendation 9), and recontamination risk to determine whether specific areas of OU3 warrant different removal depths, cover thicknesses, or technologies. Such evaluations should consider tidal, storm, and other erosive forces, as well as vessel activities, e.g. spudding, anchoring, grounding, and prop scour impacts using empirical data to the greatest extent possible.

d. Information was not provided on whether additional sampling is envisioned to support remedial design. The proposed remedial footprints (RAL exceedance areas) were presented based on Thiessen polygons. Thiessen polygon sizes and boundaries are based on the locations and distances of adjacent sample points and may not be an accurate representation of the actual extent of contamination that requires remediation. CSTAG recommends that the Region evaluate whether additional sampling during RD is needed to refine the extent of contamination in each target area prior to remediation.

5. CSM and remedy assumptions

OU3 covers approximately 75 acres over the lower 2-miles of Newtown Creek and excludes the side channels of Whale Creek and Dutch Kills. Within OU3, Alternative 3 targets 11.7 acres primarily in the upper 0.5 miles where the top 6" of sediment exceeds the RALs, primarily for PCBs and copper. EPA's 2005 sediment remediation guidance states that contaminant sources and transport pathways are essential

[5]Based on differential bathymetry (Figure 2-36) comparing October/November 2011 to December 2012, a time span that included the superstorm Sandy event in October 2012; noting that the map depictions were "limited to +/- 3' to minimize artifacts".

[6]With regard to stability of the sediment bed, OU-wide average depictions such as "average differences between the two surfaces was just +0.05 foot" and "the bathymetric surveys support the conclusion that the sediment bed in OU3 is net depositional" are not helpful because the contaminated sediments and the processes that influence their transport are not uniform, or appropriately summarized over a 2-mile reach.

elements of the CSM. The studies on OU3 have provided substantial information regarding the dominance of the East River sediment input to the lower portion of the site and that sediment COC concentrations are generally lower in that reach. A general CSM figure was provided that depicted all possible contamination sources in Newtown Creek, but the contaminant source and transport pathways that resulted in the contaminated footprint were not described. For example, it is unclear if the contaminants on the surface of the 11-acre remedial footprint are from a historic (controlled) release in the immediate vicinity or from transport from upstream (uncontrolled) contamination areas. That understanding is critical for gauging the likelihood of recontamination. Based on the longitudinal surface sediment concentration profiles of PCB and copper (*e.g.,* Figures 2-16 and 2-17 of the information provided), the proposed remediation area appears as a downstream tail of upstream contamination (note, this is an observation, not a statement of causation). A notable exception is the very high PCB concentrations in the "potentially erodible shoreline sediment samples" taken at approximately CM 1.2 (figure 2-52 of the information provided). The COC source or transport of that area was also not described. The longevity and durability of sediment cleanup in this portion of the system depends on whether the sources and processes that resulted in current surface sediment contamination have been abated and thus will not drive future recontamination.

The information package provided by the Region reviews recontamination processes and states "*It is the NCG's position that none of these internal or external inputs will negatively affect EA remedy performance*." One "*in-creek process*" is "*sediment resuspension and transport, including propwash-induced resuspension/transport*". Sediments in OU3 are included in this evaluation, but OU1's upstream, adjacent, and more heavily-contaminated sediments are not. Considering the magnitude and proximity of contamination, this is an important omission. Additional empirical evaluations of the potential for upstream and tributary contributions could be helpful to better define the source and transport processes in OU3 and the rest of the site[7].

During the stakeholder listening session, CSTAG also noted divergent opinions on the importance of in-OU COC sources and the potential for recontamination, particularly regarding NAPL and groundwater pathways. This reveals that, at present, the CSM is not a shared understanding among stakeholders. The issue of whether NAPL sources are controlled, present a migration or exposure risk, or should be addressed is a significant challenge. Materials provided by the Region included a short paragraph stating that NAPL presence and mobility in OU3 were evaluated and that mobile NAPL was not observed (p. 18-19). However, in accompanying figures, "sheen blossoms" are mapped and surface (top 6 inches) and subsurface (6 inches and deeper) sediments in areas of OU3 are described with variations of sheens, blebs, and degrees of NAPL saturation. Understanding NAPL migration, control, and the potential for future exposures is complex and location specific, beyond the scope of this CSTAG review. However, CSTAG notes the lack of concordance between a conclusion of immobile NAPL and observations of NAPL sheen blossoms and NAPL that migrated to its current location (especially without information that the processes responsible for the migration have been controlled).

The Region addresses the potential of unknown sources or flawed assumptions by proposing a performance monitoring plan (PMP) stating *"…the PMP is a critical aspect of the OU3 decision process. If there are currently unknown sources of contamination that do impact the remedy, these would be revealed*." "*If either the short-term or long-term monitoring indicates that concentrations in CM 0-2 are not trending towards long-term remedial goals and/or if actionable recontamination occurs, then either additional measures would be taken and/or the CSM for the Site would need to be re-evaluated."* CSTAG agrees that a monitoring plan is a proactive way to directly address CSM uncertainties and

[7] For example, the Region should review the relationship between the high organic content sediment in OU3 (which was credited in damping the discharge of contaminants from GW [p. 16 of the site information package]) and organic inputs from the East River to better define the areal contributions of upstream, tributary, and downstream solids. Fluorescent sediment tracer studies could also be employed to empirically evaluate sediment transport and contributions between areas.

concerns regarding the performance of the interim remedy (assuming the sampling design and timeframes are adequate to capture processes of concern), and that, if an early action is taken in this area of OU3, the PMP and associated decision framework will be a critical element. However, the existence of a strong monitoring plan does not obviate the need to fully vet source and recontamination pathways before investing in cleanup because the cost of failure is substantial.

Recommendation

The 2005 sediment remediation guidance (p. 2-21) recommends:

> *"In most cases, before any sediment action is taken, project managers should consider the potential for recontamination and factor that potential into the remedy selection process. If a site includes a source that could result in significant recontamination, source control measures will be likely necessary as part of that response action" (p. 2-21).*

It is not clear to CSTAG that upstream, tributary, and bank sources are or will be sufficiently controlled to prevent recontamination of remediated areas. If an early action in this area proceeds, CSTAG recommends that the FFS and the Proposed Plan the Region fully describe the COC sources and transport pathways of the areas that are proposed for removal and demonstrate that the sources and processes that resulted in current contamination will not recur.

6. Realistic timing

The Region asserts that one of the primary reasons to undertake the OU3 early action is to truth test the OU1 CSM that is under development. The Region further asserts that as an integral part of any early action, EPA would include a robust post-implementation PMP. The data from the performance monitoring will reveal if the assumptions used to support the OU3 early action adequately represent site conditions. The OU1 CSM could then be updated to address any unanticipated ongoing significant sources of contamination, or other modifications to the remedy for CM 0-2.

The OU1 ROD is tentatively expected in 2024 with remedial action in 2027 at the earliest. CSTAG does not question the Region's commitment to the OU3 timeline but several significant administrative requirements and unresolved issues (e.g., community acceptance, navigational requirements, ROD issuance, and legal agreements) remain to be met and resolved. Even without delays in OU3 decision-making, CSTAG questions if the early action can be implemented and post-implementation monitoring data gathered in time to update the CSM to support the OU1 Record of Decision. If the post-implementation monitoring data are not available in time to update the CSM for the final remedy, one of the primary justifications for undertaking the action will not have been achieved. In addition, if the early action is not implemented in a timely fashion, the lack of post-implementation monitoring could delay issuance of the ROD for OU1.

Recommendation

CSTAG recommends that the Region closely evaluate the timing to undertake the proposed early action to ensure that information from the early action will realistically be available to guide final remedy selection for the remainder of the site.

7. Monitoring

A post-implementation PMP with interim performance metrics (IPM) is proposed to document that surface sediment COC concentrations are remaining below RALs and are trending toward "*long-term equilibrium concentrations*" consistent with the influence of the East River. The PMP objectives are to

"(1) determine whether the action-specific IPMs for the OU3 interim early action are being met and (2) to confirm the four primary NCG Positions described previously are accurate".

Objective 1 of the PMP evaluates the OU3 RAO to remediate sediments with concentrations above the RAL. Sediment sampling in the target areas and throughout the OU are proposed, but few details on the sampling are provided. There is also no discussion on how the post-remedy monitoring will be used over the long term to maintain remedy effectiveness, except that "*[t]he CSM could then be updated accordingly and/or any unanticipated ongoing significant sources of contamination, or other modifications to the remedy for CM 0-2 could be addressed as part of implementation of the OU1 remedy."* The PMP's second objective is more complex, especially considering the range of underlying assumptions to be verified (e.g., the multiple internal or external inputs will not negatively affect early action remedy performance). The limited discussion on this PMP objective focuses on parameters likely to be monitored, not monitoring objectives, evaluations, and decisions related to sampling results.[8]

Recommendations

a. CSTAG recommends that the Region's post-remedy monitoring plan include a systematic (including stratification based on site data) and unbiased sampling of the sediment surface throughout the OU3 (i.e., not solely within RAL exceedance areas) to compare sample results to RALs and evaluate whether the RAO was achieved. The sampling will then also serve as a basis for understanding contaminant distribution, estimating SWACs with a defined level of uncertainty, and permit the derivation of natural recovery rates when the area is resampled.

b. IPM discussions do not describe how the results from the post-remedy monitoring will be used to evaluate and maintain remedy effectiveness**.** CSTAG recommends that a decision-making framework and contingent actions be developed as part of OU3 to address sources and remediate sediments if recontamination or uncontrolled sources are identified. The decision framework should be positioned to ensure the durability and effectiveness of the remedy in reducing risk and accelerating natural recovery.

c. CSTAG recommends that, if the monitoring plan is intended to test CSM hypotheses, the monitoring plan be structured to explicitly state and test the hypotheses.

8. Biological monitoring to support OU1 decisions

In 2015, CSTAG recommended "*that at least two sets of biota tissue from different years be collected and evaluated to reliably evaluate risks prior to making remedy decisions."* The information package indicated that biological monitoring was only done in 2014, but further discussion revealed that fish and shellfish were also sampled in 2018. CSTAG commends the Region for conducting at least two sampling events before a remedial action, consistent with the 2015 CSTAG recommendation. This combined data set provides a strong spatial and temporal depiction of COC concentrations in a range of organisms. This information will support biologic and exposure aspects of the CSM and provide a baseline for future monitoring events.

Recommendation

Consistent with sediment management principle 11, CSTAG recommends that the Region incorporate synoptic biological monitoring into the PMP plan. If the early action's assertions are correct, then starting biological monitoring early will aid in understanding recovery in OU3, support CSM development throughout OU1, and provide data for tracking the long-term recovery of the entire site.

[8] The discussion on sediment managment principle 11 provided to CSTAG for review contained a table of parameters with corresponding "CSM components", but no information on what it means "*to confirm the four primary NCG Positions described previously are accurate."*

9. Navigation channel considerations

Newtown Creek is an authorized federal navigation channel. Currently much of the navigation channel, including the remediation areas, are shallower than the federally authorized depth. OU3 is still used for navigation purposes, including the commercial transport of materials, but navigation depths are not currently maintained throughout OU3. Dredging to re-establish authorized navigational depths would be a significant undertaking made more challenging by the presence of contaminants and contaminated sediments in the navigation channel.

EPA's 2017 Directive on Remediating Contaminated Sediments addresses remediation in a navigation channel.

> *"In developing and evaluating remedial alternatives, and selecting a remedy, for a waterway with an authorized navigation channel, OLEM recommends that regions consider the requirements of 33 U.S.C. §403 [Section 10 of the Rivers and Harbors Act of 1899] to determine whether a Superfund response action within the boundaries of a federal navigation channel may create an obstruction to the navigable capacity of the channel, taking into account the specific navigation depths authorized by Congress. For example, if the remedial action involves placement of a cap (either with or without preliminary dredging), the cap could be a potential obstruction to navigable capacity if it is not below the depth required to maintain the authorized depth of the channel. To ensure effective interagency collaboration, OLEM also recommends that site managers meet with the ACE early in the RI/FS and continue to communicate with them throughout the remedy selection and remedial action process."*

Region 2 requested that USACE conduct a navigational study of the creek as part of the OU1 RI/FS. At the time of the CSTAG meeting, the evaluation was not complete, but an initial determination was that the navigation channel could not be deauthorized and it was unclear if the authorized depths could be adjusted. In comments to CSTAG, USACE indicated concerns with a remedy that would obstruct navigation or impair future maintenance dredging, and that construction of the early action would require USACE approval under 33 U.S.C. §403 Section 108. EPA's response to the navigational needs is that the remedy *"assumes 0.5 ft over-dredge to account for navigational dredging. (EPA presentation Slide 73)"* and that during remedial design dredge depths will be re-evaluated for location-specific considerations.

CSTAG was unclear how a 6-inch over dredge prior to placement of cover to grade would accommodate concerns of maintaining authorized navigation depths. The information provided by the Region indicates that, after dredging to 2.5 feet, the area *"would be capped to restore to pre-dredge grade, and it is assumed that an active carbon layer would be added to prevent the potential for migration of contamination from the underlying sediment."* The "backfill" is intended to be stable and provide chemical isolation and porewater treatment, but it is located above (shallower than) the authorized dredge depth. CSTAG is also concerned that the Region has identified a "tentative preferred alternative" without having fully consulted with USACE on user needs and navigational requirements. Working on this area without clarification on navigation depths could result in a need for this part of the creek to be reworked in the future, significantly impacting cleanup progress and complicating efforts to minimize short-term impacts to the water body.

Recommendations

a. CSTAG encourages the Region to continue to work with the USACE to determine appropriate current and anticipated future user needs and navigation depths before finalizing any response action to promote consistency with the final remedy.

b. If the remedy includes placement of materials above the authorized navigation depth, the decision documents should describe how the actions are consistent with the Rivers and Harbors Act and should evaluate the need for contingency plans to implement a protective remedy that maintains authorized navigation depths, if necessary.