UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4 ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8960

January 25, 2021

MEMORANDUM

SUBJECT: Contaminated Sediments Technical Advisory Group Recommendations on Operable Unit 4, Anniston PCB Site, Anniston, Alabama

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This document provides EPA Region 4's responses to the memorandum, "CSTAG Recommendations on Operable Unit 4, Anniston PCB Site" dated November 25, 2020. The November 25, 2020 memorandum provides the Contaminated Sediments Technical Advisory Group's (CSTAG's) recommendations on the overall cleanup strategy development and remedial alternatives evaluation for 37 miles of Snow Creek and Choccolocco Creek that represent Operable Unit 4 (OU4) of the Anniston PCB Site. The recommendations are based on CSTAG review of site information submitted by Region 4, as well as, web-based presentations by Region 4 and other federal, state, and community stakeholders on September 16-17, 2020.

1. Recommendations on Sediment Remedial Action Objectives (RAOs) and Remedial Goals

a. CSTAG recommends that the region develop a RAO to protect humans from consuming fish to achieve fish tissue and sediment remedial goals over time. As stated above, "*for sediment sites with RAOs to reduce contaminant levels in fish tissue, generally the feasibility study (FS) and ROD should state the fish tissue and sediment contaminant concentrations that are expected to be achieved by the remediation, along with the areas expected to meet those objectives (e.g., sitewide or by segments or river reaches) and the general timeframe." (2017 contaminated sediments directive).*

Response: The Region agrees that fish tissue and sediment goals are needed. The RAOs in the ROD will include the general timeframe based on the remedy selected.

b. The RAO to "minimize creek banks as a source…" should be expanded to ensure the floodplain is not an ongoing source of PCB to the river. While generally floodplains are depositional, small "creeklets" in the floodplain may need active control measures if floodplain contaminants are left in place.

Response: The Region agrees that the RAOs for soil should include the minimization of floodplain soil as a source to sediment contamination.

c. A RAO to reduce the downstream migration of contaminants should be included. The current RAO to "minimize creek banks as a source" is not sufficient to control PCBs from migrating offsite and impacting downstream areas.

Response: The Region agrees that RAOs to reduce migration of contaminants should be included.

d. CSTAG recommends that the region review Section 4 of the 1988 RI/FS Guidance (OSWER directive 9355.3-01) to develop RAOs for source control actions and RAOs that identify the contaminant of concern (COC), receptor, and exposure pathway, and acceptable contaminant levels.

Response: The Region agrees that RAOs should identify the contaminant of concern (COC), receptor, exposure pathways, and acceptable contaminant levels. The final RAOs in the ROD will follow the preferred format as much as possible.

2. Recommendations on Fish Tissue Remedial Goals

a. CSTAG recommends that the region consider setting a cleanup goal on the RME exposure scenario, rather than the CTE.

Response: The Region agrees that all cleanup goals should be established from Reasonable Maximum Exposure (RME) exposure scenarios.

b. CSTAG recommends that region consult EPA guidance and consider reasonable future use in the derivation of protective fish and shellfish tissue concentrations.

Response: The Region agrees that reasonable future use needs to be considered for all elements of the remedy, including fish and shellfish tissue concentrations.

c. CSTAG recommends that the fish species, averaging areas, remedial goals, and the statistical methods of comparison to the remedial goal be clearly described in the decision documents. For example, a statement such as "The 95% upper confidence limit of the average of whole body total PCB concentrations of catfish sampled in each identified exposure area will not exceed the remedial goal" clearly identifies the expectation of the remedy and how attainment will be assessed.

Response: The Region will clearly state how attainment of goals will be measured in the ROD.

3. Recommendations on Surface Water Remedial Goals

a. CSTAG recommends the region consider modifying the RAO from "reducing exceedances" (more of an interim action RAO) of the AWQC to "attaining the CWA 304(a) AWQC" (a final action RAO).

Response: The Region agrees that AWQC should be identified as ARARS.

b. CSTAG recommends the region review the determination of the AWQC as TBC rather than ARAR.

Response: A full review of the ARARs will be performed during the review of the FS.

4. Recommendation on Ecological Risk Remedial Goals

CSTAG recommends that the region clarify whether site releases may affect threatened or endangered species in OU-4 and, if so, whether and how the proposed PRGs based on an EC-20 address risks to those species.

Response: There is an endangered snail in Choccolocco Creek. The Natural Resource Trustees will be consulted about their concerns relative to the remedy and areas where active remediation is anticipated. If cleanup needs to be limited to protect an endangered species, those limits will be considered and identified either in the FS or the ROD.

5. Recommendations on Consideration of Background

CSTAG recommends that data be collected (or more clearly presented) to develop background concentrations of PCBs in fish and incoming/upstream solids at various flow stages to evaluate whether risk-based remedial goals are achievable.

Response: Background data will be explained more clearly in the FS. There are no edible fish upstream on Snow Creek, and the PCBs in whole body forage fish in Choccolocco Creek upstream of the confluence of Snow Creek and Choccolocco Creek are negligible.

6. Recommendations on Use of SWACs

CSTAG recommends that the region document the basis for determining river areas for SWAC calculation and CUL application by using the physical characteristics of the river (e.g., geomorphology or sediment grain size) and the smallest exposure area relevant to the human health and ecological risk receptors. A "moving window" analysis based on the smallest relevant exposure area may be preferred in the absence of physical barriers or other logical separations. Exposure units should be sized so that CULs are evaluated over spatial scales relevant to the exposure pathway and receptor.

Response: Ten ecological reaches were studied in OU4. The EPA will provide guidance to the PRP about SWAC calculations and CUL application expected during RD/RA. FS calculations and volume estimates will be based on the data available and will likely change when additional design sampling is collected to satisfy the accuracy requirements.

7. Conceptual Site Model

CSTAG is concerned that the COC sources, transport, and exposure pathways are not understood to a level sufficient to develop remedial alternatives that reduce risk to acceptable levels.

a. Fish-Sediment PCB relationship – Recommendations

i. CSTAG recommends that the region seek additional expertise on fish bioaccumulation of hydrophobic contaminants to evaluate current data sets and develop an understanding of fish uptake for use in deriving sediment remedial goals or action levels.

Response: The Region will work with the PRPs and EPA's scientists to evaluate current data sets and develop an understanding of fish uptake for use in deriving sediment remedial goals or action levels.

ii. CSTAG recommends that if an empirical BSAF approach is not sufficient, then the region should develop a food web model to estimate the relationship between fish tissue concentrations and sediment.

Response: The Region will work with the PRPs and EPA's scientists to ensure that a relationship between fish tissue concentrations and sediment are developed.

iii. If current information is insufficient to support sediment RG development from the food web model, CSTAG recommends collection of synoptic fish and sediment data to verify transport and exposure pathways between sediment, bank, surface water, and fish COC concentrations. Additional approaches such as high-resolution sampling of the bioaccessible surface sediments and surface water particulates co- located with passive samplers in water column and porewater throughout the system, supported by a stable isotope study of fish diet will help draw conclusions on the origins, nature, and relationship of PCBs between media.

Response: The Region intends to develop sediment RGs based on the current data. Additional data will be collected during remedial design that will inform and support the actions taken and the monitoring of recovery.

b. Sediment Banks and Bed Exposure and Transport Pathways Recommendation

i. To support the CSM and final remedy, CSTAG recommends that the region use or develop observations of sediment and COC erosion, deposition, and transport in the sediment bed and banks to provide a mass balance of areas, sources, and media responsible for COC loading.

Response: The Region will require the PRPs to provide more information and calculations to support the mass balance of contamination sources and loading to sediment.

ii. CSTAG recommends that the region thoroughly evaluate (or remove) the current discussion of bank PCB loading estimates. CSTAG could not discern how these were

developed or if they could reasonably represent bank PCB contributions. Bank prioritization schemes that combine PCB loading levels with bank erosion potential (e.g., core length weighted averaging approaches in conjunction with the BANCS model stability evaluations) are useful to estimate PCB loading from bank erosion and failure.

Response: The Region will request additional information in the FS to support the bank analysis. If the information is not sufficient, PCB bank loading will be removed from the FS.

8. Alternatives

In the information presented to the CSTAG, the range of alternatives was limited to a single remediation footprint and the alternatives had no meaningful differences in expected risk reduction (only the applied technologies and disposal varied). All remedies relied on MNR, but there was no discussion on rates, areas, or time frames to provide a meaningful understanding of when clean up levels and RAOs will be achieved. If a final, protective action is intended to reduce risk to human health to acceptable exposure levels, then alternatives should be developed and compared on that basis.

a. Recommendations for Range of Alternatives

i. CSTAG recommends that if a final, protective ROD is developed, then it be supported by an FS that evaluates a range of alternatives varying in the degree of cleanup from MNR-only to the "*maximum extent feasible*" sediment bed and creek bank remediation. A range of alternatives would allow the region to evaluate and compare tradeoffs related to time to achieve sediment and fish tissue PRGs, cost, and the alternatives' short- and long-term effectiveness. These alternatives should clearly document the risk reduction expected from reducing PCB loading and exposures in terms of anticipated reductions in the sediment bed and fish tissue concentrations.

Response: The Region will work with the PRP to develop alternatives to address CSTAG concerns. Remedial action objectives that require cleanup to a specific risk-based goal will always result in one cleanup footprint for each media. If we do not specify the risk-based goal in the RAO, we can consider cleanup goals across the cancer risk range, as long as the non-cancer hazard quotient of one is not exceeded. Our ability to vary the footprint will change depending on the contaminants of concern. For OU4, the amount of monitored natural recovery each sediment alternatives is allowed to rely on can change the time required to meet the remedial action objectives and the footprint of the remedy. Then it becomes a risk management decision as to what goal and timeframe are appropriate.

ii. CSTAG recommends that bank removal alternatives are based on the management of PCB loading potential, independent of river mile (see also Recommendation 7b) in a manner that can accommodate new information on source areas developed during design, early action, or other sampling.

Response: The Region will consider this recommendation when reviewing the FS and the basis for creek bank action.

b. Recommendations for Riverbank Alternatives

CSTAG recommends the region incorporate natural channel design concepts and approaches (e.g. bank layback, native plantings, and root wads) when designing alternatives that modify the channel or banks. In selecting a remedy and in evaluating remedy performance, the region should use predictive approaches (e.g., hydrodynamic modeling supported by physical condition/composition data and prevalent failure mode analyses) and a prospective monitoring framework to ensure that bank remediation (especially hardening without bank layback) does not result in increased bank or bed erosion further downstream and/or flooding rise. Maximizing natural design concepts will also increase cost certainty due to lesser likely compensatory mitigation requirements.

Response: The PRP proposed incorporating natural channel design concepts where erosion potential exists in areas of bank contamination in Choccolocco Creek. The existing hydraulic loading conditions will be maintained as much as possible.

c. Recommendations for MNR Predictions

CSTAG recommends that the region provide additional site-specific information on the mechanisms, timing, and the reliability of natural recovery to support the selection of MNR as a remedy component.

Response: The Region has requested that additional MNR information be provided in the OU4 FS.

9. Recommendations for Cleanup Strategy

a. If the CSM and alternative development issues identified by CSTAG cannot be resolved in a timely and efficient manner to support a final ROD, CSTAG recommends the region consider developing an interim remedy or removal action of high concentration/high mobility riverbed and riverbank COCs to achieve earlier risk reduction.

Response: The Region intends to pursue a final ROD for this operable unit. Data collection and studies have been underway for two decades. An interim remedy will only be pursued if OSRTI cannot support a final ROD.

b. Under an interim approach, CSTAG recommends the region initiate an adaptive management program consistent with Recommendation 8 of the 2017 contaminated sediments directive. The adaptive management program should compare post-remediation monitoring data to final cleanup levels to determine the need for additional actions that may be needed to achieve risk based CULs in a final ROD (see Recommendation 11, below).

Response: The Region will consider if adaptive management would be appropriate as part of the OU4 Remedy.

10. Institutional Controls

Per the NCP 300.430(iii) (C) and (D), the use of institutional controls in combination with various engineering controls are key components to any Superfund Site cleanup. ICs presented to the CSTAG included fish advisories and control of direct exposure and sources of COCs. These are discussed below.

a. Recommendations for Fish Advisory ICs:

CSTAG recommends that the region work with the PRP to supplement ADPH efforts and expand and sustain public education and notification efforts to reduce PCB-related human health risks from the consumption of contaminated fish. This includes installing new signs in multiple languages as needed, inspection and replacement of signs as necessary, and discussion in public forums and distribution of informational pamphlets at sporting goods stores. Given evidence of current exposure, efforts should commence with the OU-4 feasibility study and/or any early actions. CSTAG sees potential benefits of supporting and using the Riverkeeper's local resources and expertise to implement future efforts.

Response: The Region will work with the PRP and the community to expand public education regarding the fish advisories.

b. Recommendations for Permanence/Source Control and Direct Exposure ICs:

i. CSTAG recommends a call before you dig (811) program be developed and maintained by the PRPs in OU-4 that includes coordination with local governments and community education and outreach.

Response: The Region will consider a call before you dig (811) program and any other ICs that will ensure the protectiveness of the remedy.

ii. Monitoring, such as periodic visual inspection, should be considered for alternatives that involve leaving a substantial mass of PCBs in yards, floodplains, and banks to evaluate ongoing source potential to the creek(s). This program could also monitor stream channel migration and bank or floodplain erosion to identify, prevent, and repair unanticipated releases of PCBs. Sediment traps for piped drainage from contaminated properties should be monitored to identify contaminant migration and protect the remedy over time.

Response: The PRPs has been conducting quarterly and annual monitoring of properties with residual contamination present. The PRPs have agreements with utilities and municipalities, to prevent recontamination. The Region expects to formalize the soil management program and any other ICs identified to ensure protectiveness of the remedy.

11. Recommendations for Monitoring

a. CSTAG recommends the region develop and implement a long-term monitoring program focused on evaluating progress toward and attainment of fish, water, and sediment remedial goals (whether interim or final) and the drivers of or impediments to attaining those goals. This monitoring plan will serve as the basis for understanding the impact of remediation and

could be used to improve the CSM and adapt the remedy as necessary. The program should be initiated as soon as possible, consistent with the 2002 and 2017 directives (principle 11 and recommendation 9, respectively).

Response: The Region will develop and implement a long-term monitoring plan.

b. CSTAG recommends that sediment monitoring use a longitudinal study design, to better understand existing media relationships and exposure concentrations, stratifying the river into sampling areas as necessary. If SWACs of exposure areas or strata will be used as metric or goal, their derivation should be as free of spatial bias as possible. This study could be repeated over time to evaluate removal actions, interim actions, and/or final action performance.

Response: The Region will develop and implement a monitoring plan. The Region expects the monitoring to be conducted over many years since all the contamination cannot be removed from the environment.