



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Signed September 25, 2003

MEMORANDUM

SUBJECT: CSTAG Recommendations on the Portland Harbor Contaminated Sediment Superfund Site

FROM: Stephen J. Ells /s/ **Stephen J. Ells**
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Contaminated Sediments Technical Advisory Group (CSTAG)

TO: Chip Humphrey, Remedial Project Manager
Region 10

Background

OSWER Directive 9285.6-08, *Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites* (Feb. 12, 2002), established the Contaminated Sediments Technical Advisory Group (CSTAG) as a technical advisory group “that will monitor the progress of and provide advice regarding a small number of large, complex, or controversial contaminated sediment Superfund sites.” The main purpose of the CSTAG is to help Regional site project managers of selected large, complex, or controversial sediment sites appropriately manage their sites throughout the Superfund process in accordance with the 11 risk management principles set forth in the OSWER Directive. CSTAG membership consists of one representative per Region, two from the Office of Research and Development, and two from the Office of Superfund Remediation and Technology Innovation (OSRTI).

Brief Description of the Site

The Portland Harbor site is located along the lower Willamette River in Portland, Oregon. The Initial Study Area (ISA), a six-mile stretch between the southern tip of Sauvie Island (River Mile 3.5) and Swan Island (RM 9.5), is the most industrialized segment of the river. Current or historical industrial activities and processes that may have lead to contaminant releases to the ISA include petroleum storage and distribution, chemical manufacturing and formulation (pesticide/herbicide, asphalt, paint, resins, acetylene), oil gasification, wood treating, metals salvage, marine fueling, ship building and repair, railroad operations, and electrical power generation.

A federal navigation channel, ranging from 600 to 1,900 feet wide, with an authorized depth of 40 feet, extends through the ISA upstream to RM 11.6. Certain parts of the river (near RM 2 and between RM 8 and 10) require periodic maintenance dredging to keep the channel open for container and other commercial vessels.

The lower Willamette River is a migratory route for several protected species, including chinook salmon, steelhead trout, and Pacific lamprey. It also supports several resident fish species that are sought by recreational and subsistence anglers.

The McCormick and Baxter (M&B) Superfund Site is located at RM 7 in the ISA. This site, the location of a former wood treating facility, was placed on the NPL in 1994, before Portland Harbor was listed as a NPL site. As such, it is a separate Superfund site within the Portland Harbor ISA. The Oregon Department of Environmental Quality (DEQ) is the lead agency for the fund-lead cleanup at M&B. Upland soil cleanup was completed in 1999 and limited recovery of creosote from shallow groundwater was initiated. Because recovery of creosote from groundwater did not prevent ongoing seepage of creosote to the Willamette River, a subsurface barrier wall designed to contain 17 acres of creosote-contaminated soil and groundwater was completed in July 2003. Groundwater monitoring wells to evaluate the performance of the barrier wall will be installed in fall 2003. The next step in the cleanup is the installation of a sediment cap to isolate contaminated sediments on the river bottom. Extensive design and engineering work for the sediment cap remedy identified in the 1996 ROD were completed this year.

Several limited sediment investigations near other specific upland facilities were conducted before the Portland Harbor site was listed on the NPL in 2000. EPA and the DEQ conducted a joint investigation of near-shore sediments within Portland Harbor. Investigations completed to date have identified metals, PAHs, chlorinated insecticides and herbicides, PCBs, dioxins and furans, and phthalates in sediments.

DEQ submitted a formal request to EPA for deferral of the Site in March 2000. EPA received extensive comments from tribal governments and natural resource trustee agencies supporting NPL listing, and listed the site in December 2000. In September 2001 an Administrative Order on Consent for an RI/FS was signed by EPA and nine PRPs [Atofina Chemicals, Inc.; Chevron USA Inc.; Gunderson, Inc.; Northwest Natural Gas; City of Portland; Port of Portland; Time Oil Co.; ConocoPhillips (formerly Tosco Corporation); and Union Pacific Railroad Company]. Oregon Steel Mills became a signatory to the AOC in August 2002. The PRPs formed the Lower Willamette Group (LWG), which includes AOC signatories and non-signatories. The LWG submitted a Round 1 Work Plan in May 2002. While the work plan was not approved, EPA did allow fish tissue and limited co-located sediment sampling to proceed in the fall of 2002.

The CSTAG visited the site and met with the site team from August 12 to 14, 2003. Five of the invited stakeholders made presentations to the CSTAG. The five presenters included the Portland Harbor Community Advisory Group, NOAA, the Willamette Riverkeeper, the Lower Willamette Group, and Environment International (tribal consultant).

CSTAG Recommendations

Based upon the site visit, the review of the site information provided to us, and the presentations made by five stakeholders, the CSTAG offers the following recommendations in order that the remedial project manager (RPM) can more fully address the 11 principles. The CSTAG expects that the RPM will consider these recommendations as the investigations continue, as the conceptual site model is refined, and as remedial alternatives are developed and evaluated.

Principle #1, Control Sources Early

- The CSTAG commends the project team for developing the Joint Source Control Strategy. The CSTAG recommends that an additional effort be made to evaluate at least qualitatively the relative contribution of contaminant releases from each major upland/on-shore source to human health and ecological risks in the ISA. A prioritization scheme should also be developed in order to identify and classify the largest contaminant contributions and the most significant transport pathways (*e.g.*, groundwater, bank erosion, overland flow, *etc.*). This information coupled with the results of a screening risk assessment could be used to prioritize any upland source control actions and in-river interim actions that may be warranted.
- The CSTAG recommends that there be better coordination and more collaboration between the EPA and State Superfund programs and the other EPA and State programs (*e.g.*, TMDL, NPDES, RCRA, OPA) relating site investigations with possible cleanup/abatement options. Consider the effectiveness of voluntary programs and whether enforcement action is necessary. It is important to know the extent of the current and expected future NPDES discharges in order to understand and consider the extent of recontamination of potentially remediated sediment areas.
- If or when it becomes apparent that there will be upland source control actions, develop a comprehensive baseline monitoring program in order to gather data that can be used to evaluate the effectiveness of the source control actions in mitigating contaminant loading and subsequent risks in the ISA. This should include establishing background contaminant concentrations (including non-site related anthropogenic and naturally occurring compounds) upstream of the site in relevant media such as sediment, surface water, and/or resident aquatic biota.

Principle #2, Involve the Community Early and Often

- Consider establishing a local repository for site-related documents of interest to the community that is in a public space convenient for most stakeholders.
- Continue to use the site webpage to post all important site updates and information. This could include the electronic data (*e.g.*, Query Manager/Marplot) used in GIS data presentations and evaluations.
- Consider whether additional outreach is needed for transient and immigrant individuals that have frequent contact with the river flood plain

Principle #3, Coordinate with States, Local Governments, Tribes, and Natural Resource Trustees

- Understanding the impact of ongoing releases from upland sources to the in-river sediments and the predicted effectiveness of any planned upland source control actions is critical to evaluating the effectiveness of any in-river remedial alternatives. The CSTAG recommends that there be increased coordination and collaboration between EPA and the State, who has the lead for the upland source control actions. This is especially important in understanding the potential current and future impacts of groundwater releases on any future in-river remedial actions.
- Work with the tribes to establish tribal fish ingestion rates appropriate for the site.
- Consolidate and evaluate historical data collected at the site from numerous sources (*e.g.*, Corps of Engineers, universities, USGS, EPA/WED-Corvalis, USFWS, NOAA).
- Keep the Corps of Engineers' navigational dredging team informed of site activities and data, and work with them to coordinate the timing and extent of any planned navigational dredging of the shipping channel in the ISA.

Principle #4, Develop and Refine a Conceptual Site Model that Considers Sediment Stability

- The CSTAG supports the site's Conceptual Site Model (CSM) and the team's efforts to use multiple types of data to characterize the sediments in the ISA. Understanding the stability of the surficial and subsurface sediments is likely to be a critical factor in evaluating potential remedial options for this site.
- As more contaminant data on flood plain soil, groundwater, sediment, surface water and biota become available, the site team should revise the CSM and use it to identify the major risk drivers, to assess the important sources and sinks, and to evaluate the effects that future upland source control actions may have on reducing in-river exposures to biota.

Principle #5, Use an Iterative Approach in a Risk-Based Framework

- No new large-scale sampling events should be performed until all stakeholders have had the opportunity to evaluate the results of the LWG's first two rounds of sampling. These data should be used to determine if there any sediment "hot spots" that present very high risks or act as large continuing sources of contamination to the ISA that may warrant in-river early actions.
- Although a streamlined RI/FS for the in-river sediments may be appropriate, the CSTAG is concerned that the reduction in risks from controlling ongoing upland sources may not be fully understood at the time the sediment RI/FS is completed.
- The potential for recontamination of any remediated areas should be considered in light of the timing of any planned remedial actions within the in-water ISA and/or in upland areas.

Principle #6, Carefully Evaluate the Assumptions and Uncertainties Associated with Site Characterization Data and Site Models

- The CSTAG recommends that additional data be collected to further understand sediment stability. This may entail collecting sufficient subsurface cores in order to more fully characterize the nature and extent of recent and historic contamination throughout the ISA and measuring the critical shear stress for resuspension using an in situ device at several locations throughout the ISA.
- The Project Team should obtain additional technical expertise to review the PRP's modeling proposal and to evaluate the existing data, as well as any future data, on sediment stability that can be used to predict long-term sediment movement.
- In areas where contaminant concentrations are relatively low but close to levels that might trigger remedial action, the CSTAG recommends a careful evaluation of analytical detection limits and associated data uncertainty.
- It is important that the degree of uncertainty associated with the key studies and data are documented and incorporated in future site decisions.
- Since there appears to be several distinct areas of elevated sediment contamination, consider using smaller, discrete sediment management areas in developing risk assessment scenarios and in assessing additional data needs.
- The CSTAG recommends that more consideration be given to identifying and evaluating spatial and temporal changes in contaminant water column concentrations near the expected upland source areas, possibly using caged or indigenous bivalves or semi-permeable membrane devices (SPMDs). Bivalves and SPMDs can have significant advantages over collecting discrete large volume water samples because they continuously uptake water and concentrate the contaminants to levels that are easier to quantify. ORD can provide advice on this approach if necessary.

Principle #7, Select Site-specific, Project-specific, and Sediment-specific Risk Management Approaches that will Achieve Risk-based Goals

- If the baseline risk assessment demonstrates that human health and/or ecological risks are unacceptable, remedial action objectives and goals need to be developed that are appropriate for the site. Due to the industrial nature of the site, it may be difficult to predict reliably the effectiveness of all upland source control actions in stopping or reducing all significant releases to the river.

Principle #8, Ensure that Sediment Cleanup Levels are Clearly Tied to Risk Management Goals
The CSTAG will evaluate this principle later in the process.

Principle #9, Maximize the Effectiveness of Institutional Controls and Recognize their Limitations

- Use the results from the round 1 and round 2 data to evaluate the appropriateness of the current fish consumption advisories.

Principle #10, Design Remedies to Minimize Short-term Risks while Achieving Long-term Protection The CSTAG will evaluate this principle later in the process.

Principle #11, Monitor During and After Sediment Remediation to Assess and Document Remedy Effectiveness The CSTAG will evaluate this principle later in the process.

Regional Response

Please send us a short written response to these recommendations within 60 days. If you have any questions or would like a clarification to any of these recommendations please call one of us (Steve 703 603-8822, John 214 665-6742).

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