



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

MEMORANDUM

SUBJECT: Region 9 Response to CSTAG Recommendations on the Montrose/Palos Verdes Shelf Contaminated Sediment Superfund Site

FROM: Frederick K. Schauffler, Remedial Project Manager /s/ *Frederick K. Schauffler*
Region 9

TO: Stephen J. Ells (EPA Headquarters) and John Meyer (EPA Region 6), Co-chairs
Contaminated Sediments Technical Advisory Group (CSTAG)

DATE: May 29, 2003

Region 9 appreciates the time spent by the Contaminated Sediments Technical Advisory Group (CSTAG) and thanks them for their comments and recommendations on the Montrose/Palos Verdes Shelf Superfund site as presented in your memorandum of March 24, 2003. The CSTAG comments and this response letter will be part of the Administrative Record for the site.

For each CSTAG comment or recommendation, the Region's response is listed below. Please let me know if you have any questions regarding these responses.

Principle #1, Control Sources Early

- CSTAG supports the Region's efforts in removing the DDT-contaminated sediment from the sewer pipes and in reducing releases at the outfalls to below State permit levels.

Region 9 Response to Comment

Comment acknowledged. We will continue to work with the Los Angeles County Sanitation Districts (LACSD) to determine whether any residual DDT-contaminated sediment remains in the sewer lines downgradient of the former Montrose facility and, if so, evaluate amending the existing Removal Action Memorandum, if necessary, to prevent any health risk to workers and/or further contamination of the Palos Verdes Shelf.

- The Region should summarize their evaluation of the potential impacts of additional sources of DDT (*e.g.*, agricultural runoff) to the site and whether these additional sources are on-going.

Region 9 Response to Comment

We will incorporate a summary of that evaluation into the remedial investigation/feasibility study (RI/FS) reports. Our review of the available data indicates that there are no significant ongoing sources of DDT to the Palos Verdes Shelf.

- Evaluate the likelihood that contaminated sediment from uncapped areas could be resuspended resulting in contaminating a future clean cap, if one is proposed for remediating the site.

Region 9 Response to Comment

As part of our feasibility study, we will be conducting additional studies and evaluations to evaluate this issue. For example, per our response to one of the comments under Principle #4 below, we will be analyzing the LACSD current meter data to better define the potential for contaminated sediment from an uncapped area (such as the continental slope) to be resuspended by bottom currents and transported onto a capped area.

- Available data suggest that there may be on-going erosion of the surface sediments overlying the heavily contaminated sediments east of the outfall. The Region should continue to evaluate the rate of erosion here in order to assess this area as a possible future source of DDT and PCBs to the western part of the site.

Region 9 Response to Comment

We are continuing to review the U.S. Geological Survey (USGS) analysis of this issue and will incorporate our findings into the RI/FS. We will look at this issue in terms of both its implications for any capping remedy as well as its potential to contribute to increased site-related risks due to the re-exposure of more highly contaminated sediment.

Principle #2, Involve the Community Early and Often

- CSTAG supports the Region's efforts in coordinating with numerous community-based organizations representing various multi-cultural groups.

Region 9 Response to Comment

Comment acknowledged. Our seafood contamination task force (now known as the Fish Contamination Education Collaborative, or FCEC) currently includes members from

community-based organizations (CBOs) representing the Korean, Cambodian, Latino, Vietnamese, Guamanian, Pacific Islander, Chinese and Filipino communities in Los Angeles and Orange counties.

- Consider evaluating different media venues (*e.g.*, radio, television) for reaching specific ethnic groups as appropriate. Ensure that any bans or advisories are properly translated for the target audiences.

Region 9 Response to Comment

As part of the public outreach & education program under the institutional controls response action, the Region will be working with CBOs to design and implement in-language media campaigns that use print, radio and local television spots to spread the word about fish contamination. The educational brochure developed as part of this project to summarize the fish consumption advisories has been translated and printed in Spanish, Korean and Khmer; Vietnamese and Chinese translations are now being developed. Through the FCEC, we are working with state and local agencies to ensure that advisory information is available in the major languages within the Los Angeles/Orange County area.

- Assess whether the 20 fish species currently being evaluated include all those that may be important to the ethnic groups that eat fish routinely.

Region 9 Response to Comment

The fish-in-ocean monitoring program that EPA is undertaking in collaboration with the Montrose Settlements Restoration Program (MSRP) targeted fish based on consideration of several factors, including which fish are currently included in the fish consumption advisory and which fish are most frequently caught by anglers in the Los Angeles and Orange County area. To verify that this list covers those species that may be an important part of anglers' diets, we will be comparing the list to the results from our joint angler survey in which we ask anglers to identify the fish they commonly catch and eat. In our discussions with the CBOs to date about the fish species being sampled, no one has identified any omissions of important locally-caught fish.

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

- Encourage the State and local health authorities to coordinate and effectively communicate their fish consumption advisories with community-based organizations so that consumers receive appropriate information regarding potential risks due to eating locally-caught fish.

Region 9 Response to Comment

Through the participation of all these parties in the meetings and activities of the FCEC, significant progress has already been made in developing and delivering information to consumers about the potential health risks associated with eating contaminated fish. The Region will continue to work with these groups to ensure that these efforts continue and reflect the most current consumption advisories. We anticipate entering into cooperative agreements with some of these agencies to provide a formal mechanism for ensuring their participation in a coordinated outreach program.

- Continue coordinating the data collection efforts and interpretation of the ecological risk assessment with the trustees as represented by the Montrose Settlements Restoration Program.

Region 9 Response to Comment

We will continue to work closely with the trustees and other stakeholders in planning and implementing data collection activities, such as those that are being undertaken on a cost-shared basis. Similarly, we have solicited and received comments on the draft ecological risk assessment from the trustees and other members of the Palos Verdes Shelf Technical Information Exchange Group, and we will address those comments as we prepare the final version of the assessment.

- If EPA develops risk-based protective fish tissue levels that are different than the State health advisory values, EPA and the State should develop a risk communication plan to clearly explain these differences.

Region 9 Response to Comment

Comment noted. The current state consumption advisory for Southern California marine fish was issued in 1991, and several of the factors used in estimating potential health risks (such as consumption rate, exposure duration and tissue concentration) were different than the Region used in its 1999 human health risk evaluation for Palos Verdes Shelf. The Region anticipates entering into a cooperative agreement with the state's Office of Environmental Health Hazard Assessment (OEHHA) that will include support for their work on updating the fish consumption advisory, which should ensure close coordination throughout the process. As that work evolves, we will assess the need for a communication plan to explain any differences between their approach and ours.

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

- Examine LACSD's Acoustic Doppler Current Profiler data to determine the range of bed shear stresses to which the contaminated sediments are subjected. Correlate these stresses with the

results from the SEDFlume analysis to determine the stability characteristics of the contaminated sediments. This information should be used to determine the extent and likelihood of both sediment resuspension and cap material resuspension due to wave-, current-, and soliton-induced bed shear stresses.

Region 9 Response to Comment

The Region agrees that analysis of LACSD's recently-acquired ocean current data is needed to assess sediment resuspension and transport at the site. We have received LACSD's commitment to provide us with the data, and we are consulting with USGS and the U.S. Army Corps of Engineers to determine the most appropriate approach to processing and analyzing this large data set. The resulting information on currents will be combined with the Sedflume results to update our assessment of the stability of the existing contaminated sediment deposit as well as the stability of an *in situ* cap.

- Evaluate sediment migration and/or mixing that occurred during the *in situ* capping pilot project and incorporate any lessons learned into the evaluation of the effectiveness of any proposed cap for a larger area.

Region 9 Response to Comment

The upcoming report on the March 2002 monitoring event at the pilot capping cells includes a preliminary analysis of these issues. We anticipate that further analysis of the sediment data, coupled with the evaluation of the LACSD current meter data described above and possibly additional field studies, will be needed to complete our evaluation of placement methods, cap thickness and potential recontamination of a full-scale cap.

- Carefully evaluate the trends in DDT and PCB concentrations in white croaker tissue, and compare the data with trends in sediment DDT and PCB concentrations and DDT and PCB in tissues of other species.

Region 9 Response to Comment

The ongoing update of the ecological risk assessment includes evaluations of trends for both sediment and certain fish tissue concentrations of DDT and PCBs. These evaluations are limited to the immediate area of the Palos Verdes peninsula, where the annual monitoring activities by LACSD provide sufficient data to make those sorts of evaluations and comparisons. Apart from looking at the temporal and spatial trends, we are also using this data to develop site-specific biota-sediment accumulation factors (BSAFs) for predicting future fish tissue concentrations.

- Given that white croakers accumulate significantly more DDT and PCBs than other fish and that much of the highly-contaminated effluent-affected sediment is buried with less contaminated sediments, additional information should be collected to further understand all potential routes of DDT and PCB exposure to white croaker. This could include identifying common prey species that white croaker ingest and analyzing their DDT and PCB body burden, and evaluating DDT and PCB uptake from the water column.

Region 9 Response to Comment

The feeding behavior of white croaker, which involves the ingestion of benthic organisms along with some surficial sediment, is believed to be the primary route of exposure for this species. While common prey species for white croaker are identified in the literature, analyzing the DDT and PCB body burdens of those prey species has not been done, in part because of the difficulty in collecting sufficient biomass to conduct the analysis. However, the BSAF for white croaker appears to be a reasonably good predictor of DDT and PCB tissue concentrations in white croaker, making the need for such data on prey species or water column exposures less significant.

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

- If the overlying sediment in the area east of the outfall is found to be eroding at a relatively fast rate, consider implementing an early action in this area in order to prevent DDT and PCB dispersion to less contaminated areas west of this area.

Region 9 Response to Comment

As noted in the response to the last comment under Principle #1 above, the Region is reviewing the existing information regarding possible on-going erosion in the area east of the outfalls. We will keep the possibility of an early action in mind as we move forward with our analysis.

- Since the bottom water currents appear to go east to west, when implementing a remedy, consider beginning in the eastern end of the site and proceeding westward.

Region 9 Response to Comment

As outlined in the Corps' 1999 report, this approach is our current operating assumption. However, we will use our analysis of the LACSD current meter data to determine the optimal sequence and rate of cap placement to avoid recontamination of the cap.

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

- To the extent possible, report, evaluate, and convert if necessary, all “DDT” contaminant concentrations used in site characterization and in the risk assessments in a consistent manner; *i.e.*, as total DDT or as p,p DDE.

Region 9 Response to Comment

In all of its reports, the Region has attempted to maintain consistency in using and defining terms like “DDT” or “total DDT,” and we will continue to do. For example, DDE is much more prevalent than the DDT (or DDD) isomers at the site, and we typically sum all the o,p’ and p,p’ isomers of DDT, DDE and DDD and report them as “total DDT.” A similar issue of consistency exists for PCBs, where the lab analysis and reporting of results does not always include the same set of congeners or aroclors. Again, our practice is to sum the results for PCB concentrations and report them as total PCBs. Since there is some variability in the toxicity of these different forms of DDT and PCBs, we also try to ensure that the risk assessments acknowledge and reflect those differences.

- Consider identifying shellfish DDT and PCB body burdens and evaluating the possible resulting risks to shellfish consumers.

Region 9 Response to Comment

The state’s Office of Environmental Health Hazard Assessment (OEHHA) has recently begun a review of the existing data on shellfish in the Palos Verdes area to assess whether a consumption advisory is warranted and/or whether additional data are needed to make that determination. The Region will use the results of OEHHA’s review in deciding whether to include shellfish consumption in an update to the human health risk assessment for the site.

- The data obtained during and after the pilot capping project, and the use of these data in calibrating the numerical sediment stability model, should be peer-reviewed.

Region 9 Response to Comment

Comment acknowledged. As we move forward with using the pilot capping project data and, for example, the current meter data from LACSD to assess sediment stability, we will incorporate a peer-review process focused on the use of that data in modeling sediment stability.

- It appeared that the Trustee food chain model did not include a benthos component but EPA’s ecological risk assessment did. Determine if this difference is important and if it can affect what EPA identifies as remedial action objectives versus what the Trustees identify as resources that need to be restored.

Region 9 Response to Comment

The Trustees used a mechanistic food web/exposure model in the natural resource damage assessment (NRDA) to quantify the bioaccumulation of contaminants from sediment and water to fish. For white croaker and Dover sole, the model used both sediment data and mussel data (as a surrogate for water column data) to predict uptake of contaminants by benthic invertebrates, which in turn were part of the dietary exposure of these two species of fish. The food web model being used in the Region's ecological risk assessment links contaminant levels in sediment to contaminant levels in fish using site-specific regression relationships (i.e., empirical data), without creating an intermediary estimate of contaminant levels in benthos.

The Trustees have identified recreational fishing opportunities and raptors (bald eagles and peregrine falcons) as resources that need to be restored. We are still working on our analysis of the extent to which a remedial action such as capping can, in fact, contribute to the restoration of these resources. Regardless of which model is used, the complexity of the exposure pathways leads to increased uncertainty in predicting how sediment clean-up actions at Palos Verdes Shelf will eventually reduce contaminant exposures for higher trophic level receptors, such as raptors on the Channel Islands, relative to more localized receptors such as white croaker. The Region will have to consider that uncertainty when deciding whether to identify restoration of raptor populations as a specific remedial action objective.

- Evaluate whether the source and age of the data used impact the risk characterization and clarify which data are being used for assessing site risks versus understanding the site history.

Region 9 Response to Comment

The human health risk evaluation (HHRE) contains tables identifying the data used and their sources, and the ecological risk assessment report will include similar tables. Since the 1999 HHRE was issued, the only significant source of new data is the fish tissue data that will be available later this year from the joint EPA-Trustee fish sampling program. The Region will review that data to determine if any revisions to the HHRE are appropriate. In preparing the ecological risk report, we gathered the most recent data available, as well as earlier data from the Trustees NRDA, and also assessed temporal trends to determine if any of the older data should not be used. With respect to the upcoming fish data, we will undertake a similar evaluation for the ecological risk assessment.

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

- Enhance the existing screening analysis of the range of alternative remedial options (*i.e.*, dredging, hot spot removal, capping, monitored natural recovery, no action) in the feasibility study. Also consider combinations of alternatives and addressing smaller areas within the site (*i.e.*, eastern end).

Region 9 Response to Comment

The feasibility study will re-visit the screening evaluation to determine whether its conclusions about viable cleanup technologies are still valid, as well as the question of whether a mix of approaches is appropriate. As noted above, we will also assess the need to address specific smaller areas where early action may be needed to prevent the re-exposure and/or migration of highly contaminated sediment.

Principle #8. Ensure that Sediment Cleanup Levels are Clearly Tied to Risk Management Goals

- Establish remedial action objectives for the site that are achievable; *i.e.*, acknowledge that remedial actions taken near the Palos Verdes outfall area may not result in complete recovery of the eagle population in the Channel Islands owing to the expected levels of residual DDT in the Southern California Bight after any remediation option.

Region 9 Response to Comment

As discussed above under Principle #6, the Region will consider the impact of residual levels of DDT and PCBs in establishing remedial action objectives that are achievable.

- Clarify the link between predicted post-remedy residual DDT and PCB sediment concentrations and acceptable white croaker tissue concentrations.

Region 9 Response to Comment

The feasibility study will describe the expected post-remedy contaminant levels in sediment for each alternative and the associated contaminant levels in white croaker and other fish.

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

- Continue to monitor the effectiveness of existing institutional controls by evaluating the data from the fish-in-ocean and the fish-in-market monitoring programs.

Region 9 Response to Comment

The Region expects that the data from the fish-in-ocean sampling will be used by the state to update the existing ocean fish consumption advisory for Southern California, and the content

and scope of the public outreach and education program for recreational/subsistence anglers will be modified accordingly. The same thing is true for the ocean and market monitoring programs aimed at the commercial catch and sale of white croaker.

- Evaluate the need to put the fish advisories into additional languages for distribution to target audiences.

Region 9 Response to Comment

Through the FCEC, the Region is working with the state and the community-based organizations to ensure that the advisories are available in the major languages of the angling and fish-eating population. Most of the materials developed for use in the public outreach & education program will be made available in at least English, Spanish, Korean, Khmer, Vietnamese, Chinese, and Tagalog.

- If capping and/or monitored natural recovery is selected, identify whether any institutional controls are necessary to restrict certain activities that may compromise remedy protectiveness (*e.g.*, consider whether commercial fishing activities, such as trawling, would adversely affect the selected remedy).

Region 9 Response to Comment

Comment acknowledged. The feasibility study will identify any institutional controls that are needed to prevent activities such as commercial fishing from interfering with the effectiveness of the remedy.

- If capping and/or monitored natural recovery is selected, evaluate various approaches for providing information to mariners regarding the boundaries of the affected remediated area (*e.g.*, placement of buoys, modifications to NOAA nautical charts) in order to prevent sediment disturbance.

Region 9 Response to Comment

Comment acknowledged. Given the water depths at the site, it is unlikely that vessel traffic in and of itself would result in sediment disturbance.

Principle #10, Design Remedies to Minimize Short-term Risks while Achieving Long-term Protection

The CSTAG recognizes that site investigations are still on-going, that data are still being evaluated, and that the Region is not ready to propose a remedy for the site. If a dredging and/or capping remedy is

proposed, however, careful consideration should be given to evaluating the adverse impacts to biota and habitat that might result, and to incorporating methods to minimize any potential impacts.

- In order to maximize cap stability and permanence, evaluate the use of different grain-sized cap materials in different areas of the site using the results from the sediment stability analysis.

Region 9 Response to Comment

The 1999 Corps report on options for in situ capping included an evaluation of cap stability with respect to the grain size of cap material. This evaluation will be revisited in the feasibility study using the results from the pilot capping project, particularly the Sedflume study conducted by the Army Corps of Engineers.

- Carefully evaluate the methodologies, data, and conclusions of the *in situ* capping pilot project in evaluating the effectiveness of capping options, especially the finding that there was no disturbance of the highly contaminated, buried DDT and PCBs.

Region 9 Response to Comment

The Region concurs with this recommendation. Although the results of the pilot capping project indicated that there was some disturbance of the surficial layer of the contaminated sediment, our interpretation of the data does not indicate that the deeper, highly contaminated sediments (which are typically about 30 centimeters below the surface) were disturbed during cap placement.

- In light of the pilot study and SEDFlume results, fully evaluate the effects of the multiple methods of cap material placement used in the pilot project on bed sediment resuspension/mixing. Consider using different placement methods in different areas of the site.

Region 9 Response to Comment

The Region concurs with this recommendation. The feasibility study will look at not only the use of different placement methods in different areas of the site, but also the use of different methods in the same area (e.g., initial placement using spreading, followed by conventional point placement to achieve full cap thickness once an adequate protective layer of cap material has been constructed).

- Evaluate cap thickness assumptions and the availability of various grain-sized materials in sufficient quantities to implement possible capping remedies.

Region 9 Response to Comment

The feasibility study will incorporate an assessment of source areas for cap material in terms of several factors including quantities available, grain sizes and transport distances.

- Evaluate the effect that different grain-sized cap materials would have on attracting or repelling white croakers to the capped area.

Region 9 Response to Comment

The assessment of recolonization that was conducted as part of the March 2002 monitoring of the pilot capping cells will be useful in evaluating the extent to which grain size influences recolonization and, thus, the creation of a food supply that would attract white croaker (or other fish). The selection of an appropriate grain size for cap material, should a capping alternative be selected, will require balancing potential impacts on recolonization versus such factors as cap material availability, cap stability and cost.

Principle #11, Monitor During and After Sediment Remediation to Assess and Document Remedy Effectiveness The CSTAG recognizes that the Region will not be developing a long-term monitoring program for this site for some time, but offers the following recommendation to be considered in the future.

- In addition to white croaker, consider using sessile organisms (*e.g.*, mussels) to monitor remedy effectiveness.

Region 9 Response to Comment

The Region recognizes that a long-term monitoring plan for the Palos Verdes Shelf may be required. The development of general requirements and approaches for long-term monitoring, including the use of sessile organisms, will be carefully considered during the Feasibility Study and incorporated as appropriate into the scope and cost of each alternative.

cc: Keith Takata, Region 9
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