

standard has not changed, with the 2012 National Recommended Water Quality Criteria (NRWQC, chronic) still set at 0.014 µg/L. Current contaminant levels in OU1 surface water would not be associated with an elevated risk or hazard to ecological receptors because PCBs have not been detected in surface water. During the most recent 2011 sampling event, PCBs were not detected at a detection limit of approximately 0.5 µg/L for each Aroclor, which is the lowest practicable detection limit.

Soils east of the stream channel were generally excavated to a depth of 2 to 6 feet and capped. East bank soils (both north and south of the car wash) were excavated to a depth of several feet and capped. Because the cap creates a barrier to the contaminated layer, the exposure pathway in soil is incomplete. Thus, the potential risk to terrestrial receptors is minimal and the remedy continues to be protective.

Although the method used to perform the ecological risk assessments differs from current methods and guidance, target clean-up levels and the selected remedy for OU1 appear to still be valid.

OU2

Similar to OU1, there are no major changes in site conditions or exposure assumptions on which the risk assessment was based that would result in increased exposure or risk to ecological receptors. The primary basis for action in OU2 was the risk related to ecological receptors from PCBs in sediments of Middle Marsh. As discussed in the previous five year review, the Phase I and Phase II investigations demonstrated that the primary source of contamination was the OU1 disposal area. Before the implementation of the remedial action, flood waters from the disposal area could transport contaminants downstream. Because the remedy at OU1 consisted of capping the upstream disposal area, and the remedy at OU2 consisted of excavating sediment from the Middle Marsh to the edge of the flood plain and restoring wetlands, the source of contaminants has been eliminated. Thus, flood water will no longer transport contaminants via surface water or sediment. Furthermore, the clean fill and wetland soil used to reconstruct the Middle Marsh and the Adjacent Wetland act as a barrier to any residual contaminants below the excavation area, effectively eliminating the exposure pathway into sediment pore water. Therefore, the selected remedy is protective of benthic organisms as well as aquatic and semi-aquatic organisms.

The mean sediment quality criterion (20 µg PCB/gC) was established as the cleanup level of aquatic areas in the Middle Marsh. The risk-based sediment/soil cleanup levels for non-aquatic areas in Middle Marsh and for the adjacent wetland were established using site specific food chain modeling and set at 15 mg/kg total PCBs to be protective of wildlife. As with OU1, the surface water standard of 0.014 µg/L was used, and is consistent with current water quality criteria.

As discussed for OU1, current levels of contaminants in sediment, wetland soil, and surface water are available and most appropriate to consider when evaluating remedy protectiveness. Since the last 5 Year Review, no exceedances of water and soil cleanup levels were detected in Middle Marsh or the Adjacent Wetlands (see Attachment 3, Tables A3-5 and A3-6). Exceedances of sediment clean-up criteria were noted for two of the monitoring points in Unnamed Stream during the most recent monitoring event performed for OU2 (see Attachment 3, Tables A3-3). The maximum PCB concentrations measured in sediments from the Unnamed

Stream were 0.53 mg/kg or 64 µg/gC (at 0.82% TOC) at SDPC-2 and 0.83 mg/kg or 32 µg/gC (at 2.59% TOC) at SDPC-4, which are both above the 20 µg/gC cleanup level. However, during the same monitoring event in 2013, two other sediment samples from the Unnamed Stream (SDPC-1 and SDPC-3) contained PCB concentrations lower than the 20 µg/gC cleanup level. Although a limited number of exceedances of the selected sediment target level of 20 µg/gC, have been observed in the Unnamed Stream sediment, these were most often associated with very low TOC. No consistent pattern of increasing PCB concentrations has been observed for any locations in the Unnamed Stream and the PCB levels in the OU2 monitoring have remained below 1 ppm total PCBs, which indicates that the remedy remains protective. Continued monitoring of sediments in OU2 should be conducted to continue to evaluate the protectiveness of the remedy.

The maximum concentration of total PCBs in non-aquatic soil/sediment samples from the Middle Marsh and Adjacent Wetlands for monitoring data from 2013 were all below the cleanup level of 15 ppm. The maximum concentration of total PCBs in wetland soils was less than 1 ppm, indicating that the remedy is protective for non-aquatic soils/sediments.

Similar to OU1, contaminant levels in surface water measured for OU2 would not be associated with an elevated risk or hazard to ecological receptors because PCBs have not been detected in surface water. During the most recent 2013 sampling event, PCBs were not detected at a detection limit of 0.29 µg/L for each Aroclor, which is the lowest practicable detection limit.

Based on removal of contaminated sediments in Middle Marsh and wetland soils, and the capping of the upstream disposal area in OU1, the source of PCBs for exposure of ecological receptors has been eliminated. Monitoring data since 2002 have indicated that the total PCB concentrations in the surface water and sediment/soils of OU2 are generally meeting the levels established to be protective of ecological receptors, although individual sediment samples have at times exceeded the sediment cleanup level on a total carbon basis. Continued monitoring is recommended to continue to evaluate the protectiveness of the remedy.

Summary and Conclusions Relative to Ecological Risks

In conclusion, although the method used to perform the Ecological Risk Assessments differs from current methods and guidance, target clean-up levels and the selected remedies for OU1 and OU2 appear to be protective. The remedies implemented adequately address the risk to ecological receptors, and monitoring data indicate that the current concentrations of contaminants in site media are meeting levels protective of ecological receptors on the site.

7.2.2 ARARs Review

A review of Applicable or Relevant and Appropriate Requirements was performed to check the impact on the remedy of changes in standards that were identified as ARARs in the ROD, newly promulgated standards for chemicals of potential concern, and TBCs (to be considered) that may affect the protectiveness of the remedy. The tables in Attachment 5 provide the review. The review is summarized below.

**THIRD FIVE-YEAR REVIEW REPORT FOR
SULLIVAN'S LEDGE SUPERFUND SITE
BRISTOL COUNTY, MASSACHUSETTS**



Prepared by

**U.S. Environmental Protection Agency
Region I
BOSTON, MASSACHUSETTS**

James T. Owens III, Division Director

Date