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**Pacific Northwest  
National Laboratory**

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**Phase I Source Investigation,  
Heckathorn Superfund Site,  
Richmond, California**

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December 2002

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under Contract DE-AC06-76RL01830



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RICHMOND, CALIFORNIA

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## SUMMARY

The purpose of the present study is to identify the sources of dichlorodiphenyl trichloroethane (DDT) that have re-contaminated the sediment in Lauritzen Channel since remedial dredging in 1996 and 1997. The study reported here is Phase I of a phased approach to source investigation, in which the most likely DDT sources--outfall pipes and undredged channel sediment or unexcavated bank sediment--were investigated. Where possible, outfall pipes found during the Phase I survey were sampled for sediment and water. If present, sediment was collected directly from inside the mouth of the pipe; otherwise, a special sampler designed to trap particles from outfall discharge water was attached to the outfall pipe. To determine whether water flowing from outfall pipes carried significant quantities of pesticides into the channel, passive water samplers were placed in the end of the known outfall pipes. Passive water samplers and outfall sediment were analyzed for DDT and other pesticides of concern. Most of the identified outfalls are not considered a significant source of the DDT sediment contamination in Lauritzen Channel, but two of the outfalls bear further investigation: a concrete outfall found near Transect -8.5 and the 8-in. metal pipe outfall protruding from the retaining wall near Transect -28. The concrete pipe was discovered discharging a small volume of DDT-contaminated water during the March sampling, and may indicate a groundwater connection between upland bank soils and the channel. The 8-in. pipe could not be ruled out as a source: despite relatively low sediment concentrations, the passive sampler deployed there indicated exposure to high concentrations of DDT.

The undredged sediment under the Levin Pier and the northeast bank of Lauritzen Channel were evaluated in an underwater reconnaissance survey to document the present type, slope, and thickness of sediment under the Levin pier, and to identify potential sediment sampling locations. Thirty eight sediment samples were collected at locations of interest, both underwater in soft channel sediment and from intertidal or terrestrial soils on the embankment, and analyzed for DDT and other pesticides of concern. Bank soil samples collected from the channel bank near the north end of the Levin Pier contained higher concentrations of DDT than those previously found in channel sediments. The soft core collected at Transect +2.5, beneath the north end of the Levin Pier, had the highest DDT concentration found yet in Lauritzen Channel sediment (23,190 ppm), more than 100 times higher than the highest concentrations found in surface sediment during the 1999 Sediment Investigation. Although the volume of soft sediment along the east bank was estimated to be relatively small, sediment core samples provide evidence for redistribution of undredged sediment from under the pier as a source of DDT contamination to the rest of Lauritzen Channel. However, it is the continuing contribution of upland bank material by erosion and possible groundwater leaching that warrants further investigation at the Heckathorn site.

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