



# United Heckathorn Superfund Site

u.s. environmental protection agency • region 9 • san francisco, california • february 2004

## Reinvestigation of Waterways Completed

In September 2001, the U.S. Environmental Protection Agency (U.S. EPA) determined that the waterways of the United Heckathorn Superfund Site had not met the cleanup goals established for the site. This fact sheet goes over the findings from a two-phase investigation and what our next steps will be.

Five years after cleanup actions took place at the United Heckathorn Superfund site, U.S. EPA checked to see how effective the remedy had been. The Five-Year Review for the United Heckathorn Superfund Site concluded that part of the remedy is working and part of the remedy is not. The concrete barrier covering most of the site is functioning as designed: it prevents erosion and exposure to contaminated soils. However, the other half of the remedy, the dredging of Lauritzen Channel and Parr Canal, has not kept the Lauritzen from being contaminated with unacceptable levels of pesticides. Because concentrations of pesticides in the channel are above cleanup goals, U.S. EPA took additional actions at the site. The first step was a new round of studies to determine the source or sources of the contamination. These studies took place in 2002 and 2003, which are referred to as Phase I and II.

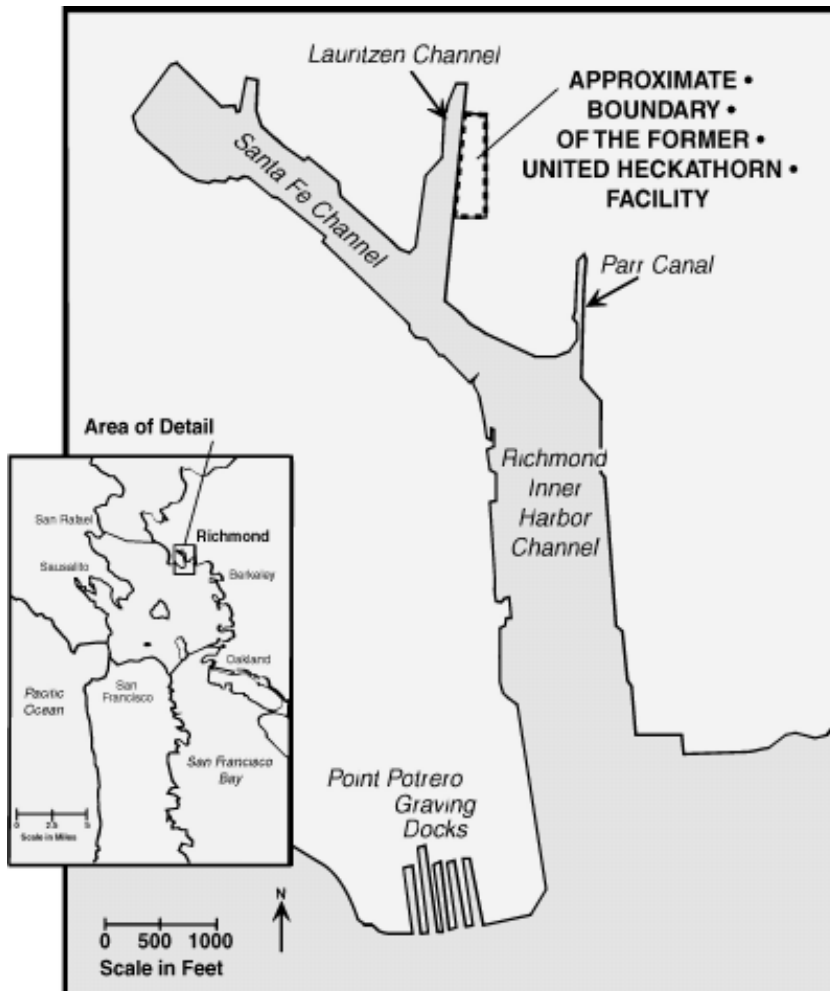


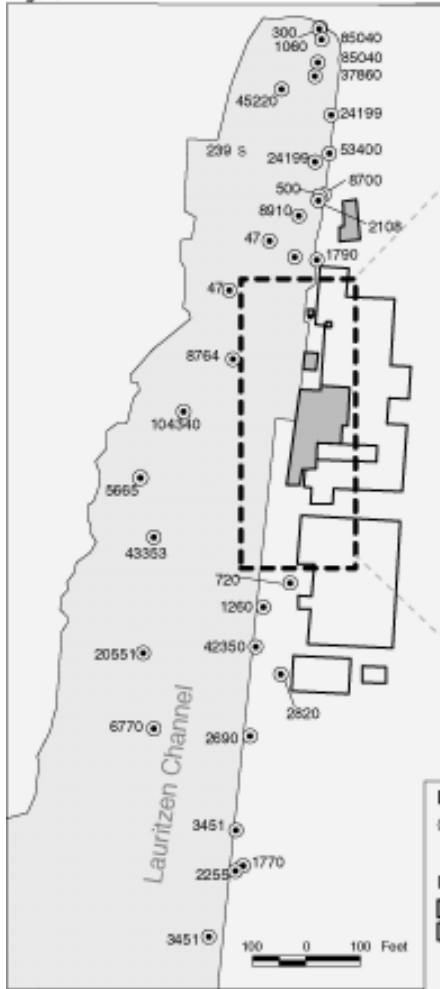
Figure 1: Location of United Heckathorn Superfund Site

### Fishing Advisory Still in Effect

In 1994, the California Department of Health Services issued an advisory against consuming any resident bottom fish, such as White Croaker, from Richmond Harbor. Fish in the harbor are exposed to multiple contaminants, including DDTs and polychlorinated biphenyls (PCBs). PCBs, DDTs and other contaminants pose a health risk to human health and the environment. The kinds of health problems that have been linked to PCBs and DDTs include effects on the nervous, immune, endocrine, and reproductive systems, infant development, and cancer. Eating fish with PCBs and DDTs does not make people sick right away. However, these chemicals can build up and stay in your body for a long time. This might cause health problems later. During pregnancy and lactation, mothers can pass PCBs, DDTs and other contaminants on to their infants.

Signs prohibiting fishing are posted in the vicinity of Parr Canal and Lauritzen Channel. Please take these signs seriously!

Figure 2



Area of Detail

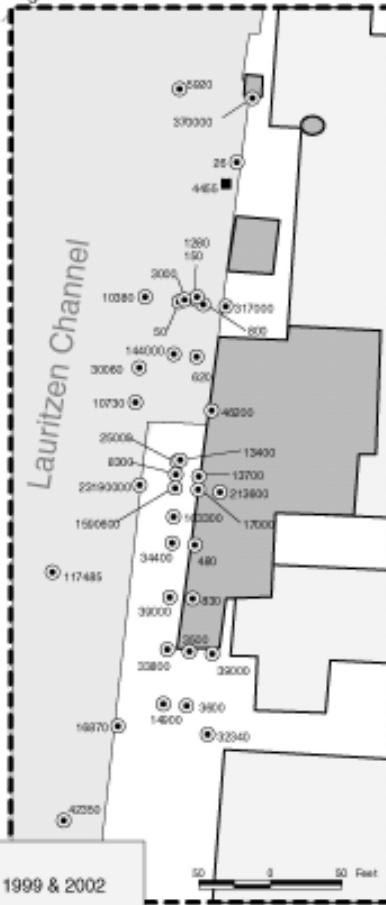


**LEGEND**

- All Sediment Samples 1999 & 2002 - DDT ( $\mu\text{g}/\text{kg}$  dry wt)
- Outfall Water Samples - DDT ( $\text{ng}/\text{L}$ )
- Former United Heckathorn Building
- ▒ Excavation Pit

DDT Remediation Goals:  
 For Sediment:  $590 \mu\text{g}/\text{kg}$   
 For Water:  $0.59 \text{ ng}/\text{L}$

Figure 3



**United Heckathorn Superfund Site**  
 Results of Phase I •  
 Sediment and  
 Outfall Water Sampling

## Phase I

U.S. EPA took a phased approach to the reinvestigation of the site. First, the U.S. EPA identified potential sources of the recontamination and areas in the channel that had not been dredged, such as under the pier (See Figure 1). To help guide the U.S. EPA through this first phase of the investigation, questions were formulated to help give us a better idea about what could be causing the recontamination:

- Could these undredged sediment areas be the problem?
- A few outfalls pipes from land protruded out of the embankment. Had all of these outfalls been identified and sealed?
- Although the upland area of the site had been capped, preventing exposure and migration of contaminated soil, the embankment was only partially covered. Could erosion of embankment soils be a factor in the recontamination of the channel?

In February and March 2002, the U.S. EPA took water and sediment samples to help locate sources of contamination. In addition to collecting water samples from the annual monitoring locations, the U.S. EPA deployed passive samplers near or in outfall pipes to determine if outfalls were discharging pesticides into the channel. A passive sampler is a polyethylene bag that is submerged for 2-3 weeks so that it can absorb the contaminants in the water until it reaches equilibrium. An additional water sample was collected in March from an embankment outfall only visible at a low tide. The northern end of Lauritzen Channel is the area with the highest pesticide concentrations in water and the water sample taken from the embankment outfall had the highest total DDT concentration recorded at the site.

Figure 4

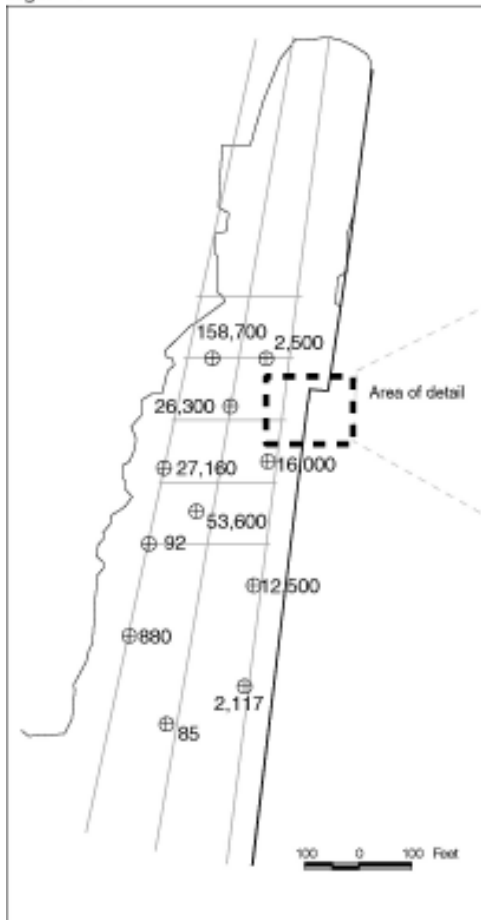
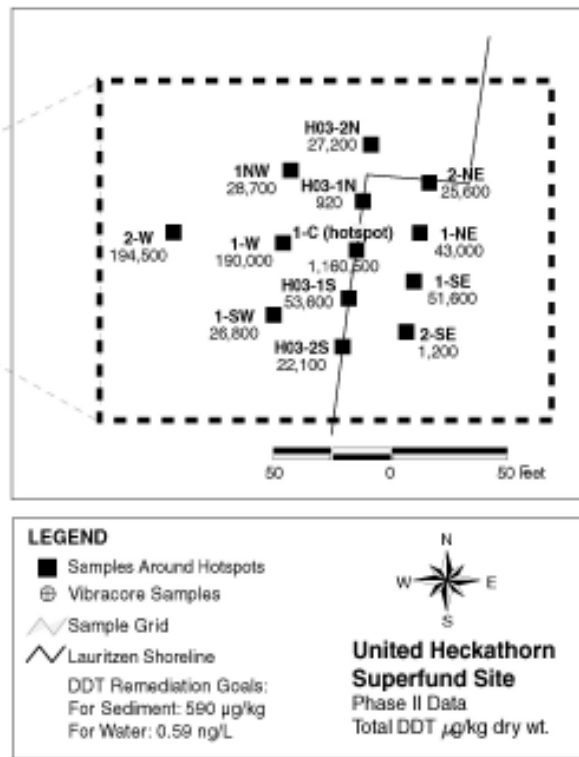


Figure 5



In March, a dive team surveyed the left bank of the channel, took sediment samples from Lauritzen Channel, and soil samples from the embankment. The divers measured the amount of soft sediment remaining under the pier; this sediment was not removed during the 1997-1998 dredging. Some soft sediment was found under the pier; however, it appears that much of the sediment from the embankment slid into the channel as the channel bottom was dredged. It's not clear how much of the soft sediment is new deposition since the dredging occurred.

U.S. EPA received the results from the sediment and soil samples in May 2002. All sediment samples from Lauritzen contained total DDT above the remediation goal of 590 µg/kg. A sediment sample at the bottom of the channel near the dock in the area near the former United Heckathorn Building 1, which is also an area that had been excavated in 1990, contained 23,190,000 µg/kg, the highest reading by far of any sediment sample collected post-remediation. Further investigation around this area occurred in July 2002. A sample taken at the same location using a collection pipe, not a diver, contained 1.5 million ug/kg. Samples taken 10 and 20 ft. from this location contained considerably less DDT.

Embankment samples were collected in February and March 2002. Three samples collected in February contained 12800 µg/kg, 270 µg/kg, and 720 µg/kg. Eight samples collected in March ranged from 1260 µg/kg to 370,000 µg/kg. Three of the eight embankment samples were above the total DDT in soil removal goal of 100 ppm.

Figures 2 and 3 show the results from the Phase I sampling as well as data collected in 1999. Figure 2 shows the entire Lauritzen Channel; Figure 3 is a closeup showing the area where the highest concentration of DDT was found.

## Phase II

The Phase I investigation answered some questions and raised others. What was the source of the water sample taken from the embankment outfall? The confirmation sampling of the super-hot spot was considerably less than the original sample: the first sample contained 23 million µg/kg total DDT, the second 1.5 million µg/kg. Was this difference because of the difference in sampling methods: divers vs. collection pipe? How high are the pesticide concentrations and over how large an area? The embankment samples were collected at the surface. Did the concentrations of DDT found in these

## Site History

The United Heckathorn Superfund site is located in Richmond Harbor in Contra Costa County, California (see Figure 1). The site is in an industrial area dominated by petroleum and shipping terminals. From 1947 to 1966, several operators, including the R.J. Prentiss Company, Heckathorn and Company, United Heckathorn, United Chemetrics, and Chemwest Incorporated (collectively referred to as "United Heckathorn") used the site to formulate and package pesticides. No chemicals were manufactured on the site. United Heckathorn would receive technical grade pesticides from chemical manufacturers, grind them in air mills, mix them with other ingredients such as clays or solvents, and package them for final use in liquid or powder formulations. Although many pesticides were handled by United Heckathorn, DDT accounted for approximately 95 percent of its operations.

United Heckathorn went bankrupt and vacated the site in 1966. Between 1966 and 1970 the United Heckathorn buildings were demolished and cleared from the site. In the 1970s the site was used primarily for bulk storage. In 1981, the Levin Metals Corporation purchased the property and, as stated above, operates a bulk shipping facility at the site.

In 1980, the United Heckathorn site was inspected and sampled by the California Department of Health Services (CDHS) as part of an Abandoned Site Project. Chlorinated pesticides and metals were detected in soil samples, and the area was designated a State Superfund site in March 1982. In March 1990, U.S. EPA placed the site on the National Priorities List (NPL) and in August of that year assumed lead agency status.

samples indicate DDT at depth? The Phase II study was designed with these questions in mind.

In May 2003, U.S. EPA collected samples from the embankment and throughout Lauritzen Channel. The embankment samples were a foot deep so that any changes in pesticide concentrations could be measured. Divers collected channel sediment samples around the super-hot spot while collection vibracores were used for other channel samples.

## Phase II Findings

Six locations along the northern half of the embankment above the water line were sampled. The results were inconclusive; three of the samples had DDT concentrations increase with depth and three did not. Four other embankment samples were taken below the water line in the area of the former pesticide processing facility. This was an area that had been excavated in 1990, but only to the water line. These samples ranged from 850 µg/kg to 6,500 µg/kg total DDT.

The samples taken around the super-hot spot were collected by divers. Once again, the super-hot spot was sampled; this time the total DDT concentration was 1,160,000 µg/kg. Samples taken 10 to 40 feet around it were considerably less. The next highest concentration was 194,500 µg/kg. The lowest, 10 ft. north of the super-hot spot, measured 920 µg/kg. All of the samples contained DDT above the remediation goal of 590 µg/kg. Figure 5 shows the samples taken around the super-hot spot.

Other sediment samples collected throughout the channel indicated that the mouth of the channel is less contaminated than the center and northern end of Lauritzen. Figure 4 shows total DDT concentrations for the vibracore samples taken from a floating platform in May 2003. The vibracore sampler is an aluminum pipe, about 5 feet long and 4 inches in diameter, attached to a vibratory hammer head. The pipe, called the "core," is lined with plastic tubing that can be removed once the sample is collected. The vibratory hammer pushes the core through the soft sediment to reach the firm older bay mud that underlies the unconsolidated sediment. The older bay mud has consistently been shown to be uncontaminated and to act as a barrier to downward contaminant migration in sediment. After the core is retrieved, the liner is removed from the core, and the sediment sample is removed from the liner.

The buried outfall was resampled. Water emitting from the outfall contained even higher concentrations of DDT than it did when first sampled in March 2002. Sediment taken from the pipe measured over 3 million µg/kg of total DDT. In order to prevent additional pesticides from being washed into Lauritzen, U.S. EPA decided to temporarily plug the pipe while the investigation continued. In July 2003, a temporary plug was inserted in the pipe.

## Next Steps

The reinvestigation confirmed that the site has not met cleanup goals. U.S. EPA has entered into an agreement with the U.S. Army Corps of Engineers to prepare a Focused Feasibility Study (FFS) to assess a range of alternative actions that could be taken at the site to remediate the remaining contamination. The range of alternatives will include a no action alternative that will address future site conditions if no additional remediation occurs.

In preparing the FFS, it became clear that additional information on the nature of

Table 1: Comparison of total DDT and Dieldrin Remedial Goals with Concentrations in Water Samples Before and After Dredging (Water Concentration in nanograms per liter (ng/L))

Location	Cleanup Goal	Before Dredging <sup>(a)</sup>	After Remediation Monitoring Results					
			1998 (Yr 1)	1999 (Yr 2)	2000 (Yr 3)	2001 (Yr 4)	2002 (Yr 5)	2003 (Yr 6)
<b>Total DDT</b>								
Richmond Inner Harbor	0.59	1	0.65	14.4	2.56	ND <sup>(b)</sup>	0.66	0.26
Lauritzen/Mouth	0.59	no sample	42.6	4.61	27.9	2.88	1.70	0.63
Lauritzen/End	0.59	50	103	62.3	83.7 <sup>(c)</sup> / 1773	142	18.4	396.3
Santa Fe/End	0.59	8.6	11	19.2	3.70	2.51	0.60	0.66
Parr Canal	0.59	no sample	—	—	—	—	2.57	1.8
Buried outfall							4455	8993.3
<b>Dieldrin</b>								
Richmond Inner Harbor	0.14	<1	0.65	0.62	1.57	ND	0.16	0.11
Lauritzen/Mouth	0.14	no sample	8.18	0.48	8.96	0.46	0.43	0.22
Lauritzen/End	0.14	18	18.1	12.5	83 <sup>(c)</sup> / 625	8.49	2.08	15.
Santa Fe/End	0.14	1.8	2.47	0.37	2.11	0.46	0.20	0.16
Parr Canal	0.14	no sample	—	—	—	—	0.98	0.88
Buried outfall							2520	3000

(a) Preremediation water concentration is the average of samples collected in October 1991 and February 1992 for the Ecological Risk Assessment (Lee et al. 1994)

(b) ND None detected

(c) Triplicate water samples were collected from each station. One sample from Lauritzen/End sampled much higher than the other two. The average concentration for Lauritzen/End is shown with (the first number) and without (the second, larger number) this anomaly.

the sediments at the site would be necessary before an assessment of alternatives could be prepared. Therefore, the FFS has been put on hold while the Army Corps and U.S. EPA gather more information on the types of sediments found in Lauritzen Channel. This work will delay the FFS by a year. However, sediment information will help determine which alternatives are truly feasible and what technologies simply are not viable.

## Post-Remediation Monitoring

Upon completion of the remedial actions in 1997 and 1998, the U.S. EPA began a five-year monitoring program. Every year water samples and mussels were collected and analyzed for pesticide levels. Analyzing mussels gives an indication of the amount of pesticides that can bioaccumulate in a living organism. Table 1 shows the pesticide concentrations in water samples from the last six years of post-remediation monitoring. Note the increase in

pesticide concentrations the first year after dredging. At the time of the Five-Year Review, the U.S. EPA concluded that cleanup goals had not been achieved. Note that the concentrations are trending downward in some areas, but not at the end of Lauritzen Channel.



## Mailing List

U.S. EPA would like to add any individual or organizations who wish to be informed and involved in the new developments at United Heckathorn. After completing these new investigations, U.S. EPA will seek public input to assist in design and selection of a new remediation plan for the Lauritzen Channel. If you would like to be on our mailing list, please call Jackie Lane at (415) 972-3236, or email the information to U.S. EPA at [lane.jackie@epa.gov](mailto:lane.jackie@epa.gov).

# For More Information

If you have questions or comments regarding the United Heckathorn Superfund Site, please contact:

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You may also call EPA's toll-free Superfund hotline and leave a message that will be forwarded to the appropriate EPA staff. The hotline number is **1-800-231-3075**.

## Site Repositories

Richmond Library  
325 Civic Center  
Richmond, CA 94804

Superfund Record Center  
95 Hawthorne Street  
San Francisco, CA 94105