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Year 6 Post-Remediation Biomonitoring and Phase II Source Investigation at the United Heckathorn Superfund Site, Richmond, California

N. P. Kohn
N. R. Evans

Battelle Marine Sciences Laboratory
Sequim, Washington

March 2004

Prepared for the U.S. Department of Energy
under Contract DE-AC06-76RL01830

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Richland, Washington 99352

Abstract

The Heckathorn Superfund Site in Richmond, California, encompasses the property of the former United Heckathorn pesticide packaging plant and the adjacent waterway, Lauritzen Channel. The site was used from 1945 to 1966 by several operators to produce various agricultural chemicals. The site was placed on the National Priorities List of Superfund sites in 1990, which resulted in the removal of pesticide-contaminated soil from the upland portion of the site and dredging the marine portion of the site. Post-remediation marine monitoring and associated studies conducted through 2002 indicate that the contamination in the channel continues to pose a significant risk to biota and human health. This report documents continued marine monitoring and source investigation studies conducted in 2003.

Acronyms

cy	cubic yards
DDD	dichlorodiphenyl dichloroethane
DDE	dichlorodiphenyl dichloroethylene
DDT	dichlorodiphenyl trichloroethane
EPA	U.S. Environmental Protection Agency (EPA)
GIS	geographic information system
MDL	method detection limit
OBM	Older Bay Mud
PCB	polychlorinated biphenyl
QC	quality control
TOC	total organic carbon
TSS	total suspended solids
YBM	Younger Bay Mud

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1.0 Introduction

This report is a brief summary of post-remediation monitoring and associated studies conducted at the United Heckathorn Superfund Site in Richmond, California in 2003. These are follow-on studies to earlier investigations described below. Because the text is so brief, all figures and tables follow the text so as not to interrupt the flow of the document.

1.1 Site Background

The Heckathorn Superfund Site in Richmond, California, encompasses the property of the former United Heckathorn pesticide packaging plant and the adjacent waterway, Lauritzen Channel (Figure 1). The site was used from 1945 to 1966 by several operators to produce various agricultural chemicals, including dichlorodiphenyl trichloroethane (DDT), its breakdown products dichlorodiphenyl dichloroethane (DDD) and dichlorodiphenyl dichloroethylene (DDE), dieldrin, and other pesticides. The site was placed on the National Priorities List of Superfund sites in 1990, which resulted in the removal of pesticide-contaminated soil from the upland portion of the site and dredging the marine portion of the site.

Remediation of the channel by dredging, dewatering, and offsite disposal of contaminated sediment took place between July 1996 and March 1997. Sampling during the dredging operation indicated that the significant mass of contamination was removed. However, subsequent sampling, particularly at the 2-year post-remedial sampling of marine water and biota (1998 to 1999), indicated pesticide contamination significantly above the remediation goals in the Record of Decision and suggested that there was a potential recontamination problem in the channel. The post-remediation marine monitoring and associated studies, described in Section 1.2, indicate that the contamination in the channel continues to pose a significant risk to biota and human health.

1.2 Previous Investigations

Post-remedial monitoring data demonstrated that the pesticide DDT[(a)] was less bioavailable to marine biota 2 to 3 years after remediation than it was in the first 6 to 10 months after remediation (Figure 3) (Antrim and Kohn 2000a, b; Kohn and Kropp 2001a). However, DDT was detected in the tens of parts-per-million (ppm) range in sediment samples collected from Lauritzen Channel in October and November 1998. Sediment DDT concentrations greater than 0.590 ppm were first measured in October 1998 and reported in Anderson et al. (2000). DDT in sediment was confirmed by additional measurements in November 1998 (Antrim and Kohn 2000b), and was additionally verified in the 1999 Sediment Investigation (Kohn and Gilmore 2001). Furthermore, an increase in bioavailability of DDT to mussels in Lauritzen Channel was observed in 2001, the fourth year of post-remediation monitoring (Kohn and Kropp 2001b); however, this increase was not apparent the following year (Kohn and Kropp 2002) (Figure 2).

(a) Throughout this document, "DDT" is generally intended to mean DDT and its breakdown products, collectively. "Total DDT" is used to indicate concentrations that are the sum of detected DDT, DDD, and DDE compounds.

Uncertainty about any trend in DDT bioavailability to mussels through 5 years of monitoring prompted the U.S. Environmental Protection Agency (EPA) to continue the biomonitoring program for another year (2003). The results of the 1999 Sediment Investigation and the apparent increase in DDT availability in 2001 triggered EPA to undertake a Phase I Source Investigation study in 2002 (Kohn and Evans 2002). This study identified several potential sources bearing further investigation: a hotspot of sediment contamination beneath the north end of the Levin Pier, embankment soils with elevated concentrations of DDT, and a previously unidentified outfall pipe discharging into the intertidal zone of northeast Lauritzen Channel. Phase II Source Investigation sampling and analysis was undertaken in 2003 to delineate the sediment hotspot, further characterize the depth of contamination in embankment soils, and to verify the outfall discharge. This report summarizes the results of the sixth year of post-remediation biomonitoring and Phase II of the Source Investigation study. All technical reports for previous investigations are available electronically from www.pnl.gov/main/publications, using "Heckathorn" as the search term.

2.0 Methods

2.1 Year 6 (2003) Monitoring

2.1.1 Sample Collection

Water and mussel samples were collected by EPA Region IX staff in the same manner as all previous years of biomonitoring at the Heckathorn site. EPA's sample collection summary memo is provided in Appendix A. Triplicate water samples were collected at the four routine monitoring locations, the Seep, and Parr Canal (Figure 3, Table 1). Additional replicates for quality control (QC) were collected from Lauritzen Channel End (303.3) and the Seep, for a total of 20 water samples. Mussel samples were collected at the four routine monitoring locations and four additional locations in Lauritzen Channel. Two of the additional locations are near elevated water or sediment.

2.1.2 Water Sample Analysis

With one exception, triplicate water samples from each of the four routine monitoring locations were analyzed for total DDT (2,4'- and 4,4'- isomers of DDT, DDE, and DDD), dissolved DDT compounds, and total suspended solids (TSS). The exception was Richmond Inner Harbor 303.1, where one of the triplicates was used for QC because the planned QC replicate (from 303.3) was broken during shipping. All water analyses were conducted by Columbia Analytical Services, Kelso, Washington. Upon receipt at the laboratory, each 4-L sample was split as follows: approximately 220 mL was removed for TSS and the remaining volume was split in half for total and dissolved pesticides. The aliquots for total pesticides were assigned suffix –T. The aliquots for dissolved pesticides were assigned suffix –D, transferred to polycarbonate containers, and centrifuged to remove particulate matter. The supernatant was decanted for subsequent analysis of dissolved pesticides.

TSS was analyzed by EPA Method 160.2. The method detection limit (MDL) is typically 1 mg/L TSS, but because the sample volume was limited, the reporting limit for this study was 5 mg/L TSS. The laboratory attempted to achieve lower reporting limits, but values less than 5 mg/L are flagged as estimates ("J"). Organochlorine pesticides were analyzed by EPA Method 8081A; polychlorinated biphenyl (PCB) aroclors were analyzed by EPA Method 8082. The laboratory noted matrix interference in the field samples that prevented reporting to the MDL of 0.05 ng/L to 0.12 ng/L for the target pesticides; reporting limits for field samples ranged from 0.48 ng/L to 0.87 ng/L. In the case of dieldrin, the laboratory MDL was 0.06 ng/L, but the reporting limits for field samples were 0.48 ng/L to 0.50 ng/L.

2.1.3 Tissue Sample Analysis

Eight mussel tissues were analyzed for pesticides and lipid content by Columbia Analytical Services, Kelso, Washington. Chlorinated pesticides were analyzed by EPA Method 8081A; PCB aroclors were analyzed by EPA Method 8082. Lipids were analyzed by the Bligh-Dyer method for consistency and comparison with pre-remediation and other post-remediation data. Lipids were also measured using EPA Method 3450. This method is efficient in that it does not require a separate sample aliquot or extraction: lipids are measured gravimetrically in the same methylene chloride extract that is prepared for pesticide

analysis. The two methods are fairly comparable, with typically less than 30% difference in results. In this case, the Seep mussel sample was too small to allow a separate Bligh-Dyer lipid extraction, and the EPA 3450 data allowed an estimate of a Bligh-Dyer-equivalent lipid content (Figure 4).

2.2 Phase II Source Investigation

The Phase II Source Investigation was a follow-on study of potential sources of pesticides to Lauritzen Channel identified in the Phase I Source Investigation. The objectives of the Phase II Source Investigation were to 1) further characterize the depth of contamination in embankment soils, 2) delineate the sediment DDT hot spot beneath the north end of the Levin Pier, and 3) survey Younger Bay Mud (YBM) thickness and DDT concentrations throughout Lauritzen Channel.

2.2.1 Sample Collection

Embankment soil and sediment core samples for the Phase II Source Investigation were collected May 20-22, 2003. Embankment soil samples were collected by Battelle and EPA personnel; both diver-collected cores and vibracores were collected by TEG Oceanographic Services of Santa Cruz, California. Locations of Phase II Source Investigation soil and sediment samples are shown in Figures 5 through 7. Sample collection and preparation information is provided in Tables 2 through 5. Sample collection activities are described below.

2.2.1.1 Embankment Samples

Embankment soils from the northeastern edge of Lauritzen Channel were collected during a low tide when the bank was accessible from land. Sampling locations were selected by EPA to represent areas of documented shoreline activities, such as railroad scale use and removal, or prior excavations and bank stabilization. Embankment soil collection information is provided in Table 2. Most samples were collected near the high tide mark, just below the vertical wall or armoring (see descriptions in Table 2 and photos in Figure 8). A hand auger with a stainless steel bit was used to penetrate the sediment surface and collect a sample from the 0- to 0.2-ft (~2.5 in.) interval. The sampler bit was rinsed thoroughly with seawater before augering deeper in the same location to collect a sample from the 0.5- to 1-ft-depth interval. If the location was on a slope, the auger was inserted perpendicular to the slope to determine the true thickness of a contaminated layer. Soil samples were placed directly into labeled sample jars for pesticide, grain size, and total organic carbon (TOC) analysis; sealed sample jars were stored on ice in coolers until transferred or shipped to the appropriate analytical laboratory.

2.2.1.2 Diver-Collected Cores

Cores were collected by TEG divers at 17 stations selected by EPA to delineate the DDT hotspot identified in the Phase I Source Investigation. The hotspot was located at the north end of the Levin Pier, beneath the pier face at Transect +2.5. EPA first placed four stations along the pier face, about 15 ft and 30 ft north of the hotspot (1-N, 2-N), and about 15 ft and 30 ft south of the hotspot (1-S, 2-S). Three stations were placed approximately 25 ft west of the pier face and between the stations on the first line of samples (1-NW, 1-W, and 1-SW). Station 2-W was located another 25 ft out so that it was about 50 ft west of the hotspot. Four more stations were located under the pier about half way between the pier face

and shore embankment (approximately 12 ft east of pier face): 1-NE, 2-NE, 1-SE, and 2-SE. Although these 13 were the only stations planned, diver time and coring supplies were available to collect four additional samples. The last four stations were located even further east, as close to the embankment as possible in the first four gaps between rows of pilings supporting the Levin Pier (whole transect numbers indicate piling rows, half numbers indicate a gap between piling rows): T(+1.5)E, T(+2.5)E, T(+3.5E), and T(+4.5)E.

Diver-collected cores were obtained by pushing by hand a 2-ft section of 2-in. diameter tubing into the sediment to maximum penetration. The diver would cap the top, dig to the bottom, and cap the bottom before removing the tube from the sediment. Capped, labeled cores were transported to shore, where the stratigraphy was described before sediment was transferred to a disposable aluminum pie plate, homogenized, and split into aliquots for pesticide, grain size, and TOC analysis (Table 5; Figure 9).

2.2.1.3 Vibracores

Vibracore samples were collected at 11 stations in Lauritzen Channel on May 22, 2003. Vibracore sampling stations were located in central and southern Lauritzen Channel to expand the hotspot delineation and fill gaps in the data obtained during the 1999 Sediment Investigation (Figure 7). The goal of the vibracore sample collection was to penetrate through the YBM into the Older Bay Mud (OBM) to determine the present-day thickness of overlying YBM and the concentration of pesticides in the YBM. The vibracore sampler was operated by TEG Oceanographic Services; it was deployed from TEG's 24-ft pontoon barge, which was anchored at each station prior to sampling (Figure 10).

Vibracore sampling information is provided in Table 4. OBM was retained in all cores except H03-12, where hard clay was reached but not penetrated sufficiently to retain. Throughout the sampling day, capped, labeled vibracores were transported to shore for processing and chemistry subsampling. Vibracores were processed by splitting longitudinally using reciprocating shears and gently prying the halves apart (Figure 11). The stratigraphy and sediment characteristics were described, and YBM was removed and homogenized in a disposable aluminum pie plate. Homogenized sediment was split into aliquots for pesticide, grain size, and TOC analysis (Table 5).

2.2.2 Sediment and Soil Sample Analysis

All sediment and soil samples were analyzed for pesticides by the EPA Region IX Laboratory in Richmond, California. Chlorinated pesticides and PCB aroclors were analyzed by EPA Method 8081A. The EPA Region IX Laboratory also analyzed TOC in sediment samples by EPA Method 9060. Grain size analysis by ASTM D422-63 method was performed by Columbia Analytical Services of Kelso, Washington.

3.0 Results

3.1 Year 6 (2003) Monitoring

3.1.1 Water Samples

Results for TSS, dieldrin, and DDT compounds in the total fraction samples are provided in Table 6; results for dieldrin and DDT in the dissolved fraction samples are shown in Table 7. Water samples were also analyzed for PCB aroclors but none were detected. All water analysis results received from the laboratory are provided in Appendix B.

It is difficult to evaluate the water chemistry relative to marine water quality criteria because of the elevated reporting limits for dieldrin and some DDT compounds. Dieldrin reporting limits were usually around 0.5 ng/L, 3 to 4 times the 0.14-ng/L remediation goal. The elevated reporting limit is not an issue where dieldrin was clearly detected, as in samples from Lauritzen Channel End 303.3 and the Seep sample. DDT reporting limits, although elevated (0.48 ng/L to 0.87 ng/L compared with MDLs of 0.05 ng/L to 0.12 ng/L), were usually below the 0.59-ng/L remediation goal. It is still clear that there is a gradient of total DDT that decreases with distance from Lauritzen Channel End (303.3). In 2003, the Lauritzen Channel End water samples showed an order-of-magnitude increase in both total and dissolved DDT concentrations from the previous year of monitoring (Table 8, Figure 12). It should be noted that these water samples provide just a snapshot of water-column DDT concentrations and thus provide no information about the temporal variability or vertical stratification of contaminants in the water column. The differences between sampling events do not necessarily verify trends, nor are individual samples necessarily representative of typical conditions.

3.1.2 Tissue Samples

Shell length of individual mussels and mean mussel tissue weight per mussel at each station were measured for Year 6 monitoring (Table 9). The target DDT pesticides were detected in all Year 6 tissue samples (Table 10). Concentrations in mussels from the four routine monitoring locations ranged from 25 µg/kg and 28 µg/kg wet weight at Santa Fe Channel End (303.4) and Richmond Inner Harbor (303.1), respectively, to 214 µg/kg and 431 µg/kg wet weight at Lauritzen Channel Mouth (303.2) and End (303.3), respectively. These follow a pattern of decreasing DDT concentration with distance from Lauritzen Channel similar to previous years (Figure 13), and Year 6 tissue concentrations were generally similar to Year 5. Of the PCB Aroclors, only Aroclor 1254 was detected in any of the mussel tissues (Table 11). This is consistent with previous years of monitoring.

Mussels collected from the four additional locations in 2003 provide valuable additional information about DDT bioavailability in Lauritzen Channel. Despite very small sample size (6 mussels) at the Seep station, pesticide concentrations in tissues from this station were so elevated that multiple dilutions were required to quantify them. The Seep area clearly represents a much higher exposure to bioavailable DDT. Mussels collected from the ladder at Manson Construction, on the west side of the channel across from 303.3, had similar tissue DDT concentrations to 303.3, suggesting that water in central Lauritzen Channel is fairly well-mixed. Mussels from the 8-in. pipe further north on the east bank of Lauritzen Channel had

higher tissue burdens of DDT, about 2.5 times the burden of 303.3 and Manson Ladder mussels. The north end of the channel would not be flushed or mixed as well as the central and south sections, but it is unclear whether the increased exposure is from Seep water pushed upchannel, from erosion of embankment soils, or (most likely) a combination of sources. Similarly, mussels from the pilings supporting the Levin Pier at Transect +2 had tissue burdens about twice those of 303.3 and Manson Ladder mussels, but the contribution of exposure from the Seep water versus the sediment hotspot cannot be easily distinguished.

3.2 Phase II Source Investigation

3.2.1 Soil and Sediment Chemistry

Results for dieldrin, total DDT, grain size, and TOC in embankment soil and channel sediment are summarized in Table 12. Total DDT concentrations by station are provided on the maps in Figures 14 and 15. Results for individual pesticides are provided in Appendix C.

The purpose of analyzing embankment soils was to determine whether DDT occurred only in the surface few inches ("veneer" of contaminant deposited on surface), or if it could be found at depth (residual contaminated upland soil). Results indicated that this depended on the sampling location. At the north end of the channel near the former train scale (Transect -35), the DDT concentration was about 9 times higher in the 0.5- to 1-ft depth interval (14 ppm) than in the surface 0- to 0.3-ft (1.6 ppm) depth interval (Table 12). In the vicinity of the 8-in. pipe protruding from the retaining wall (Transect -29), the DDT concentrations were similar in the surface and deeper intervals (68 ppm and 75 ppm), and slightly higher than the bank soil concentration from nearby Transect -32.5 (53.4 ppm, Phase I Source Investigation). Further south, around the Seep and areas of upland excavation (T-12.5, T-4.5), soil DDT concentrations did exhibit the "veneer" effect, with surface concentrations of 4 ppm to 13 ppm and <0.05 ppm below. However, under the north end of Levin Pier, embankment soils from T+2.25 were substantially more contaminated at depth (135 ppm), whereas the surface concentration of 3.5 ppm was similar to that at T-4.5 (3.8 ppm).

The diver-collected cores and vibracores near the north end of the Levin Pier were collected primarily to delineate the DDT hotspot identified during the Phase I Source Investigation. Although the highest Phase I concentration of 23,000 ppm (T+2.5 at the pier face) was not confirmed in Phase II, the core collected from that same location in 2003 did have the highest core sediment DDT concentration at 1161 ppm. Sediment total DDT concentrations decreased rapidly to the east under the pier, generally by three to four orders of magnitude within 40 ft, where soft sediment concentrations were similar to surface embankment soils (<6 ppm) (Figure 15). Sediment DDT concentrations also decreased relatively rapidly to the north and south, but remained in the 200-ppm range for 50 ft directly west of the Levin Pier (T+2.5), which is directly downslope from the hotspot.

Vibracores collected throughout the southern two thirds of Lauritzen Channel were intended to provide soft sediment distribution and DDT concentration data, primarily to fill spatial gaps in the 1999 data set, such as along the west edge of Lauritzen Channel. Vibracore data confirmed that a smaller hotspot of 156 ppm DDT appears on the west side of the channel across from the Levin Pier (Figure 14). There are no identified sources on the west side of the channel; it is more likely that contaminated

sediment is being suspended and redistributed in the channel by a combination of vessel disturbance (propeller wash) and normal tidal currents. Distribution of YBM and associated DDT concentration is discussed further in Section 3.2.2.

3.2.2 YBM and DDT Distribution

All studies conducted to date demonstrate that elevated DDT concentrations in Lauritzen Channel are associated with soft, silty YBM, and that OBM is not contaminated with DDT. The highly compacted, firm OBM acts as a barrier to downward contaminant transport in the sediment column, and thus represents the vertical extent of sediment contamination. Therefore, the distribution of YBM in the channel facilitates the evaluation of contaminant distribution. The thickness of YBM present was measured in all sediment cores collected during the 1999 Sediment Investigation, Phase I Source Investigation, and Phase II Source Investigation. YBM thickness data from all three studies were integrated to estimate the present distribution and volume of YBM in Lauritzen Channel as follows.

First, data from the 1999 study had to be reprojected in ArcView geographic information system (GIS) (v. 3.2, ESRI GIS and Mapping Software) to plot on the same base map and scale as the more recent data. Second, all three data sets were combined in ArcView and then exported to Surfer (v. 8, Golden Software). In Surfer, the kriging method of gridding and contouring the data was used. Kriging is a commonly used algorithm that tends to follow the data patterns more smoothly and creates less of a "bulls-eye" effect around the original data points than do other gridding methods. The grid area was set to include the boundaries of the shoreline file so that sediment thickness could be extrapolated to the shoreline. The resulting contour plot of sediment thickness in 1-cm (0.1-m) intervals is provided in Figure 16. The volume utility in Surfer was used to compute the volume of YBM based on the sediment thickness at each of the data points shown in Figure 16. The resulting total volume of YBM was estimated to be 18,950 cubic yards (cy). Almost half of the volume (9100 cy or 48%) resides in Levin Berths B and C immediately west of the pier. The berths represent only about one third of the area of Lauritzen Channel but they are where sediment is expected to accumulate because it is where the channel is deepest. Approximately 465 cy, or 2.5%, is beneath the Levin Pier.

Prior studies and the Phase II Source Investigation also demonstrated that the total DDT concentrations in nearly all YBM in Lauritzen Channel soft sediment exceeds the remediation goal of 0.59 ppm, and that several hotspots have concentrations five to six orders of magnitude higher. Sediment and embankment soil DDT concentrations for all studies are shown superimposed on the sediment thickness plots for all of Lauritzen Channel (Figure 17) and the hotspot area in east central Lauritzen Channel (Figure 18). The hotspots represent only 0.1% of the surface area, but nearly half of the area (48%) has YBM DDT concentrations between 10 and 100 ppm and another 43% of the area has YBM DDT concentrations between 1 and 10 ppm. Because both east and west sides of the channel are active facilities, vessel traffic is common, although at irregular intervals and with varying degree of activity. The vessels are often tugboats with powerful engines, maneuvering barges or larger vessels in the channel, which can resuspend and mix unconsolidated soft sediment. Resuspended sediment can be transported and deposited elsewhere in the channel or even out of the channel if resuspension occurs during a strong ebb current.

4.0 Discussion

Both water and mussel tissue chemistry results for 2003 show that DDT is still present above the remediation goal, and it is bioavailable and accumulated by resident biota. The Phase I and Phase II Source Investigations served to identify a broken concrete outfall, called the "Seep" in Year 6, below the riprap on the eastern shore about 180 ft north of the Levin Pier (Figure 8). The Phase II Source Investigation also confirmed and delineated the sediment hotspot beneath the north end of Levin Pier. The sediment hotspot, along with the Seep, is probably contributing to high tissue burdens of DDT in mussels collected from Transect +2 pilings. The highest concentrations of DDT were measured in water, sediment, and mussels sampled from the Seep pipe; high DDT in water samples taken approximately a year apart suggests that this Seep represents a persistent, if not continuous, source of DDT to the channel. Soon after draft 2003 data were provided to EPA, EPA took action to have the Seep pipe plugged and sealed when it was exposed at low tide (July 18, 2003). We recommend that the effectiveness of this action to reduce bioavailable DDT be monitored using mussels collected at the eight Year 6 monitoring locations. Once the potentially continuous source of dissolved DDT from the Seep is eliminated, the source of bioavailable DDT should be limited to sediment and embankment soils. The Phase II Source Investigation confirmed prior study results showing that DDT concentrations exceed the remediation goal of 0.59 ppm in nearly all the YBM in Lauritzen Channel. Continued monitoring would allow evaluation of the magnitude of the sediment/soil contribution until it is removed or otherwise remediated.

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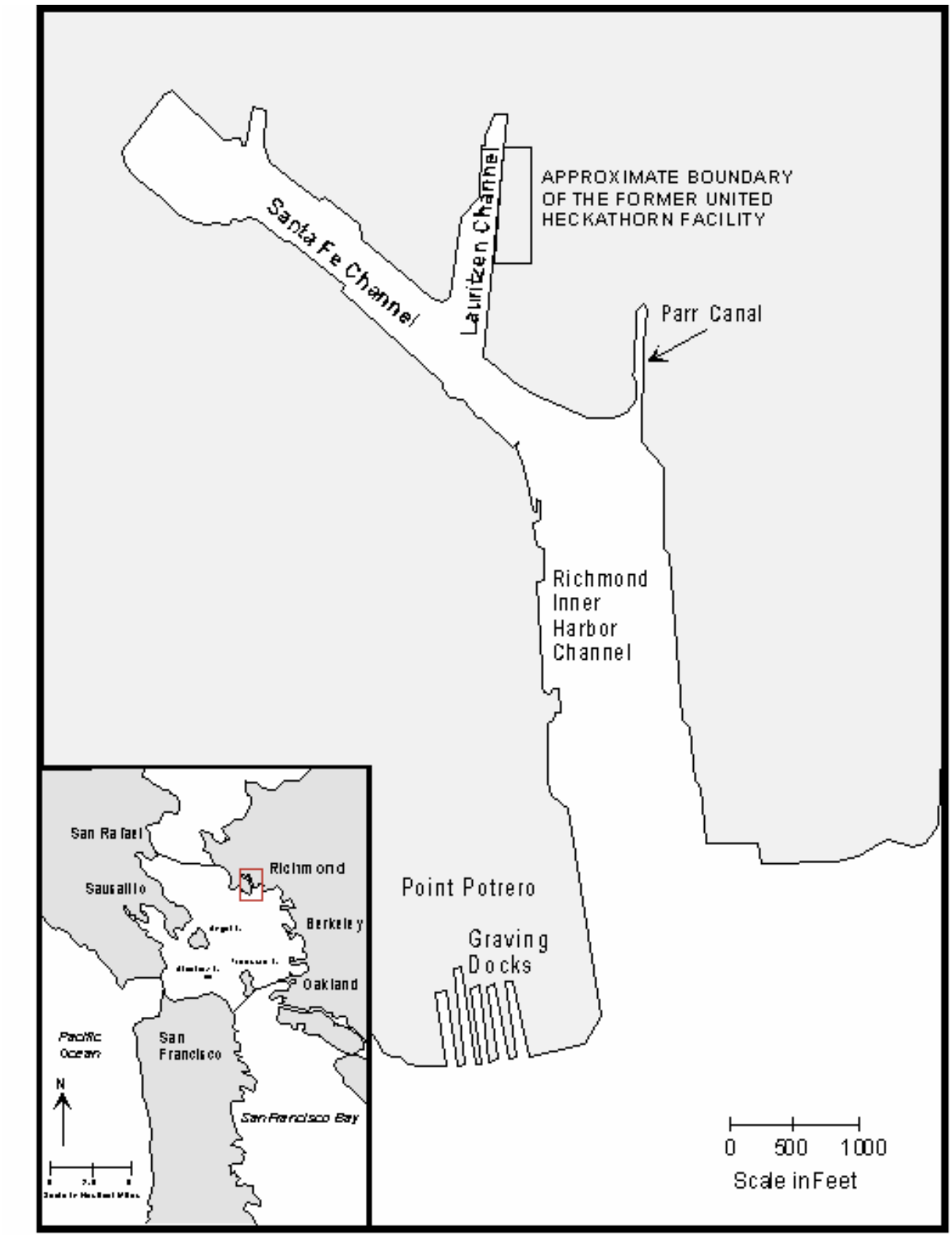

Figure 1. Location of the United Heckathorn Superfund Site, Richmond, California

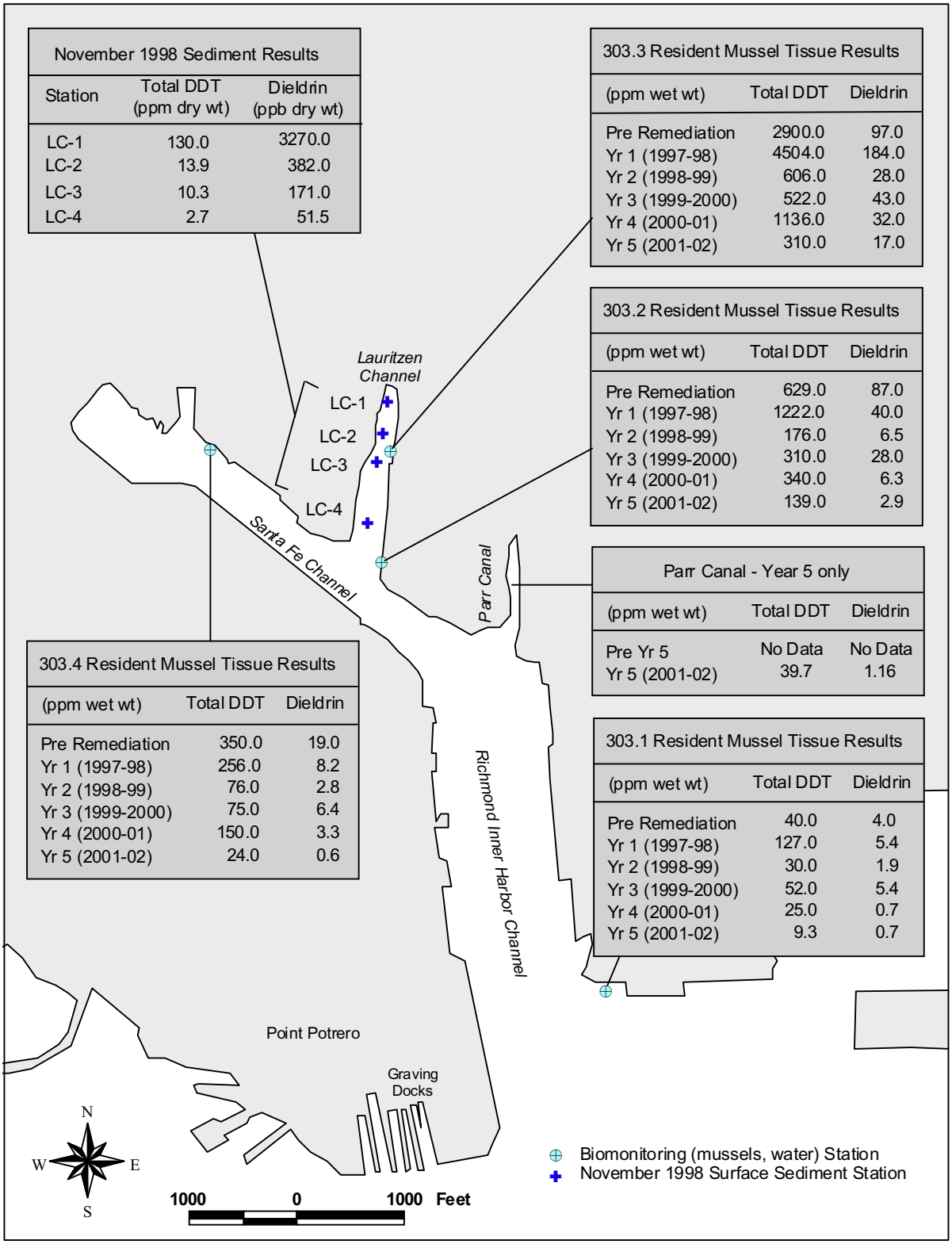

Figure 2. Five-Year Biomonitoring Results Summary, United Heckathorn Superfund Site

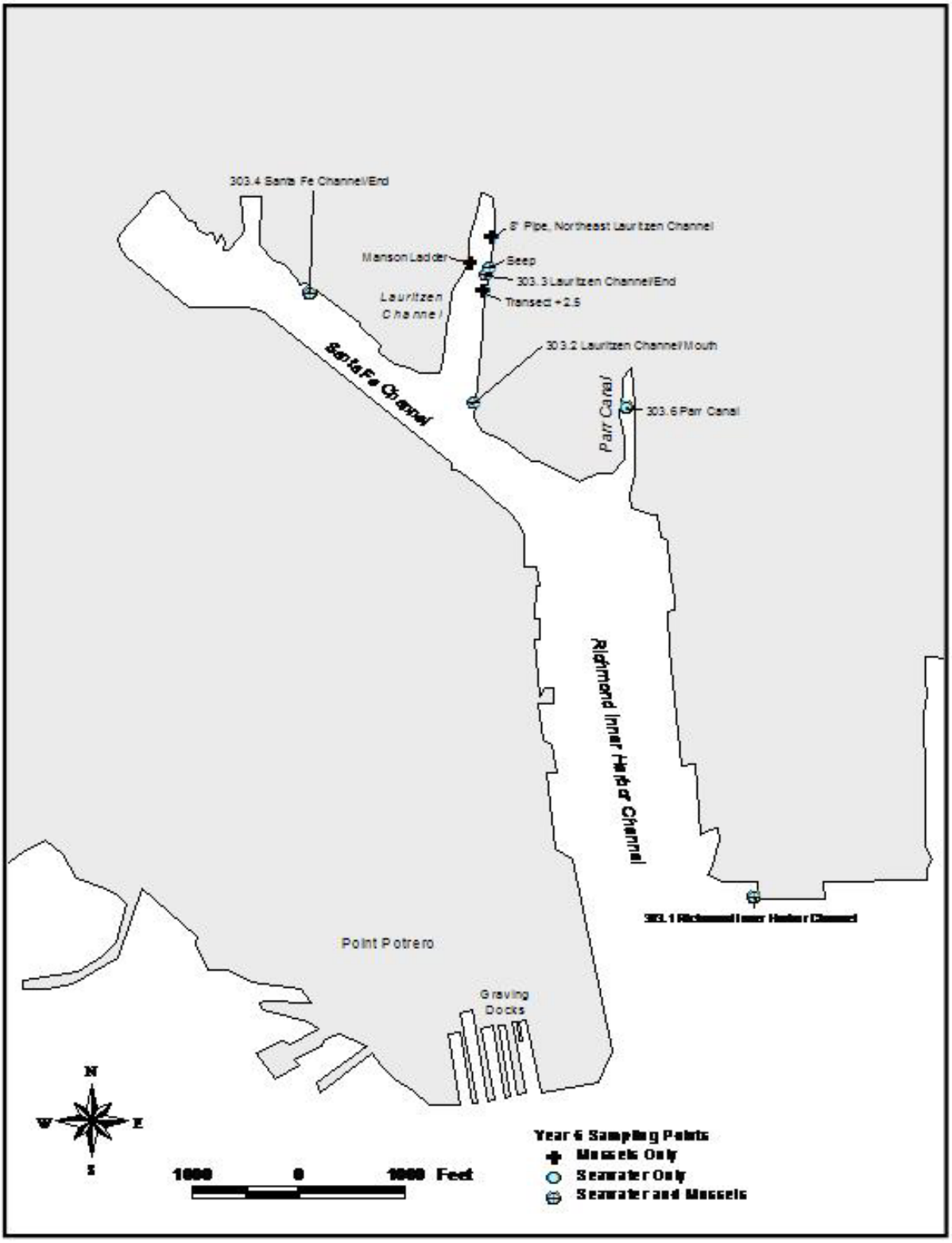

Figure 3. Locations for Year 6 (2003) Biomonitoring Sample Collection

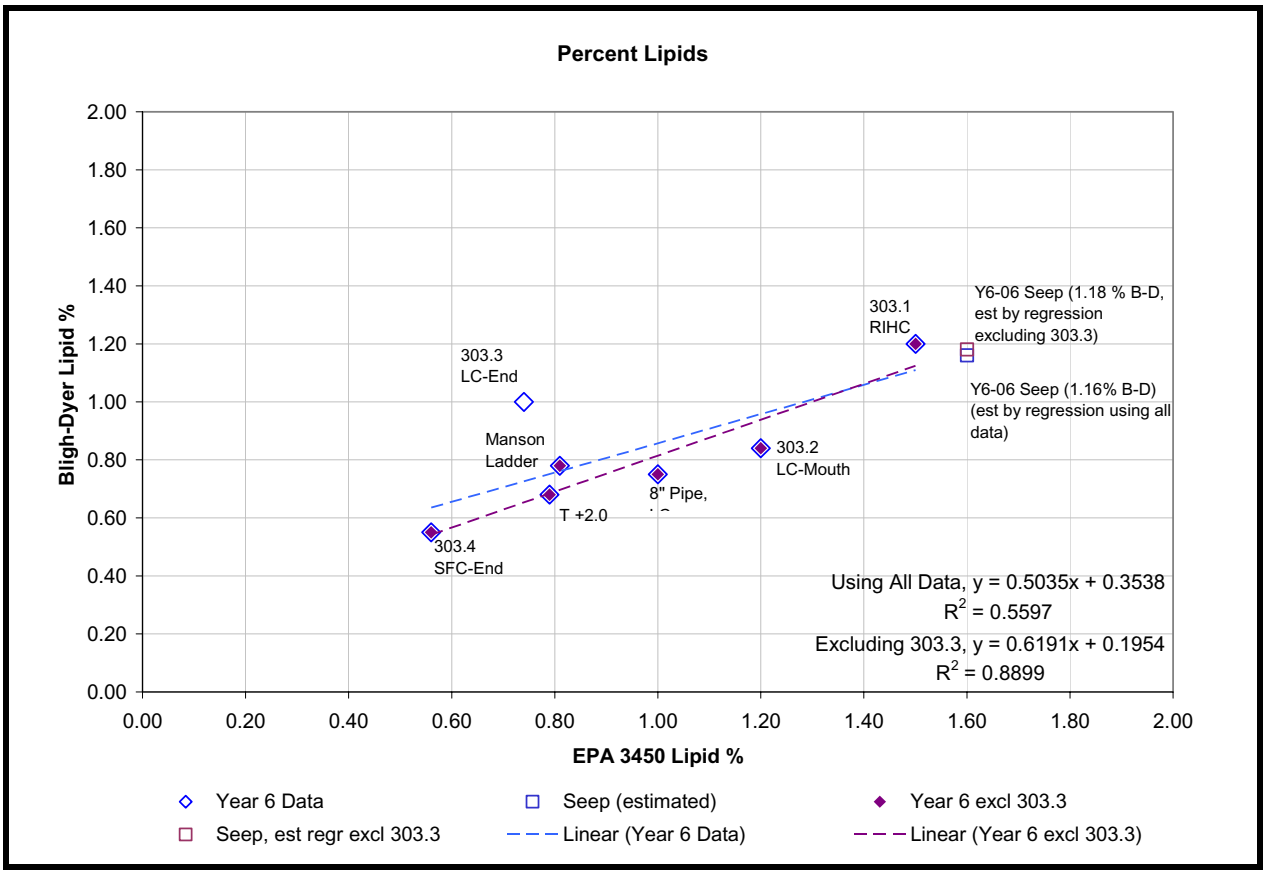

Figure 4. Relationship between Lipid Measurements by Bligh-Dyer and EPA 3450 Methods

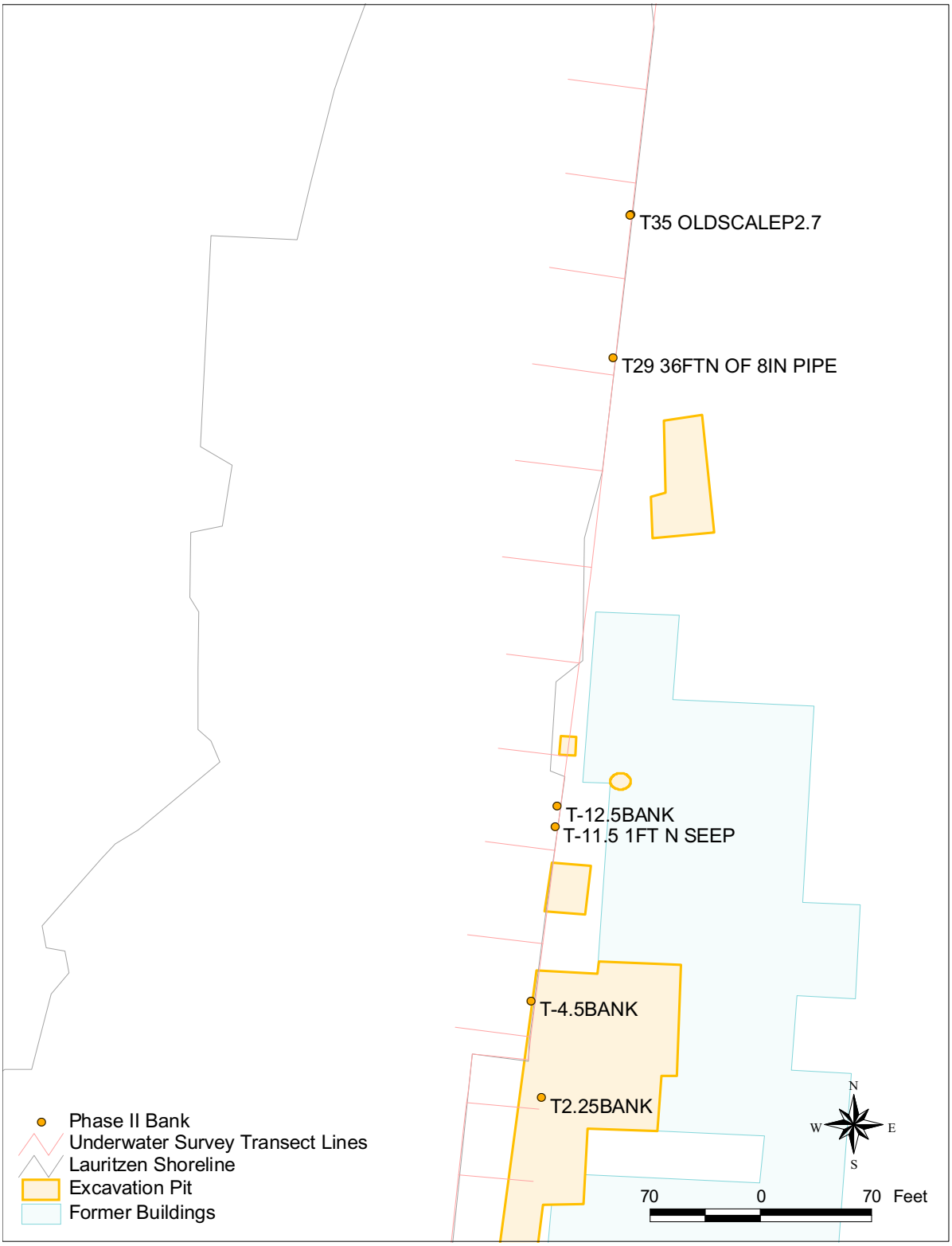

Figure 5. Embankment Soil Sampling Locations, Phase II Source Investigation

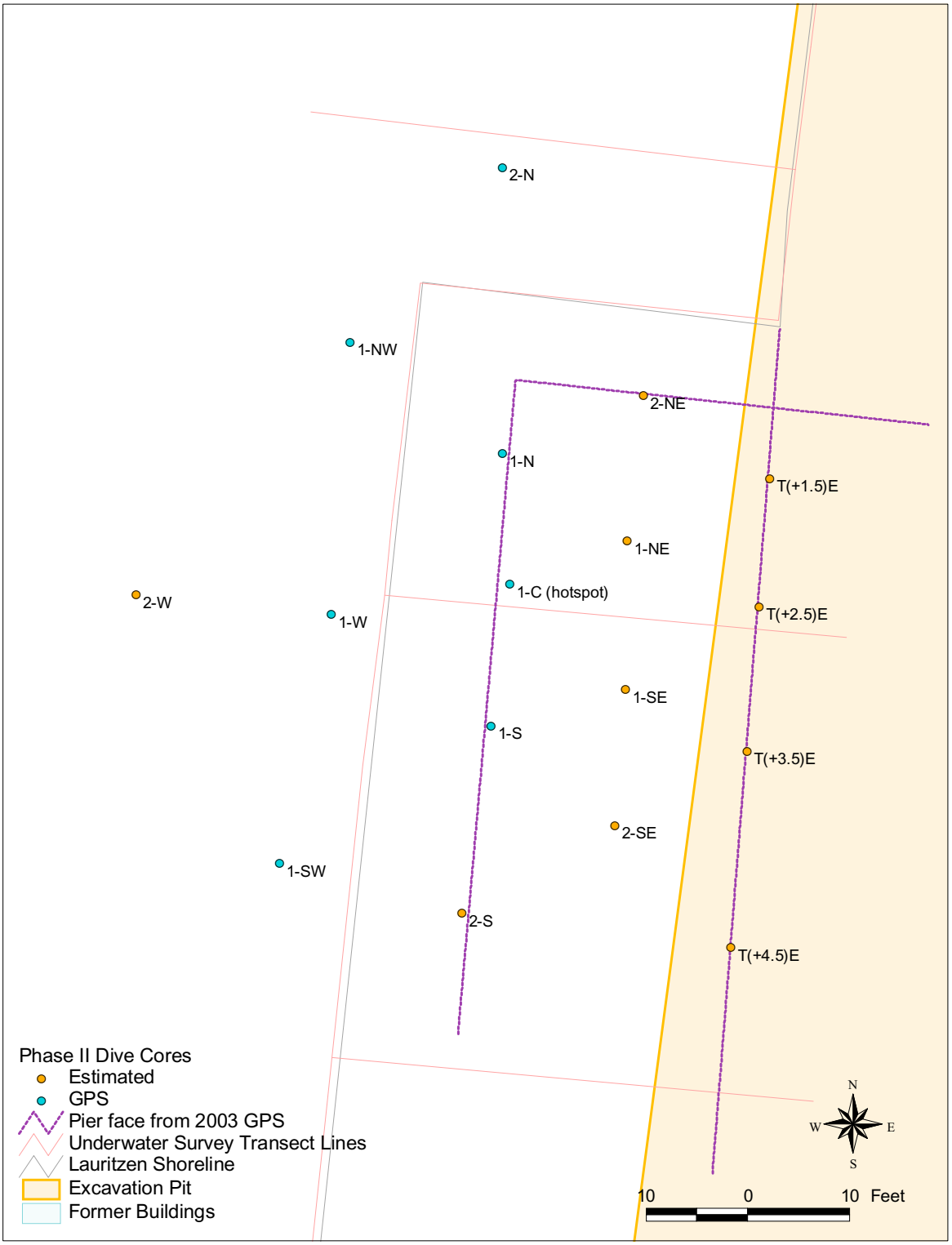

Figure 6. Diver-Collected Core Sampling Locations for Hotspot Delineation, Phase II Source Investigation

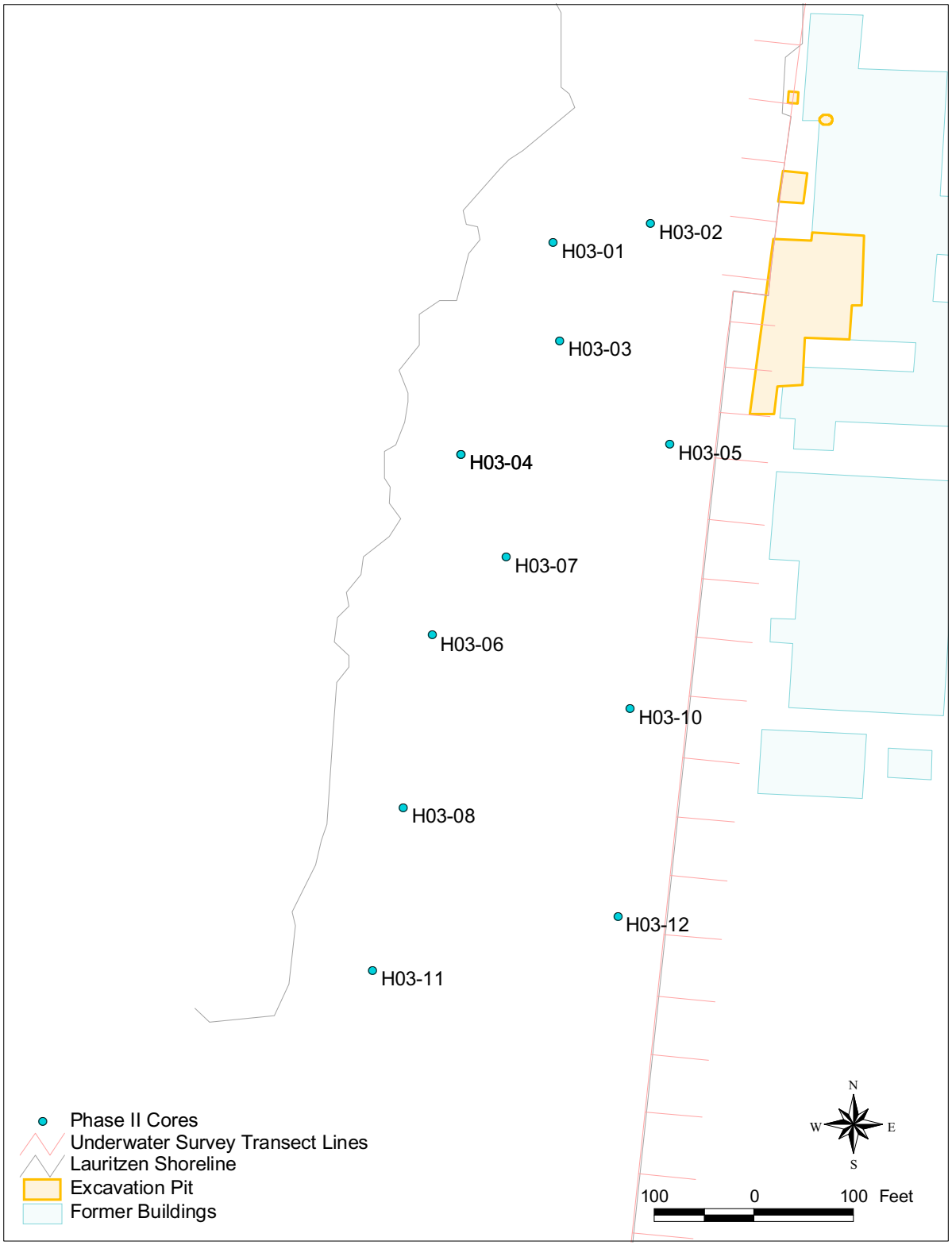

Figure 7. Vibracore Sampling Locations in Lauritzen Channel, Phase II Source Investigation

Figure 8. Embankment Soil Sampling (clockwise from left: sample collector with soil auger at T(-35), sample collection at T(-12.5), the Seep pipe at low tide 1230 on May 20, 2003)

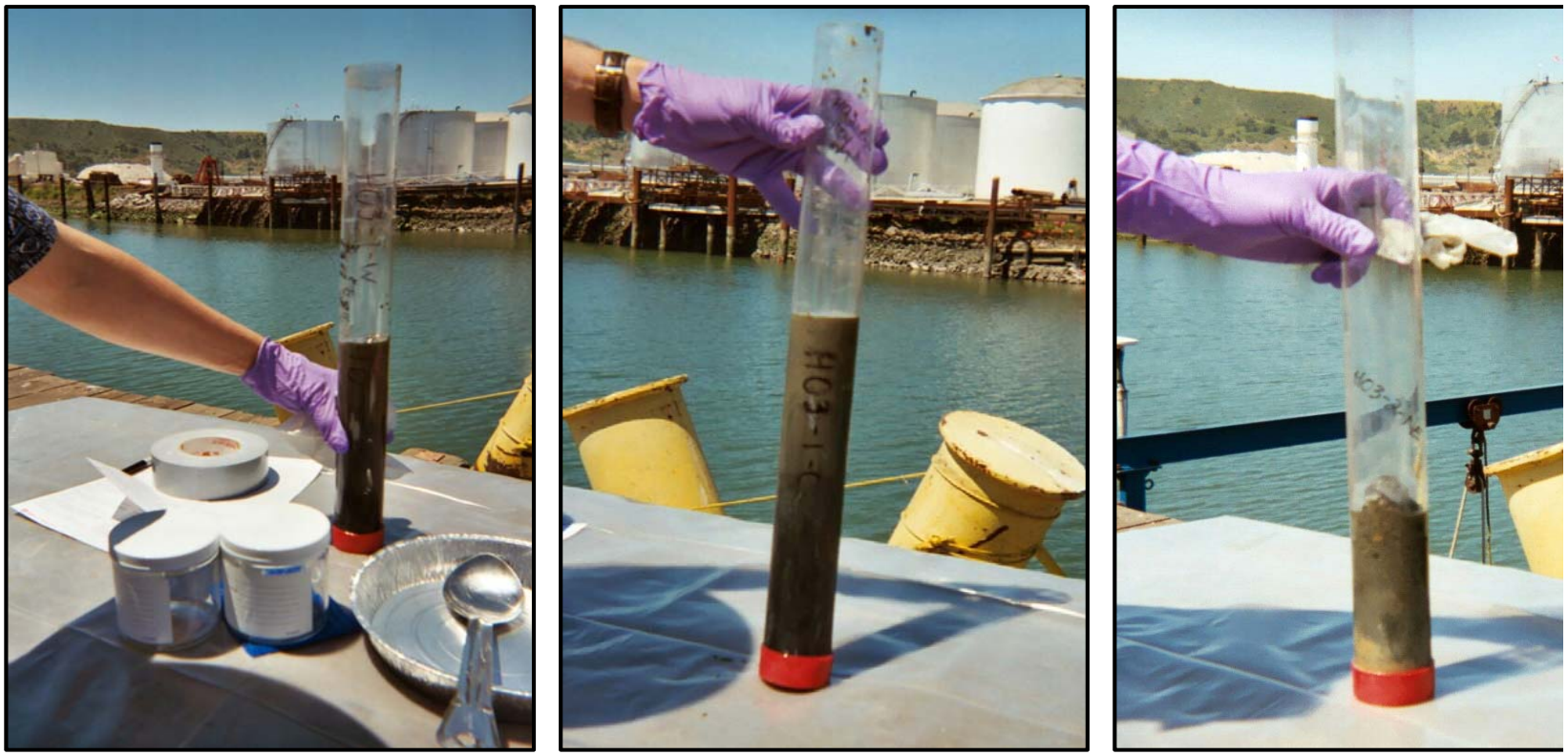

Figure 9. Representative Diver-Collected Cores: left, H03-1-W with sample preparation utensils and sample containers; center, Hotspot H03-1-C; right, H03-2-NE with Older Bay Mud visible at bottom

Figure 10. Vibracore Sampling at Station H03-11, Mouth of Lauritzen Channel

Figure 11. Representative Vibracores Split for Processing, clockwise from upper left: H03-05 with grayish green clay OBM, H03-07 "classic" profile of dark gray silty YBM over highly consolidated brown clay OBM, H03-04 entire core, H03-04 close up of sand layer between 18.5 and 23 inches down core

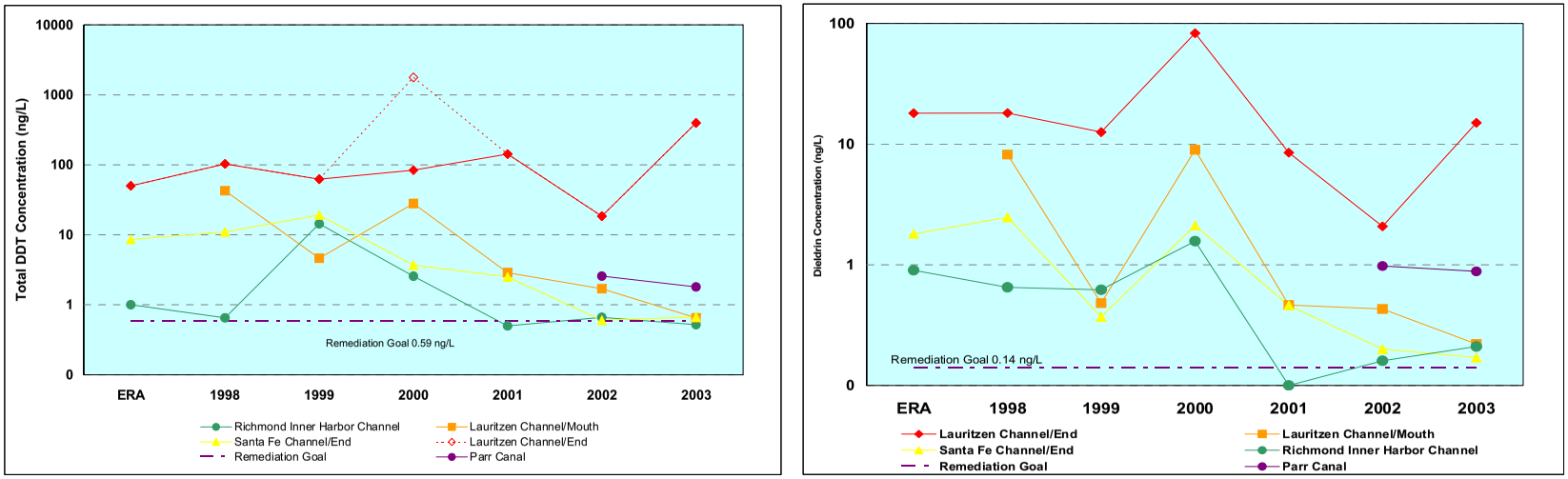

Figure 12. Total (a) DDT and (b) Dieldrin in Water (ng/L, total Fraction), Pre-Remediation Through 2003

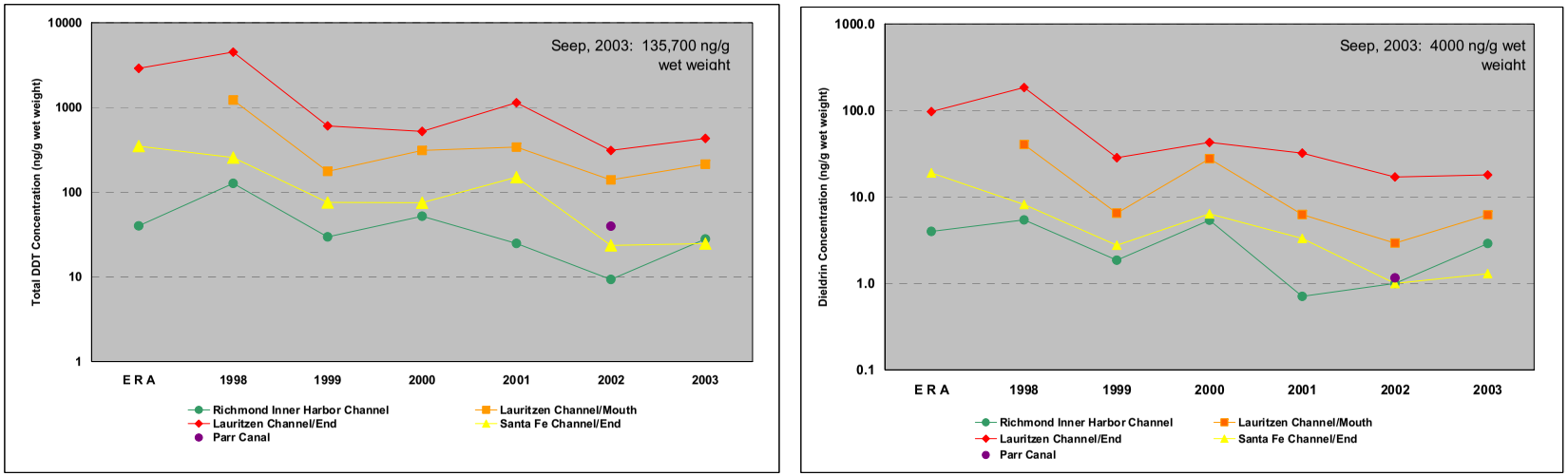

Figure 13. Total (a) DDT and (b) Dieldrin in Mussel Tissue (ng/g wet weight), Pre-Remediation Through 2003

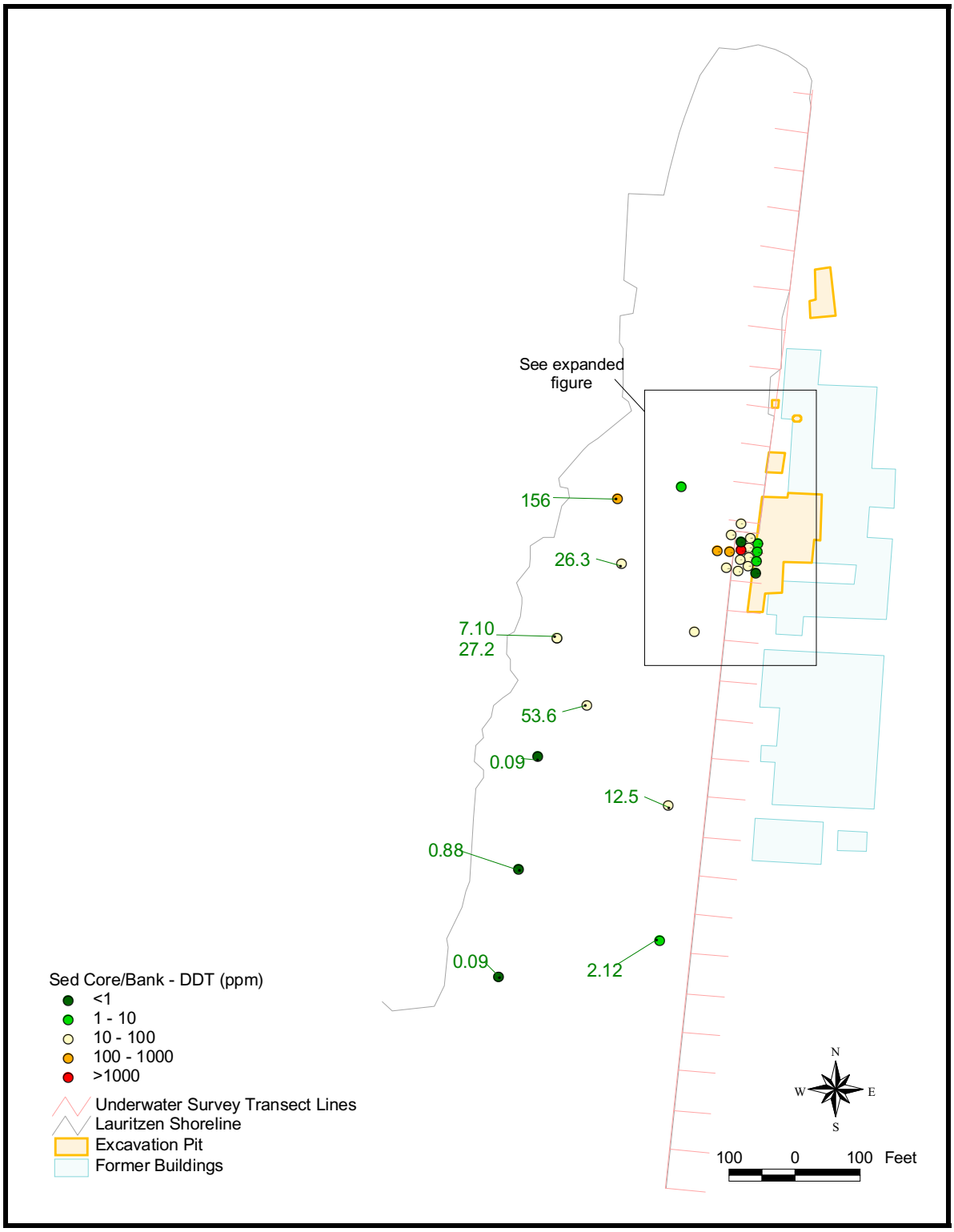

Figure 14. Sediment DDT in Lauritzen Channel Younger Bay Mud, Phase II Source Investigation (2003)

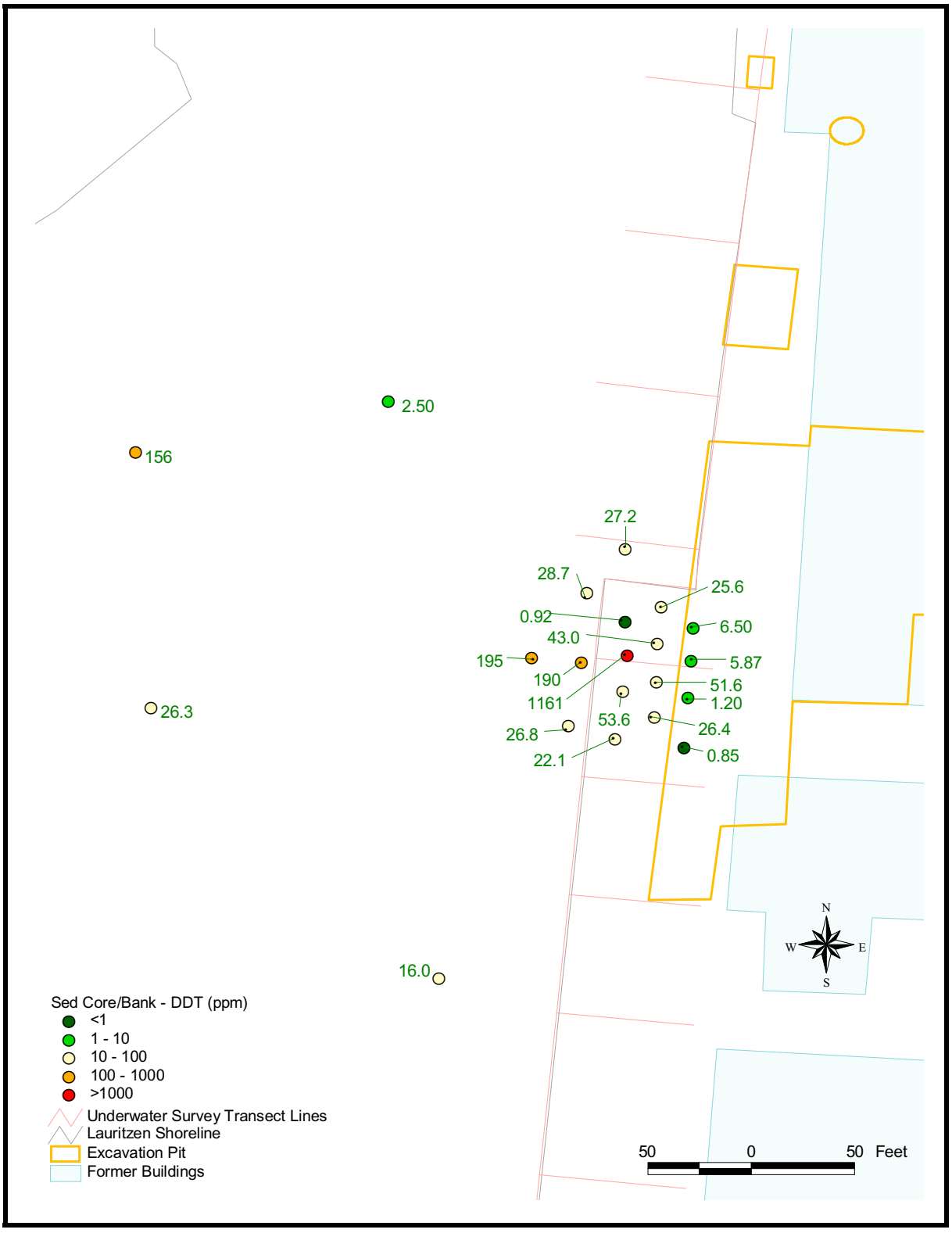

Figure 15. Sediment DDT in Hotspot Delineation Area, Phase II Source Investigation (2003)

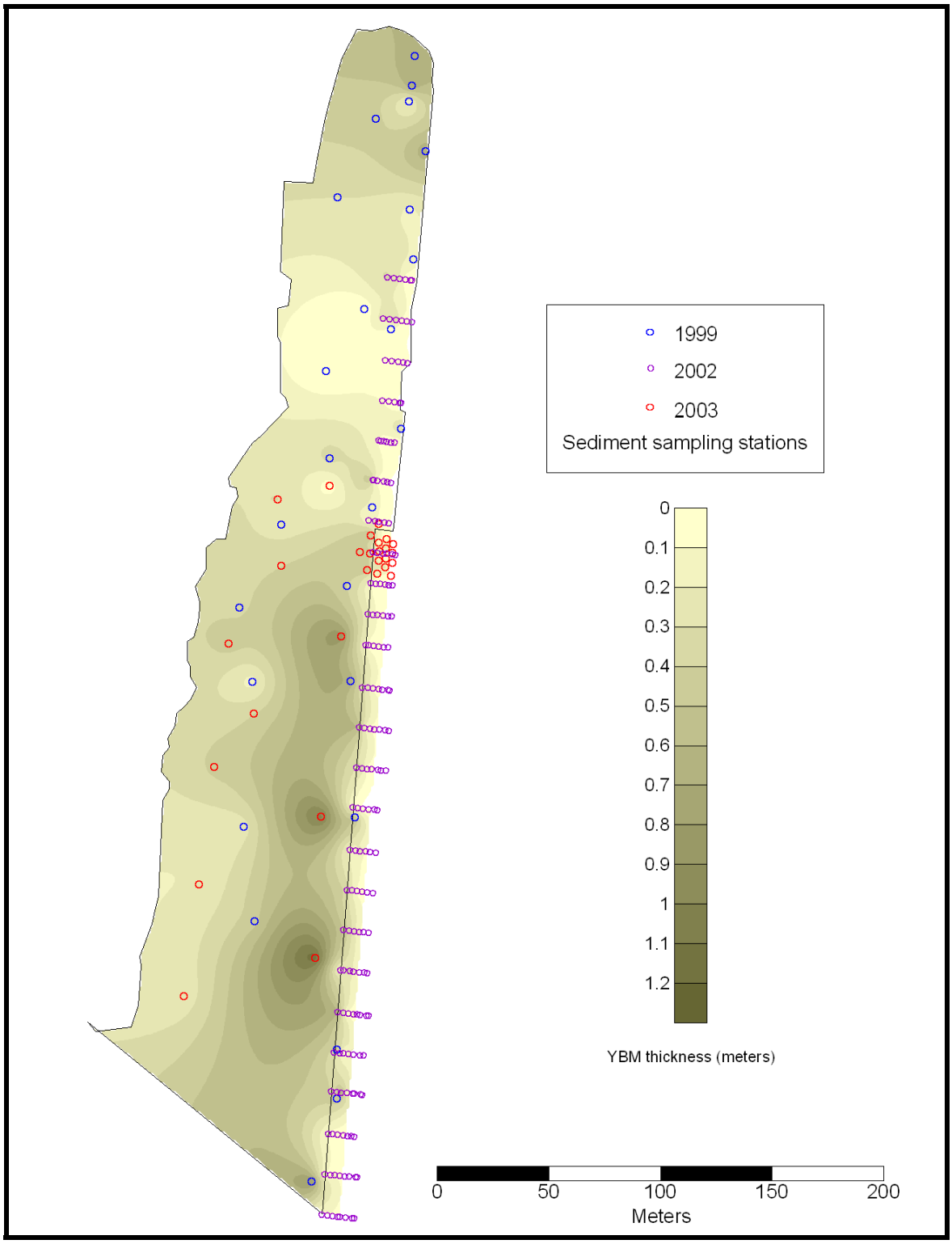

Figure 16. Plot of Sediment Thickness using 1999 Sediment Investigation Data, Phase I Under-Pier Survey Data, and Phase II Diver-Collected and Vibracore Data

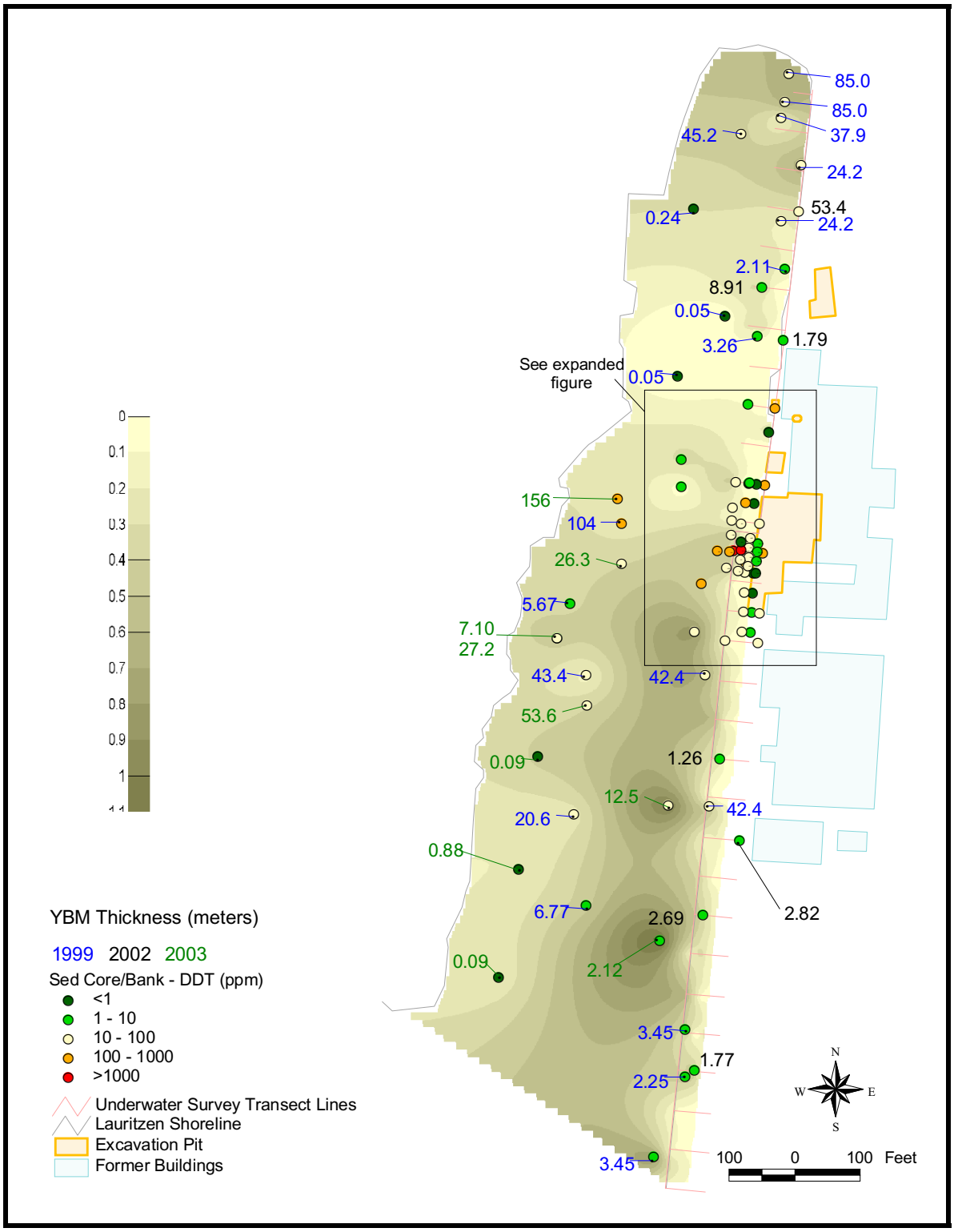

Figure 17. Sediment DDT Concentrations (1999, 2002, 2003) and YBM Thickness in Lauritzen Channel

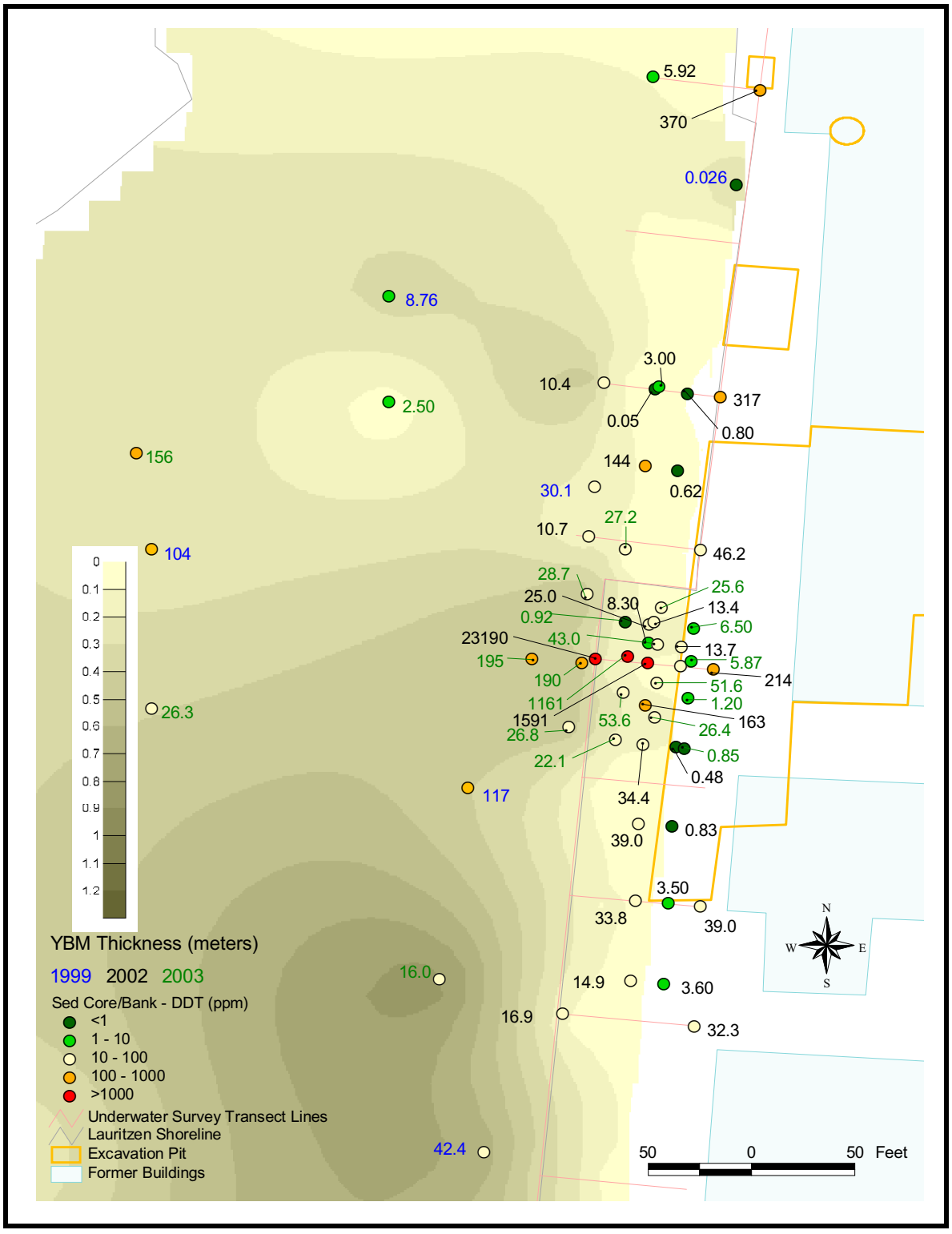

Figure 18. Sediment DDT Concentrations (1999, 2002, 2003) and YBM Thickness in East Central Lauritzen Channel

Table 1. Sampling Stations for Year 6 (2003) Post-remediation Monitoring of the United Heckathorn Site

Station Number	Station Name	Sample Types Collected	Location	Remarks
303.1	Richmond Inner Harbor Channel	Seawater, mussels	37º54' 32.869" N 122º21' 33.523" W	On western most wooden dolphin, near abandoned Ford automotive plant, southeast of public fishing pier.
303.2	Lauritzen Channel/ Mouth (South)	Seawater, mussels	37º55' 12.236" N 122º22' 01.298" W	On east side of canal, on pilings beneath the Levin Dock near the northern end of a large fender structure.
303.3	Lauritzen Channel/ End (North)	Seawater, mussels	37º55' 22.415" N 122º21′ 59.980" W	On east side of canal, southern end of small wooden pier that extends out into the channel.
303.4	Santa Fe Channel/End	Seawater, mussels	37º55' 21.081" N 122º22' 17.694" W	At northwest corner of floating boat shed, east of small boat fuel dock
303.6	Parr Canal	Seawater[(a)]	37º55' 11.817" N 122º21' 45.996" W	
	8" Pipe, Northeast Lauritzen Channel	Mussels	37º 55' 25.349" N 122º 21' 59.383" W	Mussels collected from nearby pilings
	Manson Ladder	Mussels	37º 55' 23.332" N 122º 22' 01.646" W	
	Seep	Seawater, mussels	37º 55' 22.99" N 122º 21' 59.66" W	
	Transect +2.5	Mussels	37º 55' 21.156" N 122º 22' 00.241" W	Mussels collected from pilings under north end of Levin Pier

(a) Mussels were not collected in Parr Canal. As noted in Appendix A, mussels were not plentiful, possibly due to poor substrate or lower salinity.

Table 2. Embankment Soil Sample Collection Information

Station ID	Date	Time	Station Description	Station Position (Latitude Longitude)	Depth Interval (ft)	Sediment Description	Chemistry Sample ID
T(-35) old scale	05/20/03	10:48	base of vertical wall	37° 55' 26.69108" N 122° 21' 59.05878" W	0-0.3	dark gray (brown at surface), mostly sand, silty sand, some shell debris	Heck03-001
T(-35) old scale	05/20/03	10:48	base of vertical wall	37° 55' 26.69108" N 122° 21' 59.05878" W	0.5-1	med-coarse sand, mixed w/gravel & mud, brown-dark gray	Heck03-002
T(-29) 36 ft N of 8" pipe	05/20/03	11:08	intersection of piling row & vertical wall, base of vertical wall	37° 55' 25.81612" N 122° 21' 59.19472" W	0-0.5	very gravely at surface	Heck03-004
T(-29) 36 ft N of 8" pipe	05/20/03	11:08	intersection of piling row & vertical wall, base of vertical wall	37° 55' 25.81612" N 122° 21' 59.19472" W	0.5-1	gravely muddy sand w/organic odor, brown @ surface, greenish gray at depth	Heck03-003
T(-12.5) Bank	05/20/03	11:40	slippery bank at base of vertical wall, armored above tide mark, clayey below	37° 55' 23.02334" N 122° 21' 59.53023" W	0-0.2	sticky clay/silt w/gravel and organic debris, high pasticity clay	Heck03-006
T(-12.5) Bank	05/20/03	11:40	slipperybank at base of vertical wall, armored above tide mark, clayey below	37° 55' 23.02334" N 122° 21' 59.53023" W	0.5-1	very firm, sticky clay, dark gray, H2S odor	Heck03-005
T(-11.5) Seep 1-ft N	05/20/03	12:00	1 ft north of seep (clay pipe outfall)	37° 55' 22.90342" N 122° 21' 58.53047" W	0-0.2	sticky gray clay w/organic matter	Heck03-007
T(-11.5) Seep 1-ft N	05/20/03	12:00	1 ft north of seep (clay pipe outfall)	37° 55' 22.90342" N 122° 21' 58.53047" W	0.5-1	silty clay matrix, lots of brown organic matter, H2S odor	Heck03-008
T(-11.5) Seep 1-ft N	05/20/03	12:00	1 ft north of seep (clay pipe outfall)	37° 55' 22.90342" N 122° 21' 58.53047" W	NA	soupy brown sandy silt/clay collected from about 1 ft up seep pipe	Heck03-009
T(-4.5) Bank	05/20/03	12:40	base of large cobbles & riprap below gravel veneer	37° 55' 21.83195" N 122° 21' 59.71644" W	0-0.2	gray sandy silt-clay brown organic matter throughout, no odor	Heck03-011
T(-4.5) Bank	05/20/03	12:40	base of large cobbles & riprap below gravel veneer	37° 55' 21.83195" N 122° 21' 59.71644" W	0.5-1	dark gray sandy silty clay	Heck03-010
T(+2.25) Bank	05/20/03	13:13	on slope just below geotextile, about 8 ft horizontal distance from vertical wall	37° 55' 21.19563" N 122° 21' 59.82675" W	0-0.2	dark gray clay	Heck03-012
T(+2.25) Bank	05/20/03	13:13	on slope just below geotextile, about 8 ft horizontal distance from vertical wall	37° 55' 21.19563" N 122° 21' 59.82675" W	0.5-1	dark gray clay	Heck03-013

Table 3. Diver-Collected Core Sampling Information

Station ID	Date	Time	Uncorrected Water Depth (ft)	Sampler	Core Diameter (in)	Penetration Depth (cm)	Description and Comments
H03-1N	05/21/03	10:45	23.2	Push Core	2	12	
H03-2NE	05/21/03	10:50	17.2	Push Core	2	15	Steep clay, gravelly
H03-2N	05/21/03	11:00	23.7	Push Core	2	27	Rocky, steep
H03-1NW	05/21/03	11:20	29.5	Push Core	2	52	Soft bottom, full penetration, can feel debris around on bottom, hard spot at bottom of tube trying to retain
H03-1C (Hotspot)	05/21/03	11:24	23.0	Push Core	3.5	30	Steep soft cobbly, penetrated fully but only ~1/2 retained
H03-1NE	05/21/03	11:27	11.2	Push Core	2	23	Under pier, very steep and gravelly
H03-1W	05/21/03	12:39	32.3	Push Core	2	45	12-ft barge width from pier face; full penetration but retrieved ~30 cm, flat bottom, soft, no rocks, no shells
H03-2W	05/21/03	12:43	34.9	Push Core	2	45	15 ft out (W) of H03-1W. Very soft, very flat, no rocks, total penetration, hard spot at ~ 14", zero visibility
H03-1S	05/21/03	12:47	23.3	Push Core	2	15	Face of pier between T+3 & T+4. Sloping, rocky, looking for soft spot between rocks, moved out ~3 ft deeper to get soft spot, penetration ~6"
H03-1SE	05/21/03	12:52	11.0	Push Core	2	~10	Sloping, rocky, very uneven, looks like light brown clay plug collected
H03-1SW	05/21/03	13:00	32.1	Push Core	2	45	Approx. 12 ft off pier face between T +4 and T+5. Core retained, rocky, uneven, no visibility, but soft spots between rocks, gravelly, penetrating through rocks ~16", but soft throughout
H03-2S	05/21/03	13:04	23.1	Push Core	2	12	steep, very rocky, big rocks, looking for soft spot, forcing core through rocks, soft to ~14", ~30% slope
H03-2SE	05/21/03	13:10	11.3	Push Core	2	23	Right against T+4, halfway between pier face and back slope. Very uneven, big rocks, steep slope, very rocky, trying to find soft spot, penetrating between rocks
H03-T(+4.5)E	05/21/03	14:08	6.3	Push Core	2	27	Embankment just below riprap; very steep sloping, clay like at top, hard clay, moving down slope to deeper, ~1 ft penetration, estimated 5 ft water
H03-T(+3.5)E	05/21/03	14:16	4.9	Push Core	2	15	Clay embankment below low tide; rocky steep, hard clay
H03-T(+2.5)E	05/21/03	14:20	6.6	Push Core	2	21	Embankment, sub tidal, between T+2 & T+3; steep clay bank, uniform slope, slightly rocky, shells, some rocks
H03-T(+1.5)E	05/21/03	14:26	6.3	Push Core	2	30	hard clay surface semi rocky, clay wall at 5 ft, steep, moving slightly deeper to find soft spot, soft spot between very hard clay

Table 4. Vibracore Sampling Information

Station ID	Date	Time	Latitude (dd mm.mmm)	Longitude (dd mm.mmm)	Uncorrected Water Depth (ft)	Core Recovered (ft)	Comments
H03-01	05/22/03	14:57	37º 55.3661	122º 22.0340	22.6	3.2	~4m S of target, sample time 1504, gray YBM and brown OBM on outside of barrel, ~2 ft YBM on ~1 ft OBM
H03-02	05/22/03	14:22	37º 55.3693	122º 22.0180	30.5	~0.3	Took 2 attempts. Sample time 1426, small bit of soft sediment 1-1.5" on plug of stiff gray clay OBM
H03-03	05/22/03	15:47	37º 55.3500	122º 22.0330	25.6	2.8	sample time 1551, gray YBM & brown OBM on outside of barrel, 2.8' retained
H03-04	05/22/03	16:17	37º 55.3313	122º 22.0493	21.0	3.6	sample time 1623
H03-05	05/22/03	13:44	37º 55.3329	122º 22.0148	37.8	3.9	sample collected at 1352, 47" (3.9') total collected, all YBM except 1-2" gray clay plug
H03-06	05/22/03	10:05	37º 55.3014	122º 22.0540	13.0	3.8	firm OBM plug in catcher (brown), sample collected 1010, gray sandy clay, picked up by AL & NB at 1043
H03-07	05/22/03	16:40	37º 55.3143	122º 22.0418	27.5	3.2	sample time 1645
H03-08	05/22/03	10:44	37º 55.2730	122º 22.0588	15.9	2.0	sample collected at 1050, sticky brown clay on barrel, steep slope, uneven feeling, gravelly top, ~1 ft gray sand on brown stiff OBM clay
H03-10	05/22/03	12:29	37º 55.2893	122º 22.0213	37.3	4.0	hit hard clay ~4.5 ft, hard gray plug at bottom
H03-11	05/22/03	11:26	37º 55.2461	122º 22.0638	19.0	2.1	difficult anchoring, wind & hard bottom, sample time 1131
H03-12	05/22/03	11:57	37º 55.2551	122º 22.0234	37.3	4.0	sample time 1203, penetrated 3.5 ft to hard clay, no plug, but OBM would be at bottom of core

Table 5. Chemistry Subsamples Prepared from Cores

Station ID	Total Core Length (ft)	Depth Interval (ft)	Sediment Description	Chemistry Sample ID	Aliquots	Comments
Diver-Collected Cores						
H03-T(+1.5)-E	1.0	0-0.2 0.2-1	muddy sand, olive green, loose (YBM) sandy mud, brown, stiff, compact (OBM), mostly clay (plastic)	Heck03-037	Pest, GS/TOC	steep clay bank, sampled from soft spot in clay, photo in liner, composited in pie plate
H03-T(+2.5)-E	0.7	0-0.2 0.2-0.7	olive brown, loose, muddy sand (YBM) sand mud, olive gray, compact (OBM)	Heck03-036	Pest, GS/TOC	hard clay from uniform slope, some rock/gravel, shell hash cover, photo in liner, composited in pie plate
H03-T(+3.5)-E	0.5	0-0.25 0.25-0.5	dark gray, muddy sand (YBM) gray sandy mud, compact, stiff (OBM)	Heck03-035	Pest, GS/TOC	steep clay bank, composited in pie plate, photo in liner
H03-T(+4.5)-E	0.9	0-0.1 0.1-0.9	muddy sand, dark gray (YBM) sandy mud, brown, compact (OBM)	Heck03-034	Pest, GS/TOC	from steep clay bank, all composited together in pie plate, photo in liner
H03-2-SE	0.75	0-0.75	muddy sand, finer at top, poorly sorted, fine to coarse sand, a few pebbles, pile worms, dark gray (YBM), a few gray blobs possibly from OBM below	Heck03-033	Pest, GS/TOC	composited in pie plate, photo in liner
H03-1-SE	0.5	0-0.25 0.25-0.5	muddy sand, dark gray, loose (YBM) muddy sand, brown, compact, mottled (OBM)	Heck03-030	Pest, GS/TOC	sloping rocky, uneven bottom, little penetration, all composited together in pie plate, photo in liner
H03-2-S	0.4	0-0.4	muddy sand, pebbly, louse, dark gray (YBM)	Heck03-032	Pest, GS/TOC	composited in pie plate, photo in liner
H03-1-SW	1.5	0-1.5	muddy sand, dark gray, loose, poorly sorted (YBM)	Heck03-031	Pest, GS/TOC	rocky, uneven bottom, sampled soft sediment between rocks, composited in pie plate, photo in liner
H03-2-W	1.5	0-1.5	muddy sand, dark gray, loose, poorly sorted (YBM)	Heck03-028	Pest, GS/TOC	sample all composited in pie plate, photo in liner
H03-1-S	0.6	0-0.6	pebbly muddy sand, loose, dark gray (YBM)	Heck03-029	Pest, GS/TOC	sloping, rocky, sampled from soft spot between rocks 2-3 ft from pier, no photo, extruded too soon, composited in pie plate
H03-1-W	1.5	0-1.5	muddy sand, dark gray, loose (YBM), shell fragments, poorly sorted, somewhat sticky	Heck03-027	Pest, GS/TOC	soft all the way, flat bottom, no rocks or debris, composited in pie plate, photo in liner
H03-1-N	0.4	0-0.1 0.1-0.4	dark gray, muddy sand, loose (YBM) brown muddy fine sand, compact (OBM)	Heck03-017	Pest, GS/TOC	entire interval (core?) composited in pie plate and then collected into sample jars, photo taken in liner

Table 5. (contd)

Station ID	Total Core Length (ft)	Depth Interval (ft)	Sediment Description	Chemistry Sample ID	Aliquots	Comments
Diver-Collected Cores (contd)						
H03-2-NE	0.5	0-0.25	muddy sand, dark gray (YBM), loose, poorly sorted	Heck03-022	Pest, GS/TOC	sample composited from upper dark gray interval only - brown material excluded, photo taken in liner
		0.25-0.5	muddy fine sand, brown, compact, well sorted (OBM)	NA	NA	
H03-2-N	0.9	0-0.9	pebbly muddy sand, dark gray, loose, worms, shell fragments (OBM)	Heck03-023	Pest, GS/TOC	entire interval composited in pie plate before aliquot distribution, photo taken in liner
H03-1-NW	1.7	0-1.7	muddy sand, dark gray, loose, brownish at top (YBM)	Heck03-024	Pest, GS/TOC	liner full 2 ft 4 in, cake batter consistency, composited in pie plate
H03-1-C	1.0	0-1.0	muddy sand, dark gray, loose, pebbles (YBM), poorly sorted	Heck03-025	Pest, GS/TOC	all sample composited in pie plate, photo taken in liner
H03-1-NE	0.75	0-0.75	pebbly, muddy fine to coarse sand, poorly sorted, loose, dark gray(YBM)	Heck03-026	Pest, GS/TOC	all composited in pie plate, photo in liner
Vibracores						
H03-06	3.7	0-0.3	sand, gravel	Heck03-014	Pest, GS/TOC	Heck03-014 composite of top 17 in (1.42 ft), photo may show duct tape indicating H03-11, but sample station 11 is actually H03-06
		0.3-1.4	dark gray YBM, oily layer in YBM 8-10 inches	Heck03-014	Pest, GS/TOC	
		1.4-1.7	coarse sand	NA	NA	
		1.7-3.7	OBM, tan, stiff, firm clay	NA	NA	
H03-08	2.2	0-0.7	gravel, gray clay, sand light gray and tan	Heck03-015	Pest, GS/TOC	
		0.7-2.2	light tan, sandy OBM	NA	NA	
H03-011	2.4	0-0.7	YBM, gray/olive gray with sand/gravel at top	Heck03-016	Pest, GS/TOC	
		0.7-1.0	consolidated tan clay	NA	NA	
		1.0-1.3	softer, sand (tan) clay layer	NA	NA	
		1.3-2.4	light brown OBM, sandy clay	NA	NA	
H03-012	3.8	0-3.8	all black silty clay YBM	Heck03-038	Pest, GS/TOC	composite across entire core, field personnel noted stand of OBM at end of core but were not able to keep
H03-010	4.3	0-2.3	black YBM			
		2.6-2.6	fine sand and black	Heck03-039	Pest, GS/TOC	composite 0-41 in (3.42 ft)
		2.6-3.4	black YBM			
		3.4-4.2	black OBM clay, dry, crumbly	NA	NA	

Table 5. (contd)

Station ID	Total Core Length (ft)	Depth Interval (ft)	Sediment Description	Chemistry Sample ID	Aliquots	Comments
Vibracores (contd)						
H03-05	4.0	0-2.0	black YBM clay, soft			
		2-2.3	olive green sand	Heck03-043	Pest, GS/TOC	composite 0-34 in (2.83 ft)
		2.3-2.8	YBM black			
		2.8-4.0	OBM gray clay, dry crumbly	NA	NA	
H03-02	0.3	0-0.1	YBM, black, gravel	Heck03-040	Pest, GS/TOC	
		0.1-0.3	OBM, dark gray, plastic	NA	NA	
H03-01	3.3	0-1.0	black YBM, fine silt clay smooth, some worms	Heck03-044	Pest, GS/TOC	
		1.0-2.2	tan OBM with sand, stiff clay with rust colored sand	NA	NA	
		2.2-3.33	tan OBM more clay, stiffer, denser	NA	NA	
H03-03	3.0	0-0.8	YBM, gravel at top, silty clay, smooth, black sticky	Heck03-045	Pest, GS/TOC	
		0.8-1.3	YBM, black silty clay with some sandy texture			
		1.3-1.7	OBM gray clay	NA	NA	
		1.7-2.0	OBM brown	NA	NA	
		2.0-2.5	sand mixed with clay reddish brown	NA	NA	
		2.5-2.8	OBM brown stiff smooth clay	NA	NA	
		2.8-3.0	sandy clay brown	NA	NA	
H03-04	3.7	0-0.8	pebbles, sand black YBM	Heck03-046	Pest, TOC	Heck03-046 0-18.5 in (0-1.54 ft)
		0.8-1.5	fewer pebbles, organic matter, sandy clay, black			
		1.5-1.9	black-gray olive sand and fewer pebbles			Heck03-047 23-37.5 in (1.92-3.13 ft) including organic matter in shiny layer at top of (disturbed) OBM
		1.9-2.1	black shiny layer, clay, organic matter	Heck03-047	Pest, TOC	
		2.1-3.1	gray OBM, clay smooth, slick			
		3.1-3.7	OBM tan clay, more greasy texture	NA	NA	
H03-07	2.9	0-1.3	YBM black clay smooth, worm	Heck03-048	Pest, GS/TOC	Heck03-048 YBM only 0-16 in (1.33 ft), classic profile: YBM on sand on OBM surface
		1.3-2.3	sand gray to tan brown to reddish brown	NA	NA	
		2.3-2.9	OBM tan clay smooth	NA	NA	

Table 6. Concentrations of DDT, Dieldrin, and Total Suspended Solids (TSS) in the Total Fraction of Water Samples Collected in February 2003 for Post-remediation Monitoring of the United Heckathorn Superfund Site

			Concentration (ng/L)								
Station	Location	TSS (mg/L)	Dieldrin	2,4'-DDE	4,4'-DDE	2,4'-DDD	4,4'-DDD	2,4'-DDT	4,4'-DDT	Total DDT	Aroclor 1254
303.1A	Richmond Inner	8	0.50 UI[a]	0.76 UI	0.50 U	0.50 UI	0.50 UI	0.50 UI	0.50 UI	ND	5.0 U
303.1B	Harbor Channel	6	0.21 J	0.50 U	0.50 U	0.50 U	0.50 UI	0.50 UI	0.52 P	0.52 P	5.0 U
	Mean[b]	7	0.21 J	NA	NA	NA	NA	NA	0.52 P	NA	NA
	standard deviation	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
303.2A	Lauritzen Channel/Mouth	5	0.16 J	0.52 UI	0.5 UI	0.5 U	0.5 UI	0.5 U	0.85	0.85	5.0 U
303.2B		10	0.24 JP	0.87 UI	0.5 U	0.5 UI	0.67 UI	0.5 UI	0.61	0.61	5.0 U
303.2C		6	0.27 J	0.85 UI	0.5 U	0.5 UI	0.5 UI	0.5 U	0.49 J	0.49 J	5.0 U
	Mean[b]	7	0.22 J	NA	NA	NA	NA	NA	0.65	0.65	NA
	standard deviation	2.6	0.06	NA	NA	NA	NA	NA	0.18	0.18	NA
303.3A	Lauritzen Channel/ End	6	25 D1	0.99 P	11	18	53 DI	120 D1	580 D2	783	5.0 U
303.3B		4 J	7.9	0.31 JP	3.2	6.6	12	38 D1,P	190 D1	250	5.0 U
303.3C		6	12	0.5 UI	3.5	11 P	16	15 D1,P	110 D1	156	5.0 U
	Mean[b]	5.3	15	0.65	5.9	12	27	58	293	396	NA
	standard deviation	1.2	8.9	0.48	4.4	5.7	23	55	251	338	NA
303.4A	Santa Fe Channel/ End[e]	6	0.19 J	0.78 UI	0.50 U	0.50 U	0.50 UI	0.50 UI	0.57 P	0.6 P	5.0 U
303.4B		5	0.14 J	0.80 UI	0.50 U	0.50 U	0.77 P	0.50 UI	0.33 JP	1.1 P	5.0 U
303.4C		6	0.17 JP	0.69 UI	0.50 U	0.50 UI	0.50 UI	0.50 UI	0.29 JP	0.3 JP	5.0 U
	Mean[b]	7	0.17 J	NA	NA	NA	0.77 P	NA	0.31	0.67	NA
	standard deviation	2.6	0.03	NA	NA	NA	NA	NA	0.03	0.40	NA
303.6A	Parr Canal	6	0.86	0.50 UI	0.50 U	0.50 UI	0.62 UI	0.38 JP	1.7	2.1	5.0 U
303.6B		5 U	1.0	0.50 UI	0.50 U	0.50 UI	0.54 UI	0.50 U	1.6	1.6	5.0 U
303.6C		2 J	0.79	0.50 UI	0.50 UI	0.50 UI	0.67 UI	0.50 U	1.7	1.7	5.0 U
	Mean[b]	4	0.88	NA	NA	NA	NA	0.38 JP	1.7	1.8	NA
	standard deviation	2.8	0.11	NA	NA	NA	NA	NA	0.06	0.26	NA

Table 6. (contd)

Station	Location	TSS (mg/L)	Concentration (ng/L) Dieldrin	2,4'-DDE	4,4'-DDE	2,4'-DDD	4,4'-DDD	2,4'-DDT	4,4'-DDT	Total DDT	Aroclor 1254
Seep A	Seep (intertidal	5 U	3100 D3	270 D2,P	370 D2	1900 D2	1300 D2	3100 D3,P	1900 D3	8840	14,000 UI
Seep B	outfall ~180 ft N of	5	2900 D3	320 D2,P	340 D2	1800 D2	1500 D2,P	3200 D3,P	2000 D3	9160	14,000 UI
Seep C	Levin Pier)	3 J	3000 D3	290 D2	390 D2	1800 D2	1300 D2	3200 D3,P	2000 D3	8980	17,000 UI
	Mean[(b)]	4	3000	290	370	1830	1370	3170	1970	8990	NA
	standard deviation	1.4	100	25	25	58	115	58	58	160	NA

(a) Qualifiers are defined as follows:
U Undetected above given concentration.
I Elevated detection limit due to chromatographic interference
J Estimated value below reporting limit but above detection limit.
P >40% RPD between primary and confirmation columns.
ND None detected.
D1 Extract required 1:10 dilution for quantitation
D2 Extract required 1:100 dilution for quantitation
D3 Extract required 1:1000 dilution for quantitation

(b) Mean of detected analyte concentrations

Table 7. Concentrations of DDT and Dieldrin in the Dissolved Fraction of Water Samples Collected in February 2003 for Post-remediation Monitoring of the United Heckathorn Superfund Site

		Concentration (ng/L)								
Station	Location	Dieldrin	2,4'-DDE	4,4'-DDE	2,4'-DDD	4,4'-DDD	2,4'-DDT	4,4'-DDT	Total DDT	Aroclor 1254
303.1A	Richmond Inner	0.12 J	0.80 UI	0.52 UI	0.48 UI	0.48 UI	0.48 UI	0.48 UI	ND	4.8 U
303.1B	Harbor Channel	0.48 U	0.74 UI	0.48 U	0.48 UI	0.48 UI	0.48 UI	0.48 UI	ND	4.8 U
	Mean[b]	0.12 J	NA	NA	NA	NA	NA	NA	NA	NA
	standard deviation	NA	NA	NA	NA	NA	NA	NA	NA	NA
303.2A	Lauritzen Channel/Mouth	0.14 JP	0.49 UI	0.49 U	0.18 J	0.49 UI	0.49 U	0.49 UI	0.18 J	4.9 U
303.2B		0.49 U	0.49 U	0.49 U	0.49 UI	0.49 UI	0.49 UI	0.64 P	0.64 P	4.9 U
303.2C		0.12 JP	0.49 UI	0.49 U	0.49 UI	0.49 UI	0.49 U	0.48 J	0.48 J	4.9 U
	Mean[b]	0.13 JP	NA	NA	0.18 J	NA	NA	0.56	0.43	NA
	standard deviation	0.01	NA	NA	NA	NA	NA	0.11	0.23	NA
303.3A	Lauritzen Channel/ End	13	0.49 UI	2.0	9.2 P	8.1	4.8 P	12	36.0	4.9 U
303.3B		7.2	0.49 UI	1.2	6.5 P	5.8	2.3 UI	5.2	18.7	4.9 U
303.3C		7.6	0.38 J,P	1.0	2.8 UI	7.1	1.9 UI	4.4	12.5	4.9 U
	Mean[b]	9.3	0.38 J,P	1.4	7.9 P	7.0	4.8 P	7.2	22.4	NA
	standard deviation	3.2	NA	0.5	1.9	1.2	NA	4.2	12.2	NA
303.4A	Santa Fe Channel/ End[e]	0.076 J	0.49 UI	0.49 U	0.49 UI	0.49 UI	0.49 UI	0.49 UI	ND	4.9 U
303.4B		0.16 JP	0.70 UI	0.49 U	0.49 UI	0.49 UI	0.49 UI	0.49 UI	ND	4.9 U
303.4C		0.49 U	0.49 UI	0.49 UI	0.49 UI	0.49 UI	0.49 UI	0.49 UI	ND	4.9 U
	Mean[b]	0.12	NA	NA	NA	NA	NA	NA	NA	NA
	standard deviation	0.06	NA	NA	NA	NA	NA	NA	NA	NA
303.6A	Parr Canal	0.45 J	0.49 UI	0.88 UI	0.49 UI	0.49 UI	0.49 UI	0.49 UI	ND	4.9 U
303.6B		0.56	0.49 UI	2.0 UI	0.49 UI	0.49 UI	0.49 U	1.3 P	1.3 P	4.9 U
303.6C		0.51	0.49 UI	0.82 UI	0.49 UI	0.49 UI	0.49 U	1.1 P	1.1 P	4.9 U
	Mean[b]	0.51	NA	NA	NA	NA	NA	1.2 P	1.2 P	NA
	standard deviation	0.06	NA	NA	NA	NA	NA	0.1	0.1	NA

Table 7. (contd)

Station	Location	Concentration (ng/L)								
		Dieldrin	2,4'-DDE	4,4'-DDE	2,4'-DDD	4,4'-DDD	2,4'-DDT	4,4'-DDT	Total DDT	Aroclor 1254
Seep A	Seep (intertidal outfall ~180 ft N of Levin Pier)	2400 D3	190 D2, P	160 D2	1000 D2	640 D2	440 UI	920 D2	2910	1400 UI
Seep B		2600 D3	62 UI	130 D2,P	850 D2	480 D2	320 UI	740 D2	2200	8300 UI
Seep C		2600 D3	49 UI	170 D2	1000 D2	1000 D2,P	620 UI	950 D2	3120	8600 UI
	Mean[(b)]	2530	100	150	950	710	460	870	2740	NA
	standard deviation	115	78	21	87	266	151	114	482	NA

(a) Qualifiers are defined as follows:
U Undetected above given concentration.
I Elevated detection limit due to chromatographic interference
J Estimated value below reporting limit but above detection limit.
P >40% RPD between primary and confirmation columns.
ND None detected.
D2 Extract required 1:100 dilution for quantitation
D3 Extract required 1:1000 dilution for quantitation

(b) Mean of detected analyte concentrations.

Table 8. Comparison of Years 4, 5, and 6 Pesticide Concentrations in Water

Station	Location	Average Total DDT (ng/L) Year 4 (2001)	Year 5 (2002)	Year 6 (2003)	Average Dieldrin (ng/L) Year 4 (2001)	Year 5 (2002)	Year 6 (2003)
	Remediation Goal	0.59	0.59	0.59	0.14	0.14	0.14
Total Fraction							
303.1-T	Richmond Inner Harbor Channel	0.06 U	0.66	0.52 P	0.08 U	0.16	0.21 J
303.2-T	Lauritzen Channel/ Mouth	2.88	1.7	0.65	0.46	0.43	0.22 J
303.3-T	Lauritzen Channel/ End	142	18	396	8.49	2.1	15
303.4-T	Santa Fe Channel/ End	2.51	0.60	0.67 P	0.46	0.20	0.17 J
303.6-T	Parr Canal	NS	2.57	1.8	NS	0.98	0.88
Seep-T	Seep	NS	4455	8990	NS	2520 C	3000
Dissolved Fraction							
303.1-D	Richmond Inner Harbor Channel	0.33	0.10 B	0.5 U	0.34	0.15	0.12 J
303.2-D	Lauritzen Channel/ Mouth	2.57	1.00	0.43 JP	0.46	0.34	0.13 JP
303.3-D	Lauritzen Channel/ End	10.4	4.51	22.4	4.23	1.81	9.3
303.4-D	Santa Fe Channel/ End	2.21	0.44	0.5 U	0.47	0.22	0.12 JP
303.6-D	Parr Canal	NS	1.49	1.2 P	NS	0.90	0.51
Seep-D	Seep	NS	NM	2740	NS	NM	2470

B Total DDT concentration is flagged B when a constituent is 4,4'-DDE was detected in associated blank at <5X amount in the blank.
U All DDT compounds undetected; value is average reporting limit.
J Estimated value between reporting limit and method detection limit.
P Estimated value: >40% RPD between primary and confirmation columns.
NS Not sampled.
NM Dissolved fraction not analyzed in 2002 Seep sample.
C Associated surrogate recovery was outside of QC limits because extract required 10:1 dilution.

Table 9. Summary of Length and Weight Data from Mussels Collected for Tissue Samples in February 2003 for Year 6 Post-remediation Monitoring of the United Heckathorn Superfund Site

	Station							
	303.1	303.2	303.3	303.4				
	Richmond Inner Harbor Channel	Lauritzen Channel/Mouth	Lauritzen Channel/End	Santa Fe Channel/End	Manson Ladder	8-in. pipe, NE Lauritzen	Seep	Transect +2.0
Shell Length								
n	41	43	37	42	49	48	6	46
Min length (cm)	4.23	3.27	3.93	4.25	2.57	3.84	3.07	4.37
Max length (cm)	7.31	6.16	6.64	7.08	6.24	6.76	5.55	6.49
Mean length (cm)	5.68	5.13	5.35	5.40	4.94	5.10	4.29	5.45
standard deviation	0.79	0.69	0.62	0.78	0.67	0.66	0.98	0.48
n outside range[a]	8 large	2 small	1 large, 1 small	3 large	1 small	3 small, 1 large	2 small	0
grand mean length[b]	5.17 cm (5.29 cm without Seep sample)							
standard deviation	0.42 (0.25 without Seep sample)							
Tissue Wet Weight								
sample weight (g)	294.75	221.79	295.13	333.86	223.23	200.22	20.10	338.91
mean wt (g)/mussel	7.19	5.16	7.98	8.35[c]	4.56	4.17	3.35	7.37
grand mean weight	6.01 g (6.20 g without Seep sample)							
standard deviation	1.92 (1.72 without Seep sample)							
Lipid Content (%)								
Bligh-Dyer Method	1.2	0.84	1.0	0.55	0.78	0.75	1.2[d]	0.68
EPA Method 3540	1.5	1.2	0.74	0.56	0.81	1.0	1.6	0.79
grand mean	0.87% Bligh-Dyer (1.0% EPA 3540)							
standard deviation	0.230 Bligh-Dyer (0.375 EPA 3540)							

(a) Individuals outside preferred size range of 4.0-6.5 cm.
(b) Mean of all stations combined.
(c) Based on 40 individuals; two of the measured shells contained no tissue.
(d) Bligh-Dyer lipid content estimated by linear regression relationship between EPA 3540 and Bligh-Dyer results for all other samples.

Table 10. Summary of Pesticides in Mussel Tissues, Year 6 (2003) Post-remediation Monitoring of the United Heckathorn Superfund Site

Sample Location	303.1 Richmond Inner Harbor Channel	303.2 Lauritzen Channel Mouth	303.3 Lauritzen Channel End	303.4 Santa Fe Channel End	8" pipe, N. Lauritzen	Manson Ladder	Seep (Approx. Transect -12)	Transect +2.0 (North end of Levin Pier)
Battelle Sample ID	Y6-04	Y6-03	Y6-07	Y6-05	Y6-02	Y6-01	Y6-06	Y6-08
Pesticides (µg/Kg wet weight)								
Dieldrin	2.9	6.2 J, P, D1, #	18 P, D1,#	1.3	49 D1, #	20 P, D1, #	4000 D2, #	26 D1, #
4,4'-DDE	17	41 D1, #	64 D1, #	9.4	110 D1, #	68 D1, #	15000 D3, #	86 D1, #
4,4'-DDD	11	56 D1, #	110 D1, #	9.3 U, I	390 D1, #	130 D1, #	21000 D3, #	130 D1, #
4,4'-DDT	9.7 U, I	57 D1, #	120 D1, #	8.6	180 D1, #	92 D1, #	31000 D3, #	200 D1, #
2,4'-DDE	3.8 U, I	29 D1, #	61 D1, #	6.8	150 D1, #	68 D1, #	32000 D3, #	78 D1, #
2,4'-DDD	0.26 U	2.6 U	2.6 U	0.26 U	10 U, I	2.6 U	1700 D2, #	10 U, I
2,4'-DDT	5.7 U, I	31 D1, #	76 D1, #	4.7 U, I	99 D1, #	59 D1, #	35000 D3, #	120 D1, #
Total Detected DDT	**28**	**214**	**431**	**24.8**	**929**	**417**	**135700**	**614**
Percent Lipids EPA3540	1.50	1.20	0.74	0.56	1.00	0.81	1.6	0.79
Percent Lipids Bligh & Dyer	1.20	0.84	1.0	0.55	0.75	0.78	1.16 E	0.68
Lipid Normalized Total DDT (ppb lipid)	**2,333**	**25,476**	**43,100**	**4,509**	**123,867**	**53,462**	**11,698,276**	**90,294**
Percent Dry Weight	14.0	12.7	10.1	8.2	12.3	12.0	11.2 E	9.4
Total DDT, µg/kg dry weight	200	1685	4267	304	7553	3475	1211607	6525
Dieldrin, µg/kg dry weight	21	49	178	16	398	167	35714	276
Surrogate Recoveries (pesticides)								
Tetrachloro-m-xylene	99	0 D1, #	0 D1, #	88	0 D1, #	0 D1, #	0 D2, #	0 D1, #
Decachlorobiphenyl	90	0 D1, #	0 D1, #	85	0 D1, #	0 D1, #	0 D2, #	0 D1, #

Table 10. (contd)

P	>40% RPD between primary and confirmation columns.
#	Surrogate recovery control limits not applicable because of dilution factor.
J	Estimated below reporting limit, but above method detection limit.
U	Undetected above given concentration.
D1	Extract required 1:10 dilution for quantitation.
D2	Extract required 1:100 dilution for quantitation.
D3	Extract required 1:1000 dilution for quantitation.
I	Elevated detection limit due to chromatographic interference.
E	Seep sample Bligh-Dyer lipid equivalent estimated from EPA3540 lipid result by linear regression of all other data; percent dry weight estimated as mean of other samples.

Table 11. PCB Aroclors in Mussel Tissues, Year 6 (2003) Post-remediation Monitoring of the United Heckathorn Superfund Site

Sample Location	303.1 Richmond Inner Harbor Channel	303.2 Lauritzen Channel Mouth	303.3 Lauritzen Channel End	303.4 Santa Fe Channel End	8" pipe, N. Lauritzen	Manson Ladder	Seep (Approx. Transect -12)	Transect +2.0 (North end of Levin Pier)
Battelle Sample ID	Y6-04	Y6-03	Y6-07	Y6-05	Y6-02	Y6-01	Y6-06	Y6-08
Aroclor 1016	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	140 U	0.65 U
Aroclor 1221	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	140 U	0.65 U
Aroclor 1232	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	140 U	0.65 U
Aroclor 1242	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	140 U	0.65 U
Aroclor 1248	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	140 U	0.65 U
Aroclor 1254	93	96 P	90 P	45	270 P	140 P	3100 U, I	110 P
Aroclor 1260	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	140 U	0.65 U
Total Detected PCB	**93**	**96 P**	**90 P**	**45**	**270 P**	**140 P**	**ND** I	**110 P**
Surrogate Recovery								
Decachlorobiphenyl	95	97	92	94	92	99	0 D2, #	95

U Undetected above given concentration.
P >40% RPD between primary and confirmation columns.
ND None detected.
I Elevated detection limit due to chromatographic interference.
D2 Extract required 1:100 dilution for quantitation.
Surrogate recovery control limits not applicable because of dilution factor.

Table 12. Summary Sediment Chemistry Results for all Soil and Sediment Samples, Phase II Source Investigation

Chemistry Sample ID	Sample Type	Station ID	Vertical Interval (ft)	Grain Size, TOC (% Dry Weight)				Pesticides (µg/kg dry weight)		
				Gravel	Sand	Silt + Clay	TOC	Total DDT[(a)]	Dieldrin	
Heck03-001	Bank Soil	T(-35) old scale	0-0.3	5.5	87.1	7.4	0.54	1620	95	U
Heck03-002	Bank Soil	T(-35) old scale	0.5-1	43.4	34.1	22.5	1.4	14100	1100	U
Heck03-004	Bank Soil	T(-29) 36 ft N of 8" pipe	0-0.5	76.0	20.5	3.5	1.2	68100	5900	
Heck03-003	Bank Soil	T(-29) 36 ft N of 8" pipe	0.5-1	55.4	23.2	21.4	1.3	75000	3200	
Heck03-006	Bank Soil	T(-12.5) Bank	0-0.2	4.2	15.9	79.9	2.1	12900	1800	U
Heck03-005	Bank Soil	T(-12.5) Bank	0.5-1	0.0	12.9	87.1	8.1	ND	46	U
Heck03-009	Bank Soil	T(-11.5) Seep 1-ft N	NA (from pipe)	44.4	33.4	22.2	2.5	3634100	22000	J, Q7
Heck03-007	Bank Soil	T(-11.5) Seep 1-ft N	0-0.2	0.8	10.7	88.5	4.1	4180	430	U
Heck03-008	Bank Soil	T(-11.5) Seep 1-ft N	0.5-1	0.0	11.6	88.4	8.5	28	49	U
Heck03-011	Bank Soil	T(-4.5) Bank	0-0.2	5.2	22.0	72.8	4.4	3810	410	U
Heck03-010	Bank Soil	T(-4.5) Bank	0.5-1	0.0	11.9	88.1	10	ND	45	U
Heck03-012	Bank Soil	T(+2.25) Bank	0-0.2	0.0	14.3	85.7	3.5	3520	530	U, J, Q7
Heck03-013	Bank Soil	T(+2.25) Bank	0.5-1	4.6	14.5	80.9	2.3	135200	4600	J, C1
Heck03-025	YBM	H03-1-C	0-1.0	8.6	24.9	66.5	1.3	1160500	13000	J, Q7
Heck03-017	0.1 ft YBM on 0.3 ft OBM	H03-1-N	0-0.4	9.6	27.1	63.3	0.67	920	230	U
Heck03-026	YBM	H03-1-NE	0-0.75	60.2	27.2	12.6	0.3	43000	1000	U
Heck03-024	YBM	H03-1-NW	0-1.7	6.0	30.2	63.8	1.4	28700	1600	U
Heck03-029	YBM	H03-1-S	0-0.6	22.2	27.7	50.1	1.1	53600	2300	U
Heck03-030	0.25 ft YBM on 0.25 ft OBM	H03-1-SE	0-0.5	24.1	26.7	49.2	0.42	51600	2700	U
Heck03-031	YBM	H03-1-SW	0-1.5	13.7	24.7	61.6	1.3	26800	1700	U
Heck03-027	YBM	H03-1-W	0-1.5	1.3	29.9	68.8	1.8	190000	1600	U
Heck03-023	OBM	H03-2-N	0-0.9	15.9	24.6	59.5	1.4	27200	2700	U
Heck03-022	YBM	H03-2-NE	0-0.25	27.2	21.7	51.1	0.44	25600	2400	U
Heck03-032	YBM	H03-2-S	0-0.4	45.4	19.1	35.5	1.9	22100	1400	U
Heck03-033	YBM w/few blobs OBM	H03-2-SE	0-0.75	47.9	25.2	26.9	0.72	26400	1300	U
Heck03-028	YBM	H03-2-W	0-1.5	0.2	23.7	76.1	2.4	194500	3500	U
Heck03-037	0.5 ft YBM on 0.5 ft OBM	H03-T(+1.5)-E	0-1.0	0.0	13.8	86.2	0.12	6500	1300	U
Heck03-036	0.2 ft YBM on 0.5 ft OBM	H03-T(+2.5)-E	0-0.7	1.5	21.3	77.2	0.16	5870	1100	U
Heck03-035	0.25 ft YBM on 0.25 ft OBM	H03-T(+3.5)-E	0-0.5	0.2	24.5	75.3	0.15	1200	130	U

Table 12. (contd)

Chemistry Sample ID	Sample Type	Station ID	Vertical Interval (ft)	Grain Size, TOC (% Dry Weight)				Pesticides (µg/kg dry weight)	
				Gravel	Sand	Silt + Clay	TOC	Total DDT[(a)]	Dieldrin
Heck03-034	0.1 ft YBM on 0.8 ft OBM	H03-T(+4.5)-E	0-0.9	2.7	14.4	82.9	0.16	850	53 U
Heck03-044	YBM	H03-01	0-1.0	0.0	10.5	89.5	2.0	156400	2300 J, C1
Heck03-040	0.1 ft YBM on 0.2 ft OBM	H03-02	0-0.3	23.8	25.8	50.4	1.1	2500	150 U
Heck03-045	YBM	H03-03	0-1.3	3.3	52.2	44.5	1.0	26300	1400 U
Heck03-046	YBM	H03-04	0-1.5	9.9	67.9	22.2	0.54	7100	260 U, J, Q7
Heck03-047	OBM-disturbed	H03-04	1.9-3.1	6.4	48.5	45.1	0.51	27160	1300 U
Heck03-043	YBM	H03-05	0-2.8	0.0	16.2	83.8	1.5	16000	750 U, J, Q7
Heck03-014	YBM	H03-06	0-1.4	22.2	27.7	50.1	0.72	92	27 U
Heck03-048	YBM	H03-07	0-1.3	0.6	22.7	76.7	1.0	53600	2900 U
Heck03-015	YBM	H03-08	0-0.7	32.9	18.3	48.8	0.65	880	110 U
Heck03-039	YBM	H03-10	0-3.4	0.0	15.2	84.8	1.5	12500	410 U
Heck03-016	YBM	H03-11	0-0.7	30.5	39.6	29.9	0.33	85	21 U
Heck03-038	YBM	H03-12	0-3.8	0.0	15.0	85.0	2.2	2117	85 U

(a) Sum of detected 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT concentrations.

U Undetected above given concentration.

J The reported result for this analyte should be considered an estimated value.

Q7 Surrogate spike recoveries for this sample were outside control limits

C1 The reported concentration for this analyte is below the quantitation limit.

Appendix A

EPA Field Sampling for Mussels and Seawater

Field Sampling Summary for Mussels and Seawater
at the United Heckathorn Site in
Richmond, California, conducted 2/25/2003.

Andrew Lincoff
EPA Region 9 Laboratory
PMD-2
March 25, 2003

INTRODUCTION

This sampling event involved the collection of bay mussels and seawater at the United Heckathorn Superfund Site in Richmond, California. Sampling was performed on February 25, 2003 by Andrew Lincoff and Peter Husby of the EPA Region 9 Laboratory, and Carmen White, United Heckathorn RPM. Sampling was performed in accordance with Battelle's "United Heckathorn Post-Remediation Field Monitoring Plan" (FSP), dated February 5, 1997, and "Sampling and Analysis Plan for the Investigation of Contaminant Source and Contaminant Movement in the Lauritzen Channel, United Heckathorn Site, Richmond, California" (SAP), drafted January 11, 2002.

OBJECTIVE

EPA conducted this field sampling as part of the oversight of a final Remedial Action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) at the United Heckathorn Site in Richmond, California. The sampling effort involved collecting physical environmental samples to analyze for the presence of hazardous substances.

The United Heckathorn Site was used to formulate pesticides from approximately 1947 to 1966. Soils at the Site and sediments in Richmond Harbor were contaminated with various chlorinated pesticides, primarily DDT, as a result of these pesticide formulation activities. The final remedy contained in EPA's October, 1994 Record of Decision addressed remaining hazardous substances, primarily in the marine environment. The major marine components of the selected remedy included:

- Dredging of all soft bay mud from the Lauritzen Channel and Parr Canal, with offsite disposal of dredged material.

- Marine monitoring to verify the effectiveness of the remedy.

Long-term monitoring is addressed by Battelle's February 5, 1997 FSP. The purpose of the long-term monitoring is to demonstrate the effectiveness of the remedy. Prior to the remediation, mussels in the Lauritzen Channel contained the highest levels of DDT and dieldrin in the State, and surface water exceeded EPA's Ambient Water Quality Criteria for DDT by a factor of 50. Lower but

still elevated levels were found in mussels and surface water in the Santa Fe Channel. It was concluded in EPA's Remedial Investigation that these elevated levels were the result of continuous flux from contaminated sediments. Approximately 98% of the mass of DDT in sediments in Richmond Harbor was removed by the remedial dredging. The long-term monitoring will demonstrate whether this action has succeeded in reducing the levels of DDT in mussels and surface waters.

Battelle's FSP included monitoring using both transplanted California mussels and resident Bay mussels. The first round of the long-term sampling occurred in January, 1998. This is the sixth annual round of sampling. The seasonal timing was chosen to match the protocol used by the California State Mussel Watch Program, in order to permit comparison with the State's results over the past 15 years. In the first two rounds, both transplanted and resident mussels are analyzed to determine any difference. Based on the results of the first two rounds and discussions with California State Mussel Watch Program personnel, only resident mussels were collected in subsequent rounds. Mussels collected on February 25, 2003 were shipped to Battelle for processing prior to analysis by Columbia Analytical. Seawater samples collected on February 25, 2003 were shipped directly to Columbia Analytical.

FIELD NOTES AND OBSERVATIONS

1. 1. Seawater and mussel samples were collected at the routine Mussel Watch station numbers 303.1 to 303.4 used in the previous annual collections and at the Parr Canal station which last year was given the number 303.6. Three gallons of seawater were collected from approximately one foot below the surface at each location. An extra gallon was collected at station 303.3 for lab QC. In addition, three gallons of seawater were collected from a pipe which emerges from the shoreline near station 303.3 called the "seep" (Photo 1). Water can be seen flowing from this pipe when the tide drops. An extra gallon was collected from the "seep" and labeled "blind duplicate." No time was recorded on the label of the blind duplicate to prevent its identification, but it was collected at the same time as the other "seep" samples.

2. Bay mussels were collected at each of the water stations above except for station 303.6 in the Parr Canal. Mussels are not plentiful in the Parr Canal, possibly due to poor substrate or lower salinity. Bay mussels were also collected at three additional locations: the "seep," a ladder off the Manson dock, and from piles near an 8" pipe near the northern end of the canal which emerges from Levin's sheet pile wall (Photo 2). The mussels were all collected near the surface, which at the collection time was approximately at 1 ft above Mean Lower Low Water (MLLW), except for station 303.4 where the mussels were collected near the surface from a floating dock, and the "seep" where the mussels were collected from in and around the mouth of the pipe.

3. The samples were promptly delivered to the Region 9 Lab and the seawater samples were placed in a 4 ºC cold room. The mussels were cleaned of gross debris in the laboratory's clean filtered seawater, wrapped in ashed foil, placed in zip-loc bags, and stored in a -20 ºC freezer. The

seawater and mussels were packaged and shipped on March 26, 2003 by Fed Ex. The seawater was shipped chilled to Columbia Analytical and the mussels were shipped frozen to Battelle.

4. GPS coordinates for the sample locations are listed in Table 1. No location was taken at station 303.1 on the day of sampling. The location listed is from the April 10, 2002 sampling report. All locations were differentially corrected with the exception of the "seep." It was not possible to differentially correct the readings from this location. The cause is unknown. The location listed is the mean of five position recordings.

5. Salinity was measured using a refractometer in seawater from the "seep" and nearby station 303.3. The salinity of the "seep" was 21 parts per thousand (ppt) and the salinity at station 303.3 was 23 ppt.

Table 1
Sample Locations

Sample	GPS Location	Remarks
303.3	37º 55' 22.415" N, 122º 21' 59.980" W	seawater, mussels
303.2	37º 55' 12.236" N, 122º 22' 01.298" W	seawater, mussels
303.4	37º 55' 21.081" N, 122º 22' 17.694" W	seawater, mussels
303.1	37º 54' 32.869" N, 122º 21' 33.523" W*	seawater, mussels
303.6	37º 55' 12.140" N, 122º 21' 45.915" W	seawater
Seep	37º 55' 22.99" N, 122º 22' 59.66" W**	seawater, mussels
Transect 2.5	37º 55' 21.156" N, 122º 22' 00.241" W	mussels
Near 8" pipe	37º 55' 25.349" N, 122º 21' 59.383" W	mussels collected from nearby piles
Manson Ladder	37º 55' 23.332" N, 122º 22' 01.646" W	mussels

* Location from April 10, 2002 field report.
** Mean of five uncorrected positions.

Photo 1. Water flowing from "seep."

Photo 2: Mussel collection from piles near 8" pipe in background.

Appendix B

Year 6 (2003) Monitoring Water and Tissue Chemistry

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
303.1A-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		25	=					
303.1B-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		25	=					
303.1C-T-QC	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		25	=					
303.6A-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		13	=					
303.6B-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		12	=					
303.6C-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		15	=					
303.4A-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		25	=					
303.4B-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		25	=					
303.4C-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		25	=					
303.2A-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		25	=					
303.2B-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		25	=					
303.2C-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		25	=					
303.3A-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		24	=					
303.3B-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		24	=					
303.3C-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		24	=					
Blind Dup.-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		23	=					
Seep A-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		23	=					
Seep B-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		23	=					
Seep C-T	SMPL	NONE	SM 2520B	g/Kg	Salinity	1	2		22	=					
Method Blank	MB1	NONE	SM 2520B	g/Kg	Salinity	1	2		ND	ND					
303.1A-T	DUP1	NONE	SM 2520B	g/Kg	Salinity	1	2	2	25	=				25	< 1
303.1A-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		8	=					
303.1B-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		6	=					
303.1C-T-QC	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		7	=					
303.6A-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		6	=					
303.6B-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		ND	ND					
303.6C-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		2	=, J					
303.4A-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		6	=					
303.4B-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		5	=					
303.4C-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		6	=					
303.2A-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		5	=					
303.2B-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		10	=					
303.2C-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		6	=					
303.3A-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		6	=					
303.3B-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		4	=, J					
303.3C-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		6	=					
Blind Dup.-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		4	=, J					
Seep A-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		ND	ND					
Seep B-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		5	=					
Seep C-T	SMPL	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		3	=, J					
Method Blank	MB1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		ND	ND					
Method Blank	MB1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		1.5	=					
Method Blank	MB1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		-1.5	=					
Method Blank	MB1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		-1	=					
Method Blank	MB1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		-1.5	=					
Method Blank	MB1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		ND	ND					
Method Blank	MB1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		0	=					
Method Blank	MB1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		0.5	=					
Method Blank	MB1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5		-2	=					
Lab Control Sample	LCS1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5	2	5.4	=	5.7	94.73684211	85-115		

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
Duplicate Lab Contro	DLCS1	NONE	160.2	mg/L	Solids, Total Suspended (TSS)	1	5	2	6.4	=	5.7	112	85-115		16
303.1A-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			75	SUR		75	10-157		
303.1A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.1A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.1A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.1A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.1A-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			87	SUR		87	10-157		
303.1A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0048	0.0024	ND	ND					
303.1A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0048	0.0024	ND	ND					
303.1A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0048	0.0024	ND	ND					
303.1A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0048	0.0024	ND	ND					
303.1B-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			61	SUR		61	10-157		
303.1B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.1B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.1B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.1B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.1B-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			77	SUR		77	10-157		
303.1B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0048	0.0024	ND	ND					
303.1B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0048	0.0024	ND	ND					
303.1B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0048	0.0024	ND	ND					
303.1B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0048	0.0024	ND	ND					
303.6A-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			62	SUR		62	10-157		
303.6A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.6A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.6A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.6A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.6A-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			65	SUR		65	10-157		
303.6A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.6A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.6A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					
303.6A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.6B-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			55	SUR		55	10-157		
303.6B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.6B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.6B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.6B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.6B-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			72	SUR		72	10-157		
303.6B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.6B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.6B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					
303.6B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.6C-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			67	SUR		67	10-157		
303.6C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.6C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.6C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.6C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.6C-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			70	SUR		70	10-157		
303.6C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.6C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.6C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
303.6C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.4A-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			54	SUR		54	10-157		
303.4A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.4A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.4A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.4A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.4A-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			61	SUR		61	10-157		
303.4A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.4A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.4A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					
303.4A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.4B-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			59	SUR		59	10-157		
303.4B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.4B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.4B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.4B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.4B-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			66	SUR		66	10-157		
303.4B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.4B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.4B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					
303.4B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.4C-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			61	SUR		61	10-157		
303.4C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.4C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.4C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.4C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.4C-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			76	SUR		76	10-157		
303.4C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.4C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.4C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					
303.4C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.2A-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			51	SUR		51	10-157		
303.2A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.2A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.2A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.2A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.2A-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			69	SUR		69	10-157		
303.2A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.2A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.2A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					
303.2A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.2B-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			55	SUR		55	10-157		
303.2B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.2B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.2B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.2B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.2B-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			73	SUR		73	10-157		
303.2B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.2B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.2B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
303.2B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.2C-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			67	SUR		67	10-157		
303.2C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.2C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.2C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.2C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.2C-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			73	SUR		73	10-157		
303.2C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.2C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.2C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					
303.2C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.3A-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			56	SUR		56	10-157		
303.3A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.3A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.3A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.3A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.3A-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			71	SUR		71	10-157		
303.3A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.3A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.3A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					
303.3A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.3B-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			44	SUR		44	10-157		
303.3B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.3B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.3B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.3B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.3B-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			73	SUR		73	10-157		
303.3B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.3B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.3B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					
303.3B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
303.3C-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			55	SUR		55	10-157		
303.3C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
303.3C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
303.3C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
303.3C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.3C-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			63	SUR		63	10-157		
303.3C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0049	0.0024	ND	ND					
303.3C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0049	0.0024	ND	ND					
303.3C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0049	0.0024	ND	ND					
303.3C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0049	0.0024	ND	ND					
Blind Dup.-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	100			100	SUR, D,#		100	10-157		
Blind Dup.-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	100	0.50	0.24	ND	ND					
Blind Dup.-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	100	1.6	1.6	ND	ND, i					
Blind Dup.-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	100	14	14	ND	ND, i					
Blind Dup.-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	100	1.6	1.6	ND	ND, i					
Blind Dup.-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	100			129	SUR, D,#		129	10-157		
Blind Dup.-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	100	0.49	0.24	ND	ND					
Blind Dup.-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	100	2.1	2.1	ND	ND, i					
Blind Dup.-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	100	9.7	9.7	ND	ND, i					

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
Blind Dup.-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	100	1.9	1.9	ND	ND, i					
Seep A-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	100			48	SUR, D,#		48	10-157		
Seep A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	100	0.48	0.24	ND	ND					
Seep A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	100	1.6	1.6	ND	ND, i					
Seep A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	100	14	14	ND	ND, i					
Seep A-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	100	1.5	1.5	ND	ND, i					
Seep A-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	100			118	SUR, D,#		118	10-157		
Seep A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	100	0.49	0.24	ND	ND					
Seep A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	100	1.4	1.4	ND	ND, i					
Seep A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	100	8.6	8.6	ND	ND, i					
Seep A-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	100	1.8	1.8	ND	ND, i					
Seep B-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	100			112	SUR, D,#		112	10-157		
Seep B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	100	0.49	0.24	ND	ND					
Seep B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	100	1.5	1.5	ND	ND, i					
Seep B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	100	14	14	ND	ND, i					
Seep B-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	100	1.4	1.4	ND	ND, i					
Seep B-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	100			125	SUR, D,#		125	10-157		
Seep B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	100	0.49	0.24	ND	ND					
Seep B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	100	1.9	1.9	ND	ND, i					
Seep B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	100	8.3	8.3	ND	ND, i					
Seep B-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	100	1.8	1.8	ND	ND, i					
Seep C-T	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	100			125	SUR, D,#		125	10-157		
Seep C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	100	0.49	0.24	ND	ND					
Seep C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	100	2.8	2.8	ND	ND, i					
Seep C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	100	17	17	ND	ND, i					
Seep C-T	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	100	1.9	1.9	ND	ND, i					
Seep C-D	SMPL	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	100			125	SUR, D,#		125	10-157		
Seep C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1242	100	0.49	0.24	ND	ND					
Seep C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1248	100	1.2	1.2	ND	ND, i					
Seep C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1254	100	8.6	8.6	ND	ND, i					
Seep C-D	SMPL	EPA 3520C	8082	ug/L	Aroclor 1260	100	1.6	1.6	ND	ND, i					
Method Blank	MB1	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			100	SUR		100	10-157		
Method Blank	MB1	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
Method Blank	MB1	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
Method Blank	MB1	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
Method Blank	MB1	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
Method Blank	MB1	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			85	SUR		85	10-157		
Method Blank	MB1	EPA 3520C	8082	ug/L	Aroclor 1242	1	0.0050	0.0024	ND	ND					
Method Blank	MB1	EPA 3520C	8082	ug/L	Aroclor 1248	1	0.0050	0.0024	ND	ND					
Method Blank	MB1	EPA 3520C	8082	ug/L	Aroclor 1254	1	0.0050	0.0024	ND	ND					
Method Blank	MB1	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	ND	ND					
303.1B-D	MS1	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			90	SUR		90	10-157		
303.1B-D	MS1	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.019	0.0089	0.389	=	0.370	105	24-150		
303.1B-D	DMS1	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			87	SUR		87	10-157		
303.1B-D	DMS1	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.023	0.011	0.438	=	0.455	96	24-150		12
303.1B-T	MS1	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			92	SUR		92	10-157		
303.1B-T	MS1	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	0.109	=	0.100	109	24-150		
303.1B-T	DMS1	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			84	SUR		84	10-157		
303.1B-T	DMS1	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	0.107	=	0.100	107	24-150		2
Lab Control Sample	LCS1	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			87	SUR		87	10-157		

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
Lab Control Sample	LCS1	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	0.0971	=	0.100	97	61-135		
Lab Control Sample	LCS1	EPA 3520C	8082	PERCENT	Decachlorobiphenyl	1			87	SUR		87	10-157		
Lab Control Sample	LCS1	EPA 3520C	8082	ug/L	Aroclor 1260	1	0.0050	0.0024	0.100	=	0.100	100	61-135		
303.1A-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			53	SUR		53	28-105		
303.1A-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			83	SUR		83	10-134		
303.1A-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.50	ND	ND, i					
303.1A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
303.1A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.50	ND	ND, i					
303.1A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.50	ND	ND, i					
303.1A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.76	0.76	ND	ND, i					
303.1A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.16	ND	ND, i					
303.1A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.50	ND	ND, i					
303.1A-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			59	SUR		59	28-105		
303.1A-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			86	SUR		86	10-134		
303.1A-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.48	0.056	0.12	=, J					
303.1A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.52	0.52	ND	ND, i					
303.1A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.48	0.48	ND	ND, i					
303.1A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.48	0.48	ND	ND, i					
303.1A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.80	0.80	ND	ND, i					
303.1A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.48	0.14	ND	ND, i					
303.1A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.48	0.23	ND	ND, i					
303.1B-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			62	SUR		62	28-105		
303.1B-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			65	SUR		65	10-134		
303.1B-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			61	SUR		61	28-105		
303.1B-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			74	SUR		74	10-134		
303.6A-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			56	SUR		56	28-105		
303.6A-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			59	SUR		59	10-134		
303.6A-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	0.86	=					
303.6A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
303.6A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.62	0.62	ND	ND, i					
303.6A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	1.7	=					
303.6A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.50	ND	ND, i					
303.6A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.27	ND	ND, i					
303.6A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.12	0.38	=, JP					
303.6A-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			60	SUR		60	28-105		
303.6A-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			55	SUR		55	10-134		
303.6A-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	0.45	=, J					
303.6A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.88	0.88	ND	ND, i					
303.6A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.49	ND	ND, i					
303.6A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.49	ND	ND, i					
303.6A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.49	ND	ND, i					
303.6A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.22	ND	ND, i					
303.6A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.49	0.34	ND	ND, i					
303.6B-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			54	SUR		54	28-105		
303.6B-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			51	SUR		51	10-134		
303.6B-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	1.0	=					
303.6B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
303.6B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.54	0.54	ND	ND, i					
303.6B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	1.6	=					
303.6B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.50	ND	ND, i					

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
303.6B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.26	ND	ND, i					
303.6B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.12	ND	ND					
303.6B-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			55	SUR		55	28-105		
303.6B-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			65	SUR		65	10-134		
303.6B-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	0.56	=					
303.6B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	2.0	2.0	ND	ND, i					
303.6B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.49	ND	ND, i					
303.6B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.047	1.3	=, P					
303.6B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.49	ND	ND, i					
303.6B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.49	ND	ND, i					
303.6B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.49	0.12	ND	ND					
303.6C-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			54	SUR		54	28-105		
303.6C-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			63	SUR		63	10-134		
303.6C-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	0.79	=					
303.6C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.50	ND	ND, i					
303.6C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.67	0.67	ND	ND, i					
303.6C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	1.7	=					
303.6C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.50	ND	ND, i					
303.6C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.26	ND	ND, i					
303.6C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.12	ND	ND					
303.6C-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			53	SUR		53	28-105		
303.6C-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			59	SUR		59	10-134		
303.6C-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	0.51	=					
303.6C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.82	0.82	ND	ND, i					
303.6C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.49	ND	ND, i					
303.6C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.047	1.1	=, P					
303.6C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.49	ND	ND, i					
303.6C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.20	ND	ND, i					
303.6C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.49	0.12	ND	ND					
303.4A-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			55	SUR		55	28-105		
303.4A-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			57	SUR		57	10-134		
303.4A-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	0.19	=, J					
303.4A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
303.4A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.50	ND	ND, i					
303.4A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	0.57	=, P					
303.4A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.78	0.78	ND	ND, i					
303.4A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	ND	ND					
303.4A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.50	ND	ND, i					
303.4A-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			61	SUR		61	28-105		
303.4A-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			67	SUR		67	10-134		
303.4A-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	0.076	=, J					
303.4A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.49	0.12	ND	ND					
303.4A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.49	ND	ND, i					
303.4A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.49	ND	ND, i					
303.4A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.40	ND	ND, i					
303.4A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.068	ND	ND, i					
303.4A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.49	0.18	ND	ND, i					
303.4B-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			57	SUR		57	28-105		
303.4B-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			62	SUR		62	10-134		
303.4B-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	0.14	=, J					

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
303.4B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
303.4B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.047	0.77	=, P					
303.4B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	0.33	=, JP					
303.4B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.80	0.80	ND	ND, i					
303.4B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	ND	ND					
303.4B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.50	ND	ND, i					
303.4B-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			60	SUR		60	28-105		
303.4B-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			63	SUR		63	10-134		
303.4B-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	0.16	=, JP					
303.4B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.49	0.12	ND	ND					
303.4B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.49	ND	ND, i					
303.4B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.49	ND	ND, i					
303.4B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.70	0.70	ND	ND, i					
303.4B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.27	ND	ND, i					
303.4B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.49	0.19	ND	ND, i					
303.4C-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			58	SUR		58	28-105		
303.4C-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			66	SUR		66	10-134		
303.4C-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	0.17	=, JP					
303.4C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
303.4C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.50	ND	ND, i					
303.4C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	0.29	=, JP					
303.4C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.69	0.69	ND	ND, i					
303.4C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.15	ND	ND, i					
303.4C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.13	ND	ND, i					
303.4C-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			60	SUR		60	28-105		
303.4C-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			71	SUR		71	10-134		
303.4C-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	ND	ND					
303.4C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.49	0.49	ND	ND, i					
303.4C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.49	ND	ND, i					
303.4C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.49	ND	ND, i					
303.4C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.23	ND	ND, i					
303.4C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.31	ND	ND, i					
303.4C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.49	0.17	ND	ND, i					
303.2A-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			51	SUR		51	28-105		
303.2A-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			54	SUR		54	10-134		
303.2A-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	0.16	=, J					
303.2A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.50	ND	ND, i					
303.2A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.50	ND	ND, i					
303.2A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	0.85	=					
303.2A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.52	0.52	ND	ND, i					
303.2A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	ND	ND					
303.2A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.12	ND	ND					
303.2A-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			52	SUR		52	28-105		
303.2A-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			56	SUR		56	10-134		
303.2A-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	0.14	=, JP					
303.2A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.49	0.12	ND	ND					
303.2A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.49	ND	ND, i					
303.2A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.49	ND	ND, i					
303.2A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.49	ND	ND, i					
303.2A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.060	0.18	=, J					

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
303.2A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.49	0.12	ND	ND					
303.2B-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			50	SUR		50	28-105		
303.2B-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			58	SUR		58	10-134		
303.2B-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	0.24	=, JP					
303.2B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
303.2B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.67	0.67	ND	ND, i					
303.2B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	0.61	=					
303.2B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.87	0.87	ND	ND, i					
303.2B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.077	ND	ND, i					
303.2B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.50	ND	ND, i					
303.2B-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			56	SUR		56	28-105		
303.2B-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			63	SUR		63	10-134		
303.2B-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	ND	ND					
303.2B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.49	0.12	ND	ND					
303.2B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.49	ND	ND, i					
303.2B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.047	0.64	=, P					
303.2B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.047	ND	ND					
303.2B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.14	ND	ND, i					
303.2B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.49	0.14	ND	ND, i					
303.2C-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			53	SUR		53	28-105		
303.2C-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			69	SUR		69	10-134		
303.2C-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	0.27	=, J					
303.2C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
303.2C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.50	ND	ND, i					
303.2C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	0.49	=, J					
303.2C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.85	0.85	ND	ND, i					
303.2C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.50	ND	ND, i					
303.2C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.12	ND	ND					
303.2C-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			54	SUR		54	28-105		
303.2C-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			62	SUR		62	10-134		
303.2C-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	0.12	=, JP					
303.2C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.49	0.12	ND	ND					
303.2C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.49	ND	ND, i					
303.2C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.047	0.48	=, J					
303.2C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.49	ND	ND, i					
303.2C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.34	ND	ND, i					
303.2C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.49	0.12	ND	ND					
303.3A-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			46	SUR		46	28-105		
303.3A-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			54	SUR		54	10-134		
303.3A-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	10	5.0	0.56	25	=, D					
303.3A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	11	=					
303.3A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	10	5.0	0.47	53	=, D					
303.3A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	100	50	4.7	580	=, D					
303.3A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.047	0.99	=, P					
303.3A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	18	=					
303.3A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	10	5.0	1.2	120	=, D					
303.3A-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			51	SUR		51	28-105		
303.3A-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			58	SUR		58	10-134		
303.3A-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	13	=					
303.3A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.49	0.12	2.0	=					

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
303.3A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.047	8.1	=					
303.3A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.047	12	=					
303.3A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.46	ND	ND, i					
303.3A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.060	9.2	=, P					
303.3A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.49	0.12	4.8	=, P					
303.3B-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			38	SUR		38	28-105		
303.3B-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			42	SUR		42	10-134		
303.3B-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	7.9	=					
303.3B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	3.2	=					
303.3B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.047	12	=					
303.3B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	10	5.0	0.47	190	=, D					
303.3B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.047	0.31	=, JP					
303.3B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	6.6	=					
303.3B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	10	5.0	1.2	38	=, PD					
303.3B-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			51	SUR		51	28-105		
303.3B-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			63	SUR		63	10-134		
303.3B-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	7.2	=					
303.3B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.49	0.12	1.2	=					
303.3B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.047	5.8	=					
303.3B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.047	5.2	=					
303.3B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.49	ND	ND, i					
303.3B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.49	0.060	6.5	=, P					
303.3B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	2.3	2.3	ND	ND, i					
303.3C-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			49	SUR		49	28-105		
303.3C-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			51	SUR		51	10-134		
303.3C-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	12	=					
303.3C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	3.5	=					
303.3C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.047	16	=					
303.3C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	10	5.0	0.47	110	=, D					
303.3C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.41	ND	ND, i					
303.3C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	11	=, P					
303.3C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	10	5.0	1.2	15	=, PD					
303.3C-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			53	SUR		53	28-105		
303.3C-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			58	SUR		58	10-134		
303.3C-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.49	0.056	7.6	=					
303.3C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.49	0.12	1.0	=					
303.3C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.49	0.047	7.1	=					
303.3C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.49	0.047	4.4	=					
303.3C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.49	0.047	0.38	=, JP					
303.3C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	2.8	2.8	ND	ND, i					
303.3C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	1.9	1.9	ND	ND, i					
Blind Dup.-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	100			0	SUR, D,#		0	28-105		
Blind Dup.-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	100			0	SUR, ED,#		0	10-134		
Blind Dup.-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1000	500	56	2700	=, D					
Blind Dup.-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	100	50	12	360	=, D					
Blind Dup.-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	100	50	4.7	920	=, D					
Blind Dup.-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	100	50	4.7	2000	=, D					
Blind Dup.-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	100	50	50	ND	ND, i					
Blind Dup.-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	100	50	6.0	1700	=, D					
Blind Dup.-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1000	500	120	2800	=, PD					

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
Blind Dup.-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	100			0	SUR, D,#		0	28-105		
Blind Dup.-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	100			0	SUR, D,#		0	10-134		
Blind Dup.-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1000	490	56	2600	=, D					
Blind Dup.-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	100	49	12	160	=, D					
Blind Dup.-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	100	49	4.7	830	=, D					
Blind Dup.-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	100	49	4.7	910	=, D					
Blind Dup.-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	100	93	93	ND	ND, i					
Blind Dup.-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	100	49	6.0	1000	=, D					
Blind Dup.-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	100	560	560	ND	ND, i					
Seep A-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	100			0	SUR, D,#		0	28-105		
Seep A-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	100			0	SUR, D,#		0	10-134		
Seep A-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1000	480	56	3100	=, D					
Seep A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	100	48	12	370	=, D					
Seep A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	100	48	4.7	1300	=, D					
Seep A-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1000	480	47	1900	=, D					
Seep A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	100	48	4.7	270	=, PD					
Seep A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	100	48	6.0	1900	=, D					
Seep A-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1000	480	120	3100	=, PD					
Seep A-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	100			0	SUR, D,#		0	28-105		
Seep A-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	100			0	SUR, D,#		0	10-134		
Seep A-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1000	490	56	2400	=, D					
Seep A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	100	49	12	160	=, D					
Seep A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	100	49	4.7	640	=, D					
Seep A-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	100	49	4.7	920	=, D					
Seep A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	100	49	4.7	190	=, PD					
Seep A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	100	49	6.0	1000	=, D					
Seep A-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	100	440	440	ND	ND, i					
Seep B-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	100			0	SUR, D,#		0	28-105		
Seep B-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	100			0	SUR, ED,#		0	10-134		
Seep B-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1000	490	56	2900	=, D					
Seep B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	100	49	12	340	=, D					
Seep B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	100	49	4.7	1500	=, PD					
Seep B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1000	490	47	2000	=, D					
Seep B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	100	49	4.7	320	=, PD					
Seep B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	100	49	6.0	1800	=, D					
Seep B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1000	490	120	3200	=, PD					
Seep B-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	100			0	SUR, D,#		0	28-105		
Seep B-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	100			0	SUR, D,#		0	10-134		
Seep B-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1000	490	56	2600	=, D					
Seep B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	100	49	12	130	=, PD					
Seep B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	100	49	4.7	480	=, D					
Seep B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	100	49	4.7	740	=, D					
Seep B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	100	62	62	ND	ND, i					
Seep B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	100	49	6.0	850	=, D					
Seep B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	100	320	320	ND	ND, i					
Seep C-T	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	100			0	SUR, D,#		0	28-105		
Seep C-T	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	100			0	SUR, ED,#		0	10-134		
Seep C-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1000	490	56	3000	=, D					
Seep C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	100	49	12	390	=, D					
Seep C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	100	49	4.7	1300	=, D					

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
Seep C-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1000	490	47	2000	=, D					
Seep C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	100	49	4.7	290	=, D					
Seep C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	100	49	6.0	1800	=, D					
Seep C-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1000	490	120	3200	=, PD					
Seep C-D	SMPL	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	100			0	SUR, D,#		0	28-105		
Seep C-D	SMPL	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	100			0	SUR, ED,#		0	10-134		
Seep C-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1000	490	56	2400	=, D					
Seep C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	100	49	12	170	=, D					
Seep C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	100	49	4.7	1000	=, PD					
Seep C-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	100	49	4.7	950	=, D					
Seep C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	100	49	48	ND	ND, i					
Seep C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	100	49	6.0	1000	=, D					
Seep C-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	100	620	620	ND	ND, i					
303.1B-D	MS1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			58	SUR		58	28-105		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			66	SUR		66	28-105		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			105	SUR		105	10-134		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	alpha-BHC	1	0.50	0.25	3.54	=	4.00	89	62-114		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	alpha-BHC	1	0.50	0.25	4.03	=	4.00	101	62-114		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	beta-BHC	1	0.50	0.50	4.65	=	4.00	116	57-126		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	gamma-BHC (Lindane)	1	0.50	0.20	3.49	=	4.00	87	65-118		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	gamma-BHC (Lindane)	1	0.50	0.20	4.04	=	4.00	101	65-118		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	delta-BHC	1	0.50	0.062	4.56	=	4.00	114	10-144		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Heptachlor	1	0.50	0.073	3.40	=	4.00	85	50-119		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Heptachlor	1	0.50	0.073	3.86	=	4.00	96	50-119		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Aldrin	1	0.50	0.14	3.34	=	4.00	83	58-117		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Heptachlor Epoxide	1	0.50	0.21	3.57	=	4.00	89	62-118		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Heptachlor Epoxide	1	0.50	0.21	3.76	=	4.00	94	62-118		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	gamma-Chlordane	1	0.50	0.065	3.93	=	4.00	98	61-121		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endosulfan I	1	0.50	0.10	3.25	=	4.00	81	50-128		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	alpha-Chlordane	1	0.50	0.044	3.82	=	4.00	96	63-118		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	3.89	=	4.00	97	65-129		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	3.94	=	4.00	98	65-129		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	4.22	=	4.00	105	69-127		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endrin	1	0.50	0.054	3.81	=	4.00	95	66-125		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endrin	1	0.50	0.054	4.04	=	4.00	101	66-125		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endosulfan II	1	0.50	0.063	3.73	=	4.00	93	63-123		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.047	4.32	=	4.00	108	66-132		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.047	5.54	=, *	4.00	139	66-132		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endrin Aldehyde	1	0.50	0.038	4.09	=	4.00	102	64-113		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endosulfan Sulfate	1	0.50	0.13	4.43	=	4.00	111	66-115		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	4.83	=	4.00	121	69-130		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	5.03	=	4.00	126	69-130		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endrin Ketone	1	0.50	0.030	4.25	=	4.00	106	69-126		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Methoxychlor	1	0.50	0.17	4.61	=, P	4.00	115	59-136		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			60	SUR		60	28-105		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			89	SUR		89	10-134		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	4.13	=	5.00	83	70-130		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.047	4.00	=	5.00	80	70-130		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.12	4.66	=	5.00	93	70-130		
Duplicate Lab Contro	DLCS1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			55	SUR		55	28-105		

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
Duplicate Lab Contrc	DLCS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			69	SUR		69	10-134		
Duplicate Lab Contrc	DLCS1	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	4.43	=	5.00	89	70-130		7
Duplicate Lab Contrc	DLCS1	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.047	3.89	=	5.00	78	70-130		3
Duplicate Lab Contrc	DLCS1	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.12	3.76	=	5.00	75	70-130		21
303.1B-D	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.48	0.056	ND	ND					
303.1B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.48	0.12	ND	ND					
303.1B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.48	0.48	ND	ND, i					
303.1B-D	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.48	0.48	ND	ND, i					
303.1B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.74	0.74	ND	ND, i					
303.1B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.48	0.17	ND	ND, i					
303.1B-D	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.48	0.20	ND	ND, i					
303.1B-D	MS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			93	SUR		93	10-134		
303.1B-D	MS1	EPA 3520C	8081A	ng/L	Dieldrin	1	1.9	0.21	13.1	=	14.8	89	35-137		
303.1B-D	MS1	EPA 3520C	8081A	ng/L	4,4'-DDE	1	1.9	0.45	16.1	=	14.8	108	22-148		
303.1B-D	MS1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	1.9	0.18	23.2	=, *	14.8	157	32-148		
303.1B-D	MS1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	1.9	0.18	17.8	=	14.8	120	37-143		
303.1B-D	DMS1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			54	SUR		54	28-105		
303.1B-D	DMS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			87	SUR		87	10-134		
303.1B-D	DMS1	EPA 3520C	8081A	ng/L	Dieldrin	1	2.3	0.26	15.4	=	18.2	85	35-137		16
303.1B-D	DMS1	EPA 3520C	8081A	ng/L	4,4'-DDE	1	2.3	0.55	16.9	=	18.2	93	22-148		5
303.1B-D	DMS1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	2.3	0.22	25.4	=	18.2	140	32-148		9
303.1B-D	DMS1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	2.3	0.22	20.7	=	18.2	114	37-143		15
303.1B-T	MS1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			72	SUR		72	28-105		
303.1B-T	MS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			97	SUR		97	10-134		
303.1B-T	MS1	EPA 3520C	8081A	ng/L	Dieldrin	1	2.0	0.23	15.7	=	16.0	97	35-137		
303.1B-T	MS1	EPA 3520C	8081A	ng/L	4,4'-DDE	1	2.0	0.48	16.6	=	16.0	104	22-148		
303.1B-T	MS1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	2.0	0.19	24.2	=, *	16.0	151	32-148		
303.1B-T	MS1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	2.0	0.19	20.7	=	16.0	126	37-143		
303.1B-T	DMS1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			72	SUR		72	28-105		
303.1B-T	DMS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			94	SUR		94	10-134		
303.1B-T	DMS1	EPA 3520C	8081A	ng/L	Dieldrin	1	2.0	0.23	15.3	=	16.0	94	35-137		3
303.1B-T	DMS1	EPA 3520C	8081A	ng/L	4,4'-DDE	1	2.0	0.48	16.3	=	16.0	102	22-148		2
303.1B-T	DMS1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	2.0	0.19	22.0	=	16.0	137	32-148		9
303.1B-T	DMS1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	2.0	0.19	22.5	=	16.0	137	37-143		8
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			66	SUR		66	28-105		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			105	SUR		105	10-134		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	alpha-BHC	1	0.50	0.25	4.03	=	4.00	101	62-114		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	beta-BHC	1	0.50	0.50	4.65	=	4.00	116	57-126		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	gamma-BHC (Lindane)	1	0.50	0.20	4.04	=	4.00	101	65-118		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	delta-BHC	1	0.50	0.062	4.10	=	4.00	103	10-144		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	delta-BHC	1	0.50	0.062	4.56	=	4.00	114	10-144		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Heptachlor	1	0.50	0.073	3.86	=	4.00	96	50-119		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Aldrin	1	0.50	0.14	3.34	=	4.00	83	58-117		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Heptachlor Epoxide	1	0.50	0.21	3.76	=	4.00	94	62-118		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	gamma-Chlordane	1	0.50	0.065	3.93	=	4.00	98	61-121		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endosulfan I	1	0.50	0.10	2.93	=	4.00	73	50-128		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endosulfan I	1	0.50	0.10	3.25	=	4.00	81	50-128		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	alpha-Chlordane	1	0.50	0.044	3.82	=	4.00	96	63-118		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	3.94	=	4.00	98	65-129		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	4.22	=	4.00	105	69-127		

Table B-1. 2003 Water Chemistry

Sample	Sample Type	Extraction Method	Method	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endrin	1	0.50	0.054	4.04	=	4.00	101	66-125		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endosulfan II	1	0.50	0.063	3.73	=	4.00	93	63-123		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.047	5.54	=, *	4.00	139	66-132		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endrin Aldehyde	1	0.50	0.038	3.89	=	4.00	97	64-113		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endrin Aldehyde	1	0.50	0.038	4.09	=	4.00	102	64-113		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endosulfan Sulfate	1	0.50	0.13	4.43	=	4.00	111	66-115		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	5.03	=	4.00	126	69-130		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endrin Ketone	1	0.50	0.030	4.16	=	4.00	104	69-126		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Endrin Ketone	1	0.50	0.030	4.25	=	4.00	106	69-126		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Methoxychlor	1	0.50	0.17	4.61	=, P	4.00	115	59-136		
303.1B-T	SMPL	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	0.21	=, J					
303.1B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
303.1B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.50	ND	ND, i					
303.1B-T	SMPL	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	0.52	=, P					
303.1B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.047	ND	ND					
303.1B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	ND	ND					
303.1B-T	SMPL	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.50	ND	ND, i					
Method Blank	MB1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			47	SUR		47	28-105		
Method Blank	MB1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			96	SUR		96	10-134		
Method Blank	MB1	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.047	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.047	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.12	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			50	SUR		50	28-105		
Method Blank	MB1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			97	SUR		97	10-134		
Method Blank	MB1	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.047	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	2,4'-DDE	1	0.50	0.047	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	2,4'-DDD	1	0.50	0.060	ND	ND					
Method Blank	MB1	EPA 3520C	8081A	ng/L	2,4'-DDT	1	0.50	0.12	0.22	=, J					
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			45	SUR		45	28-105		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			89	SUR		89	10-134		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	3.52	=	4.00	88	65-129		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	3.92	=	4.00	98	69-127		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.047	4.86	=	4.00	121	66-132		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	4.82	=	4.00	121	69-130		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Tetrachloro-m-xylene	1			66	SUR		66	28-105		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			102	SUR		102	10-134		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Decachlorobiphenyl	1			105	SUR		105	10-134		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	Dieldrin	1	0.50	0.056	3.94	=	4.00	98	65-129		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDE	1	0.50	0.12	4.22	=	4.00	105	69-127		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDD	1	0.50	0.047	5.54	=, *	4.00	139	66-132		
Lab Control Sample	LCS1	EPA 3520C	8081A	ng/L	4,4'-DDT	1	0.50	0.047	5.03	=	4.00	126	69-130		

Table B-2. 2003 Tissue Chemistry

Sample	Sample Type	Extraction Method	Method	Basis	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
20212-Y6-01	SMPL	BLIGH & DYER	PSEP	As Received	PERCENT	Lipids, Total	1	0.17		0.78	=					
20212-Y6-02	SMPL	BLIGH & DYER	PSEP	As Received	PERCENT	Lipids, Total	1	0.16		0.75	=					
20212-Y6-03	SMPL	BLIGH & DYER	PSEP	As Received	PERCENT	Lipids, Total	1	0.16		0.84	=					
20212-Y6-04	SMPL	BLIGH & DYER	PSEP	As Received	PERCENT	Lipids, Total	1	0.17		1.2	=					
20212-Y6-05	SMPL	BLIGH & DYER	PSEP	As Received	PERCENT	Lipids, Total	1	0.17		0.55	=					
20212-Y6-07	SMPL	BLIGH & DYER	PSEP	As Received	PERCENT	Lipids, Total	1	0.16		1	=					
20212-Y6-08	SMPL	BLIGH & DYER	PSEP	As Received	PERCENT	Lipids, Total	1	0.16		0.68	=					
20212-Y6-04	DUP1	BLIGH & DYER	PSEP	As Received	PERCENT	Lipids, Total	1	0.17		1.2	=				1.2	<1
20212-Y6-04	TPL	BLIGH & DYER	PSEP	As Received	PERCENT	Lipids, Total	1	0.17		1.2	=				1.2	<1
20212-Y6-01	SMPL	EPA 3540	PSEP	As Received	PERCENT	Lipids, Total	1	0.025		0.81	=					
20212-Y6-02	SMPL	EPA 3540	PSEP	As Received	PERCENT	Lipids, Total	1	0.025		1	=					
20212-Y6-03	SMPL	EPA 3540	PSEP	As Received	PERCENT	Lipids, Total	1	0.025		1.2	=					
20212-Y6-04	SMPL	EPA 3540	PSEP	As Received	PERCENT	Lipids, Total	1	0.025		1.5	=					
20212-Y6-05	SMPL	EPA 3540	PSEP	As Received	PERCENT	Lipids, Total	1	0.025		0.56	=					
20212-Y6-06	SMPL	EPA 3540	PSEP	As Received	PERCENT	Lipids, Total	1	0.025		1.6	=					
20212-Y6-07	SMPL	EPA 3540	PSEP	As Received	PERCENT	Lipids, Total	1	0.025		0.74	=					
20212-Y6-08	SMPL	EPA 3540	PSEP	As Received	PERCENT	Lipids, Total	1	0.025		0.79	=					
20212-Y6-07	DUP1	EPA 3540	PSEP	As Received	PERCENT	Lipids, Total	1	0.025		0.83	=				0.785	8
20212-Y6-04	TPL	EPA 3540	PSEP	As Received	PERCENT	Lipids, Total	1	0.025		1.5	=				1.5	<1
20212-Y6-01	SMPL	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	10			92	SUR, D	100	92	38-109		
20212-Y6-01	SMPL	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	10			118	SUR, D	100	118	51-120		
20212-Y6-01	SMPL	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	10	10	0.63	20	=, PD					
20212-Y6-01	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	10	10	1.1	68	=, D					
20212-Y6-01	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	10	10	1.5	130	=, D					
20212-Y6-01	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	10	10	1.6	92	=, D					
20212-Y6-01	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	10	10	1.3	68	=, D					
20212-Y6-01	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	10	10	2.6	ND	ND					
20212-Y6-01	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	10	10	1.4	59	=, D					
20212-Y6-02	SMPL	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	10			98	SUR, D	100	98	38-109		
20212-Y6-02	SMPL	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	10			113	SUR, D	100	113	51-120		
20212-Y6-02	SMPL	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	10	10	0.63	49	=, D					
20212-Y6-02	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	10	10	1.1	110	=, D					
20212-Y6-02	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	10	10	1.5	390	=, D					
20212-Y6-02	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	10	10	1.6	180	=, D					
20212-Y6-02	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	10	10	1.3	150	=, D					
20212-Y6-02	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	10	10	10	ND	ND, i					
20212-Y6-02	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	10	10	1.4	99	=, D					
20212-Y6-03	SMPL	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	10			97	SUR, D	100	97	38-109		
20212-Y6-03	SMPL	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	10			116	SUR, D	100	116	51-120		
20212-Y6-03	SMPL	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	10	10	0.63	6.2	=, JPD					
20212-Y6-03	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	10	10	1.1	41	=, D					
20212-Y6-03	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	10	10	1.5	56	=, D					
20212-Y6-03	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	10	10	1.6	57	=, D					
20212-Y6-03	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	10	10	1.3	29	=, D					

Table B-2. 2003 Tissue Chemistry

Sample	Sample Type	Extraction Method	Method	Basis	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
20212-Y6-03	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	10	10	2.6	ND	ND					
20212-Y6-03	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	10	10	1.4	31	=, D					
20212-Y6-04	SMPL	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	1			99	SUR	100	99	38-109		
20212-Y6-04	SMPL	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	1			90	SUR	100	90	51-120		
20212-Y6-04	SMPL	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	1	1	0.063	2.9	=					
20212-Y6-04	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	1	1	0.11	17	=					
20212-Y6-04	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	1	1	0.15	11	=					
20212-Y6-04	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	1	9.7	9.7	ND	ND, i					
20212-Y6-04	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	1	3.8	3.8	ND	ND, i					
20212-Y6-04	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	1	1	0.26	ND	ND					
20212-Y6-04	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	1	5.7	5.7	ND	ND, i					
20212-Y6-05	SMPL	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	1			88	SUR	100	88	38-109		
20212-Y6-05	SMPL	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	1			85	SUR	100	85	51-120		
20212-Y6-05	SMPL	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	1	1	0.063	1.3	=					
20212-Y6-05	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	1	1	0.11	9.4	=					
20212-Y6-05	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	1	9.3	9.3	ND	ND, i					
20212-Y6-05	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	1	1	0.16	8.6	=					
20212-Y6-05	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	1	1	0.13	6.8	=					
20212-Y6-05	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	1	1	0.26	ND	ND					
20212-Y6-05	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	1	4.7	4.7	ND	ND, i					
20212-Y6-06	SMPL	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	100			136	SUR, D,#	100	136	38-109		
20212-Y6-06	SMPL	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	100			0	SUR, D,#	100	0	51-120		
20212-Y6-06	SMPL	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	100	110	6.6	4000	=, D					
20212-Y6-06	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	1000	1100	120	15000	=, D					
20212-Y6-06	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	1000	1100	160	21000	=, D					
20212-Y6-06	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	1000	1100	170	31000	=, D					
20212-Y6-06	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	1000	1100	140	32000	=, D					
20212-Y6-06	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	100	110	27	1700	=, D					
20212-Y6-06	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	1000	1100	150	35000	=, D					
20212-Y6-07	SMPL	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	10			97	SUR, D	100	97	38-109		
20212-Y6-07	SMPL	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	10			109	SUR, D	100	109	51-120		
20212-Y6-07	SMPL	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	10	10	0.63	18	=, PD					
20212-Y6-07	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	10	10	1.1	64	=, D					
20212-Y6-07	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	10	10	1.5	110	=, D					
20212-Y6-07	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	10	10	1.6	120	=, D					
20212-Y6-07	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	10	10	1.3	61	=, D					
20212-Y6-07	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	10	10	2.6	ND	ND					
20212-Y6-07	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	10	10	1.4	76	=, D					
20212-Y6-08	SMPL	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	10			93	SUR, D	100	93	38-109		
20212-Y6-08	SMPL	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	10			111	SUR, D	100	111	51-120		
20212-Y6-08	SMPL	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	10	10	0.63	26	=, D					
20212-Y6-08	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	10	10	1.1	86	=, D					
20212-Y6-08	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	10	10	1.5	130	=, D					
20212-Y6-08	SMPL	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	10	10	1.6	200	=, D					

Table B-2. 2003 Tissue Chemistry

Sample	Sample Type	Extraction Method	Method	Basis	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
20212-Y6-08	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	10	10	1.3	78	=, D					
20212-Y6-08	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	10	10	10	ND	ND, i					
20212-Y6-08	SMPL	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	10	10	1.4	120	=, D					
20212-Y6-05	DUP1	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	1			94	SUR	100	94	38-109		
20212-Y6-05	DUP1	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	1			82	SUR	100	82	51-120		
20212-Y6-05	DUP1	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	1	1	0.063	1.3	=				1.3	1
20212-Y6-05	DUP1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	1	1	0.11	8.4	=				8.9	11
20212-Y6-05	DUP1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	1	7.9	7.9	ND	ND, i				ND	
20212-Y6-05	DUP1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	1	1	0.16	7.4	=				8.0	15
20212-Y6-05	DUP1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	1	1	0.13	6.1	=				6.5	12
20212-Y6-05	DUP1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	1	1	0.26	ND	ND				ND	
20212-Y6-05	DUP1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	1	4.1	4.1	ND	ND, i				ND	
Method Blank	MB1	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	1			88	SUR	100	88	38-109		
Method Blank	MB1	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	1			103	SUR	100	103	51-120		
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	1	1	0.063	ND	ND					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	1	1	0.11	1.5	=, P					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	1	1	0.15	1.5	=, P					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	1	1	0.16	8.4	=					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	1	1	0.13	0.5	=, JP					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	1	1	0.26	ND	ND					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	1	1	0.14	4.9	=					
Method Blank	MB1	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	1			82	SUR	100	82	38-109		
Method Blank	MB1	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	1			86	SUR	100	86	51-120		
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	1	1	0.063	ND	ND					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	1	1	0.11	ND	ND					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	1	1	0.15	ND	ND					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	1	1	0.16	ND	ND					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	1	1	0.13	ND	ND					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	1	1	0.26	ND	ND					
Method Blank	MB1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	1	1	0.14	ND	ND					
20212-Y6-05	MS1	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	1			87	SUR	100	87	38-109		
20212-Y6-05	MS1	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	1			85	SUR	100	85	51-120		
20212-Y6-05	MS1	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	1	1	0.063	19.9	=	20	93	27-175		
20212-Y6-05	MS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	1	1	0.11	27.4	=	20	90	38-137		
20212-Y6-05	MS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	1	1	0.15	27	=, #	20	135	41-145		
20212-Y6-05	MS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	1	1	0.16	25.5	=	20	84	34-154		
20212-Y6-05	MS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	1	1	0.13	24.9	=	20	90	70-130		
20212-Y6-05	MS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	1	1	0.26	19	=	20	95	70-130		
20212-Y6-05	MS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	1	1	0.14	23.5	=, #	20	117	70-130		
20212-Y6-05	DMS1	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	1			93	SUR	100	93	38-109		
20212-Y6-05	DMS1	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	1			84	SUR	100	84	51-120		
20212-Y6-05	DMS1	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	1	1	0.063	22	=	20	104	27-175		10
20212-Y6-05	DMS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	1	1	0.11	31.5	=	20	110	38-137		14
20212-Y6-05	DMS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	1	1	0.15	30.8	=, #	20	154	41-145		13

Table B-2. 2003 Tissue Chemistry

Sample	Sample Type	Extraction Method	Method	Basis	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
20212-Y6-05	DMS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	1	1	0.16	29.2	=	20	103	34-154		14
20212-Y6-05	DMS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	1	1	0.13	25.8	=	20	95	70-130		4
20212-Y6-05	DMS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	1	1	0.26	19.5	=	20	98	70-130		3
20212-Y6-05	DMS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	1	1	0.14	24.4	=, #	20	122	70-130		4
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	1			96	SUR	100	96	38-109		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	1			99	SUR	100	99	51-120		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	1	1	0.063	21.9	=	20	110	44-151		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	1	1	0.11	29.3	=, B	20	147	38-158		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	1	1	0.15	37.1	=, *	20	185	37-154		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	1	1	0.16	35.7	=, B,*	20	179	48-156		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	1	1	0.13	20.2	=	20	101	70-130		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	1	1	0.26	19.8	=	20	99	70-130		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	1	1	0.14	21.7	=, B	20	109	70-130		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	PERCENT	Tetrachloro-m-xylene	1			79	SUR	100	79	38-109		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	PERCENT	Decachlorobiphenyl	1			83	SUR	100	83	51-120		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	Dieldrin	1	1	0.063	20.2	=	20	101	44-151		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDE	1	1	0.11	20.6	=	20	103	38-158		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDD	1	1	0.15	20.6	=	20	103	37-154		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	4,4'-DDT	1	1	0.16	20.4	=	20	102	48-156		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDD	1	1	0.13	19.9	=	20	99	70-130		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDE	1	1	0.26	19.8	=	20	99	70-130		
Lab Control Sample	LCS1	EPA 3540C	8081A	Wet	ug/Kg	2,4'-DDT	1	1	0.14	19.9	=	20	99	70-130		
20212-Y6-01	SMPL	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			99	SUR	100	99	40-141		
20212-Y6-01	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	ND	ND					
20212-Y6-01	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1221	1	20	0.65	ND	ND					
20212-Y6-01	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1232	1	10	0.65	ND	ND					
20212-Y6-01	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1242	1	10	0.65	ND	ND					
20212-Y6-01	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1248	1	10	0.65	ND	ND					
20212-Y6-01	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1254	1	10	0.65	140	=, P					
20212-Y6-01	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	ND	ND					
20212-Y6-02	SMPL	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			92	SUR	100	92	40-141		
20212-Y6-02	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	ND	ND					
20212-Y6-02	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1221	1	20	0.65	ND	ND					
20212-Y6-02	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1232	1	10	0.65	ND	ND					
20212-Y6-02	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1242	1	10	0.65	ND	ND					
20212-Y6-02	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1248	1	10	0.65	ND	ND					
20212-Y6-02	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1254	1	10	0.65	270	=, P					
20212-Y6-02	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	ND	ND					
20212-Y6-03	SMPL	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			97	SUR	100	97	40-141		
20212-Y6-03	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	ND	ND					
20212-Y6-03	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1221	1	20	0.65	ND	ND					
20212-Y6-03	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1232	1	10	0.65	ND	ND					
20212-Y6-03	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1242	1	10	0.65	ND	ND					
20212-Y6-03	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1248	1	10	0.65	ND	ND					

Table B-2. 2003 Tissue Chemistry

Sample	Sample Type	Extraction Method	Method	Basis	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
20212-Y6-03	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1254	1	10	0.65	96	=, P					
20212-Y6-03	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	ND	ND					
20212-Y6-04	SMPL	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			95	SUR	100	95	40-141		
20212-Y6-04	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	ND	ND					
20212-Y6-04	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1221	1	20	0.65	ND	ND					
20212-Y6-04	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1232	1	10	0.65	ND	ND					
20212-Y6-04	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1242	1	10	0.65	ND	ND					
20212-Y6-04	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1248	1	10	0.65	ND	ND					
20212-Y6-04	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1254	1	10	0.65	93	=					
20212-Y6-04	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	ND	ND					
20212-Y6-05	SMPL	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			94	SUR	100	94	40-141		
20212-Y6-05	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	ND	ND					
20212-Y6-05	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1221	1	20	0.65	ND	ND					
20212-Y6-05	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1232	1	10	0.65	ND	ND					
20212-Y6-05	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1242	1	10	0.65	ND	ND					
20212-Y6-05	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1248	1	10	0.65	ND	ND					
20212-Y6-05	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1254	1	10	0.65	45	=					
20212-Y6-05	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	ND	ND					
20212-Y6-06	SMPL	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	200			112	SUR, D,#	100	112	40-141		
20212-Y6-06	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	200	2100	140	ND	ND					
20212-Y6-06	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1221	200	4200	140	ND	ND					
20212-Y6-06	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1232	200	2100	140	ND	ND					
20212-Y6-06	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1242	200	2100	140	ND	ND					
20212-Y6-06	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1248	200	2100	140	ND	ND					
20212-Y6-06	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1254	200	3100	3100	ND	ND, i					
20212-Y6-06	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	200	2100	140	ND	ND					
20212-Y6-07	SMPL	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			92	SUR	100	92	40-141		
20212-Y6-07	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	ND	ND					
20212-Y6-07	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1221	1	20	0.65	ND	ND					
20212-Y6-07	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1232	1	10	0.65	ND	ND					
20212-Y6-07	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1242	1	10	0.65	ND	ND					
20212-Y6-07	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1248	1	10	0.65	ND	ND					
20212-Y6-07	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1254	1	10	0.65	90	=, P					
20212-Y6-07	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	ND	ND					
20212-Y6-08	SMPL	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			95	SUR	100	95	40-141		
20212-Y6-08	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	ND	ND					
20212-Y6-08	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1221	1	20	0.65	ND	ND					
20212-Y6-08	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1232	1	10	0.65	ND	ND					
20212-Y6-08	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1242	1	10	0.65	ND	ND					
20212-Y6-08	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1248	1	10	0.65	ND	ND					
20212-Y6-08	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1254	1	10	0.65	110	=, P					
20212-Y6-08	SMPL	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	ND	ND					
20212-Y6-07	DUP1	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			96	SUR	100	96	40-141		
20212-Y6-07	DUP1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	ND	ND				ND	

Table B-2. 2003 Tissue Chemistry

Sample	Sample Type	Extraction Method	Method	Basis	Units	Component	Dilution Factor	Reporting Limit	Detection Limit	Result	Result Notes	Spike Concentration	Percent Recovery	Acceptance Limits	Average	RPD
20212-Y6-07	DUP1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1221	1	20	0.65	ND	ND				ND	
20212-Y6-07	DUP1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1232	1	10	0.65	ND	ND				ND	
20212-Y6-07	DUP1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1242	1	10	0.65	ND	ND				ND	
20212-Y6-07	DUP1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1248	1	10	0.65	ND	ND				ND	
20212-Y6-07	DUP1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1254	1	10	0.65	130	=, P				110	39
20212-Y6-07	DUP1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	ND	ND				ND	
Method Blank	MB1	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			88	SUR	100	88	40-141		
Method Blank	MB1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	ND	ND					
Method Blank	MB1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1221	1	20	0.65	ND	ND					
Method Blank	MB1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1232	1	10	0.65	ND	ND					
Method Blank	MB1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1242	1	10	0.65	ND	ND					
Method Blank	MB1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1248	1	10	0.65	ND	ND					
Method Blank	MB1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1254	1	10	0.65	ND	ND					
Method Blank	MB1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	ND	ND					
20212-Y6-04	MS1	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			99	SUR	100	99	40-141		
20212-Y6-04	MS1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	208	=	200	104	70-130		
20212-Y6-04	MS1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	230	=	200	115	70-130		
20212-Y6-04	DMS1	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			95	SUR	100	95	40-141		
20212-Y6-04	DMS1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	182	=	200	91	70-130		13
20212-Y6-04	DMS1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	215	=	200	108	70-130		7
Lab Control Sample	LCS1	EPA 3540C	8082	Wet	PERCENT	Decachlorobiphenyl	1			99	SUR	100	99	40-141		
Lab Control Sample	LCS1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1016	1	10	0.65	188	=	200	94	57-134		
Lab Control Sample	LCS1	EPA 3540C	8082	Wet	ug/Kg	Aroclor 1260	1	10	0.65	189	=	200	95	64-136		

Appendix C

Phase II Source Investigation Soil and Sediment Chemistry

Table C-1. Chlorinated Pesticides and PCBs in Embankment Soils, Phase II Source Investigation

	Concentration µg/kg dry					
Analyte	**T(-35) Old Scale 0-0.3 ft**	**T (-35) Old Scale 0.5-1 ft**	**T(-29) 36ft N of 8" pipe 0-0.5 ft**	**T(-29) 36ft N of 8" pipe 0.5-1 ft**	**T(-12.5) Bank 0-0.2 ft**	**T(-12.5) Bank 0.5-1 ft**
0-Dieldrin	95 U	1100 U	5900	3200	1800 U	46 U
2,4´-DDE	95 U	1100 U	1000 U	2100 U	1800 U	46 U
2,4´-DDT	160	1100 U	5500	1900 C1, J	1900	46 U
2,4'-DDD	180	2100	2700	9300	1800 U	46 U
4,4'-DDD	680	7700	8600	45000 Q7, J	2200	46 U
4,4'-DDE	170	1800	5300	3800	1800 U	46 U
4,4'-DDT	430	2500	46000 Q7, J	15000	8800	46 U
Aldrin	49 U	570 U	4800	1500	940 U	24 U
alpha-BHC	49 U	570 U	520 U	1100 U	940 U	24 U
alpha-Chlordane	49 U	570 U	520 U	1100 U	940 U	24 U
beta-BHC	49 U	570 U	520 U	1100 U	940 U	24 U
delta-BHC	49 U	570 U	520 U	1100 U	940 U	24 U
Endosulfan I	49 U	570 U	520 U	1100 U	940 U	24 U
Endosulfan II	95 U	1100 U	550 C1, G1, N, J	2100 U	1800 U	46 U
Endosulfan sulfate	95 U	1100 U	1000 U	2100 U	1800 U	46 U
Endrin	95 U	1100 U	5900	1300 C1, J	1800 U	46 U
Endrin aldehyde	95 U	1100 U	1000 U	2100 U	1800 U	46 U
Endrin ketone	95 U	1100 U	2300 N, G1	2100 U	1800 U	46 U
gamma-BHC (Lindane)	49 U	570 U	520 U	1100 U	940 U	24 U
gamma-Chlordane	49 U	570 U	520 U	700 C1, J	940 U	24 U
Heptachlor	49 U	570 U	520 U	1100 U	940 U	24 U
Heptachlor epoxide	49 U	570 U	520 U	1100 U	940 U	24 U
Methoxychlor	490 U	5700 U	5200 U	11000 U	9400 U	240 U
Toxaphene	4900 U	57000 U	52000 U	110000 U	94000 U	2400 U
Aroclor 1016	950 U	11000 U	10000 U	21000 U	18000 U	460 U
Aroclor 1221	1900 U	22000 U	20000 U	43000 U	36000 U	930 U
Aroclor 1232	950 U	11000 U	10000 U	21000 U	18000 U	460 U
Aroclor 1242	950 U	11000 U	10000 U	21000 U	18000 U	460 U
Aroclor 1248	950 U	11000 U	10000 U	21000 U	18000 U	460 U
Aroclor 1254	300	11000 U	10000 U	21000 U	18000 U	460 U
Aroclor 1260	950 U	11000 U	10000 U	21000 U	18000 U	460 U
Surrogate Recovery						
2,4,5,6-Tetrachloro-m-xylene	70%	80 %	82%	85%	73 %	75%
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	86%	125 %	115%	100%	88 %	70%

Table C-1. Chlorinated Pesticides and PCBs in Embankment Soils, Phase II Source Investigation

	Concentration µg/kg dry				
Analyte	**T(-11.5) Seep 1-ft N NA (Pipe Sed)**	**T(-11.5)Seep 1-ft N 0-0.2ft**	**T(-11.5) Seep 1-ft N 0.5-1ft**	**T(-4.5) Bank 0-0.2ft**	**T(-4.5) Bank 0.5-1ft**
0-Dieldrin	22000 Q7, J	430 U	49 U	410 U	45 U
2,4´-DDE	5100 G1, N, J, Q7	430 U	49 U	410 U	45 U
2,4´-DDT	120000 Q7, J	780	49 U	340 C1, J	45 U
2,4'-DDD	370000 Q7, J	430 U	49 U	330 C1, J	45 U
4,4'-DDD	1500000 Q7, J	430 U	49 U	830	45 U
4,4'-DDE	39000 Q7, J	430 U	49 U	410	45 U
4,4'-DDT	1600000 Q7, J	3400	28 C1, J	1900	45 U
Aldrin	1600 U	220 U	25 U	210 U	23 U
alpha-BHC	1600 U	220 U	25 U	210 U	23 U
alpha-Chlordane	1700 Q7, J	220 U	25 U	210 U	23 U
beta-BHC	1600 U	220 U	25 U	210 U	23 U
delta-BHC	1600 U	220 U	25 U	210 U	23 U
Endosulfan I	1600 U	220 U	25 U	210 U	23 U
Endosulfan II	3200 U	430 U	49 U	410 U	45 U
Endosulfan sulfate	3200 U	430 U	49 U	410 U	45 U
Endrin	3000 C1, G1, N, Q7,	430 U	49 U	410 U	45 U
Endrin aldehyde	3200 U	430 U	49 U	410 U	45 U
Endrin ketone	3200 U	430 U	49 U	410 U	45 U
gamma-BHC (Lindane)	1600 U	220 U	25 U	210 U	23 U
gamma-Chlordane	3100 G1, N, Q7, J	220 U	25 U	210 U	23 U
Heptachlor	1600 U	220 U	25 U	210 U	23 U
Heptachlor epoxide	1600 U	220 U	25 U	210 U	23 U
Methoxychlor	16000 U	2200 U	250 U	2100 U	230 U
Toxaphene	160000 U	22000 U	2500 U	21000 U	2300 U
Aroclor 1016	32000 U	4300 U	490 U	4100 U	450 U
Aroclor 1221	64000 U	8600 U	970 U	8200 U	900 U
Aroclor 1232	32000 U	4300 U	490 U	4100 U	450 U
Aroclor 1242	32000 U	4300 U	490 U	4100 U	450 U
Aroclor 1248	32000 U	4300 U	490 U	4100 U	450 U
Aroclor 1254	32000 U	4300 U	490 U	4100 U	450 U
Aroclor 1260	32000 U	4300 U	490 U	4100 U	450 U
Surrogate Recovery					
2,4,5,6-Tetrachloro-m-xylene	105 %	74 %	73 %	77 %	135 %
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	159 %	89 %	69 %	100 %	136 %

Table C-1. Chlorinated Pesticides and PCBs in Embankment Soils, Phase II Source Investigation

Analyte	T(+2.25) Bank 0-0.2 ft		T(+2.25) Bank 0.5-1ft	
0-Dieldrin	530	Q7, J, U	4600	C1, J
2,4´-DDE	530	Q7, J, U	5100	U
2,4´-DDT	520	C1, Q7, J	11000	
2,4'-DDD	530	Q7, J, U	5100	U
4,4'-DDD	530	Q7, J, U	4200	C1, J
4,4'-DDE	530	Q7, J, U	5100	U
4,4'-DDT	3000	Q7, J	120000	
Aldrin	270	Q7, J, U	2600	U
alpha-BHC	270	Q7, J, U	2600	U
alpha-Chlordane	270	Q7, J, U	2600	U
beta-BHC	270	Q7, J, U	2600	U
delta-BHC	270	Q7, J, U	2600	U
Endosulfan I	270	Q7, J, U	2600	U
Endosulfan II	530	Q7, J, U	5100	U
Endosulfan sulfate	530	Q7, J, U	5100	U
Endrin	530	Q7, J, U	5100	U
Endrin aldehyde	530	Q7, J, U	5100	U
Endrin ketone	530	Q7, J, U	5100	U
gamma-BHC (Lindane)	270	Q7, J, U	2600	U
gamma-Chlordane	270	Q7, J, U	2600	U
Heptachlor	270	Q7, J, U	2600	U
Heptachlor epoxide	270	Q7, J, U	2600	U
Methoxychlor	2700	Q7, J, U	26000	U
Toxaphene	27000	Q7, J, U	260000	U
Aroclor 1016	5300	Q7, J, U	51000	U
Aroclor 1221	11000	Q7, J, U	100000	U
Aroclor 1232	5300	Q7, J, U	51000	U
Aroclor 1242	5300	Q7, J, U	51000	U
Aroclor 1248	5300	Q7, J, U	51000	U
Aroclor 1254	5300	Q7, J, U	51000	U
Aroclor 1260	5300	Q7, J, U	51000	U
Surrogate Recovery				
2,4,5,6-Tetrachloro-m-xylene	49 %		80 %	
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	82 %		110 %	

Table C-2. Chlorinated Pesticides and PCBs in Diver-Collected Cores, Phase II Source Investigation

	Concentration µg/kg dry					
Analyte	**H03-1-C 0-1.0 ft**	**H03-1-N 0-0.4 ft**	**H03-1-NE 0-0.75 ft**	**H03-1-NW 0-1.7 ft**	**H03-1-S 0-0.6 ft**	**H03-1-SE 0-0.5 ft**
0-Dieldrin	13000 Q7, J	230 U	1000 U	1600 U	2300 U	2700 U
2,4´-DDE	5500 U	230 U	1000 U	1600 U	2300 U	2700 U
2,4´-DDT	110000 J, Q7	230 U	4200	1500 C1, J	5200	3600
2,4'-DDD	20000 J, Q7	230 U	1200	1700	4300	2400 C1, J
4,4'-DDD	54000 J, Q7	230 U	3600	4500	8700	5600
4,4'-DDE	6500 Q7, J	230 U	1000 U	1600 U	1400 C1, J	2700 U
4,4'-DDT	970000 Q7, J	920	34000	21000	34000	40000
Aldrin	2800 U	120 U	540 U	800 U	1200 U	1400 U
alpha-BHC	2800 U	120 U	540 U	800 U	1200 U	1400 U
alpha-Chlordane	2800 U	120 U	540 U	800 U	1200 U	1400 U
beta-BHC	2800 U	120 U	540 U	800 U	1200 U	1400 U
delta-BHC	2800 U	120 U	540 U	800 U	1200 U	1400 U
Endosulfan I	2800 U	120 U	540 U	800 U	1200 U	1400 U
Endosulfan II	5500 U	230 U	1000 U	1600 U	2300 U	2700 U
Endosulfan sulfate	5500 U	230 U	1000 U	1600 U	2300 U	2700 U
Endrin	5500 U	230 U	1000 U	1600 U	2300 U	2700 U
Endrin aldehyde	5500 U	230 U	1000 U	1600 U	2300 U	2700 U
Endrin ketone	5500 U	230 U	1000 U	1600 U	2300 U	2700 U
gamma-BHC (Lindane)	2800 U	120 U	540 U	800 U	1200 U	1400 U
gamma-Chlordane	2800 U	120 U	540 U	800 U	1200 U	1400 U
Heptachlor	2800 U	120 U	540 U	800 U	1200 U	1400 U
Heptachlor epoxide	2800 U	120 U	540 U	800 U	1200 U	1400 U
Methoxychlor	28000 U	1200 U	5400 U	8000 U	12000 U	14000 U
Toxaphene	280000 U	12000 U	54000 U	80000 U	120000 U	140000 U
Aroclor 1016	55000 U	2300 U	10000 U	16000 U	23000 U	27000 U
Aroclor 1221	110000 U	4600 U	21000 U	31000 U	46000 U	54000 U
Aroclor 1232	55000 U	2300 U	10000 U	16000 U	23000 U	27000 U
Aroclor 1242	55000 U	2300 U	10000 U	16000 U	23000 U	27000 U
Aroclor 1248	55000 U	2300 U	10000 U	16000 U	23000 U	27000 U
Aroclor 1254	55000 U	2300 U	10000 U	16000 U	23000 U	27000 U
Aroclor 1260	55000 U	2300 U	10000 U	16000 U	23000 U	27000 U
Surrogate Recovery						
2,4,5,6-Tetrachloro-m-xylene	97 %	70 %	77 %	78 %	80 %	65 %
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	157 %	90 %	124 %	86 %	110 %	85 %

Table C-2. Chlorinated Pesticides and PCBs in Diver-Collected Cores, Phase II Source Investigation

	Concentration µg/kg dry						
Analyte	**H03-1-SW 0-1.5 ft**	**H03-1-W 0-1.5 ft**	**H03-2-N 0-0.9 ft**	**H03-2-NE 0-0.25 ft**	**H03-2-S 0-0.4 ft**	**H03-2-SE 0-0.75 ft**	**H03-2-W 0-1.5 ft**
0-Dieldrin	1700 U	1600 U	2700 U	2400 U	1400 U	1300 U	3500 U
2,4´-DDE	1700 U	1600 U	2700 U	2400 U	1400 U	1300 U	3500 U
2,4´-DDT	2300	17000	3800 J, Q7	10000	1300 C1, J	2400	36000
2,4'-DDD	1500 C1, J	2800	2700 U	2500	1400	2100	2800 C1, J
4,4'-DDD	4000	9100	1400 C1, Q7, J	3100	2400	3900	5700
4,4'-DDE	1700 U	1100 C1, J	2700 U	2400 U	1400 U	1300 U	3500 U
4,4'-DDT	19000	160000 Q7, J	22000 Q7, J	10000	17000	18000	150000
Aldrin	870 U	820 U	1400 U	1200 U	700 U	660 U	1800 U
alpha-BHC	870 U	820 U	1400 U	69000 Q7, J	700 U	660 U	1800 U
alpha-Chlordane	870 U	820 U	1400 U	1200 U	700 U	660 U	1800 U
beta-BHC	870 U	820 U	1400 U	3200	700 U	660 U	1800 U
delta-BHC	870 U	820 U	1400 U	1200 U	700 U	660 U	1800 U
Endosulfan I	870 U	820 U	1400 U	1200 U	700 U	660 U	1800 U, C1
Endosulfan II	1700 U	1600 U	2700 U	2400 U	1400 U	1300 U	3500 U
Endosulfan sulfate	1700 U	1600 U	2700 U	2400 U	1400 U	1300 U	3500 U
Endrin	1700 U	1600 U	2700 U	2400 U	1400 U	1300 U	3500 U
Endrin aldehyde	1700 U	1600 U	2700 U	2400 U	1400 U	1300 U	3500 U
Endrin ketone	1700 U	1600 U	2700 U	2400 U	1400 U	1300 U	3500 U
gamma-BHC (Lindane)	870 U	820 U	1400 U	1200 U	700 U	660 U	1800 U
gamma-Chlordane	870 U	820 U	1400 U	1200 U	700 U	660 U	1800 U
Heptachlor	870 U	820 U	1400 U	1200 U	700 U	660 U	1800 U
Heptachlor epoxide	870 U	820 U	1400 U	1200 U	700 U	660 U	8900 U
Methoxychlor	8700 U	8200 U	14000 U	12000 U	7000 U	6600 U	18000 U
Toxaphene	87000 U	82000 U	140000 U	120000 U	70000 U	66000 U	180000 U
Aroclor 1016	17000 U	16000 U	27000 U	24000 U	14000 U	13000 U	35000 U
Aroclor 1221	34000 U	32000 U	54000 U	47000 U	27000 U	26000 U	69000 U
Aroclor 1232	17000 U	16000 U	27000 U	24000 U	14000 U	13000 U	35000 U
Aroclor 1242	17000 U	16000 U	27000 U	24000 U	14000 U	13000 U	35000 U
Aroclor 1248	17000 U	16000 U	27000 U	24000 U	14000 U	13000 U	35000 U
Aroclor 1254	17000 U	16000 U	27000 U	24000 U	14000 U	13000 U	35000 U
Aroclor 1260	17000 U	16000 U	27000 U	24000 U	14000 U	13000 U	35000 U
Surrogate Recovery							
2,4,5,6-Tetrachloro-m-xylene	67 %	77 %	75 %	80 %	70 %	72 %	75 %
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	98 %	108 %	170 %	120 %	103 %	112 %	100 %

Table C-2. Chlorinated Pesticides and PCBs in Diver-Collected Cores, Phase II Source Investigation

	Concentration µg/kg dry			
Analyte	**H03-T(+1.5)-E 0-1.0 ft**	**H03-T(+2.5)-E 0-0.7 ft**	**H03-T(+3.5)-E 0-0.5 ft**	**H03-T(+4.5)-E 0-0.9 ft**
0-Dieldrin	1300 U	1100 U	130 U	53 U
2,4´-DDE	1300 U	1100 U	130 U	53 U
2,4´-DDT	1000 C1, J	670 C1, J	68 C1, J	100
2,4'-DDD	1300 U	1100 U	82 C1, J	49 C1, J
4,4'-DDD	1300 U	1100 U	120 C1, J	120
4,4'-DDE	1300 U	1100 U	130 U	51 C1, J
4,4'-DDT	5500	5200	930	530
Aldrin	670 U	580 U	66 U	27 U
alpha-BHC	670 U	580 U	66 U	27 U
alpha-Chlordane	670 U	580 U	66 U	27 U
beta-BHC	670 U	580 U	66 U	27 U
delta-BHC	670 U	580 U	66 U	27 U
Endosulfan I	670 U	580 U	66 U	27 U
Endosulfan II	1300 U	1100 U	130 U	53 U
Endosulfan sulfate	1300 U	1100 U	130 U	53 U
Endrin	1300 U	1100 U	130 U	53 U
Endrin aldehyde	1300 U	1100 U	130 U	53 U
Endrin ketone	1300 U	1100 U	130 U	53 U
gamma-BHC (Lindane)	670 U	580 U	66 U	27 U
gamma-Chlordane	670 U	580 U	66 U	27 U
Heptachlor	670 U	580 U	66 U	27 U
Heptachlor epoxide	670 U	580 U	66 U	27 U
Methoxychlor	6700 U	5800 U	660 U	270 U
Toxaphene	67000 U	58000 U	6600 U	2700 U
Aroclor 1016	13000 U	11000 U	1300 U	530 U
Aroclor 1221	26000 U	23000 U	2500 U	1100 U
Aroclor 1232	13000 U	11000 U	1300 U	530 U
Aroclor 1242	13000 U	11000 U	1300 U	530 U
Aroclor 1248	13000 U	11000 U	1300 U	530 U
Aroclor 1254	13000 U	11000 U	1300 U	530 U
Aroclor 1260	13000 U	11000 U	1300 U	530 U
Surrogate Recovery				
2,4,5,6-Tetrachloro-m-xylene	50 %	67 %	64 %	64 %
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	65 %	90 %	78 %	65 %

Table C-3. Chlorinated Pesticides and PCBs in Vibracores, Phase II Source Investigation

	Concentration µg/kg dry					
Analyte	**H03-01 0-1.0 ft**	**H03-02 0-0.3 ft**	**H03-03 0-1.3**	**H03-04 0-1.5 ft**	**H03-04 1.9-3.1 ft**	**H03-05 0-2.8 ft**
0-Dieldrin	2300 C1, J	150 U	1400 U	260 J, Q7, U	1300 U	750 J, Q7, U
2,4´-DDE	3700 U	150 U	1400 U	260 J, Q7, U	2000 U	750 J, Q7, U
2,4´-DDT	3200 C1, J	120 C1, J	1400 U	190 J, C1, Q7	1300 U	700 J, Q7, C1
2,4'-DDD	16000	190	3500	650 J, Q7	2300	1600 J, Q7
4,4'-DDD	66000	890	8800	3100 J, Q7	12000 B1, J	6700 J, Q7
4,4'-DDE	2200 C1, J	150 U	1400 U	160 J, C1, Q7	860 C1, J	750 J, Q7, U
4,4'-DDT	69000	1300	14000	3000 J, Q7	12000 J, B1	7000 J, Q7
Aldrin	1900 U	75 U	700 U	140 J, Q7, U	680 U	380 J, Q7, U
alpha-BHC	1900 U	75 U	700 U	140 J, Q7, U	680 U	380 J, Q7, U
alpha-Chlordane	1900 U	75 U	700 U	140 J, Q7, U	680 U	380 J, Q7, U
beta-BHC	1900 U	75 U	700 U	140 J, Q7, U	680 U	380 J, Q7, U
delta-BHC	1900 U	75 U	700 U	140 J, Q7, U	680 U	380 J, Q7, U
Endosulfan I	1900 U	75 U	700 U	140 J, Q7, U	680 U	380 J, Q7, U
Endosulfan II	3700 U	150 U	1400 U	260 J, Q7, U	1300 U	750 J, Q7, U
Endosulfan sulfate	3700 U	150 U	1400 U	260 J, Q7, U	1300 U	750 J, Q7, U
Endrin	3700 U	150 U	1400 U	260 J, Q7, U	1300 U	750 J, Q7, U
Endrin aldehyde	3700 U	150 U	1400 U	260 J, Q7, U	1300 U	750 J, Q7, U
Endrin ketone	3700 U	150 U	1400 U	260 J, Q7, U	1300 U	750 J, Q7, U
gamma-BHC (Lindane)	1900 U	75 U	700 U	140 J, Q7, U	680 U	380 J, Q7, U
gamma-Chlordane	1900 U	75 U	700 U	140 J, Q7, U	680 U	380 J, Q7, U
Heptachlor	1900 U	75 U	700 U	140 J, Q7, U	680 U	380 J, Q7, U
Heptachlor epoxide	1900 U	75 U	700 U	140 J, Q7, U	680 U	380 J, Q7, U
Methoxychlor	19000 U	750 U	7000 U	1400 J, Q7, U	6800 U	3800 J, Q7, U
Toxaphene	190000 U	7500 U	70000 U	14000 J, Q7, U	68000 U	38000 J, Q7, U
Aroclor 1016	37000 U	1500 U	14000 U	2600 J, Q7, U	13000 U	7500 J, Q7, U
Aroclor 1221	73000 U	2900 U	27000 U	5200 J, Q7, U	26000 U	15000 J, Q7, U
Aroclor 1232	37000 U	1500 U	14000 U	2600 J, Q7, U	13000 U	7500 J, Q7, U
Aroclor 1242	37000 U	1500 U	14000 U	2600 J, Q7, U	13000 U	7500 J, Q7, U
Aroclor 1248	37000 U	1500 U	14000 U	2600 J, Q7, U	13000 U	7500 J, Q7, U
Aroclor 1254	37000 U	1500 U	14000 U	2600 J, Q7, U	13000 U	7500 J, Q7, U
Aroclor 1260	37000 U	1500 U	14000 U	2600 J, Q7, U	13000 U	7500 J, Q7, U
Surrogate Recovery						
2,4,5,6-Tetrachloro-m-xylene	80 %	50 %	68 %	48 %	63 %	44 %
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	80 %	65 %	105 %	62 %	80 %	57 %

Table C-3. Chlorinated Pesticides and PCBs in Vibracores, Phase II Source Investigation

	Concentration µg/kg dry					
Analyte	**H03-06 0-1.4 ft**	**H03-07 0-1.3 ft**	**H03-08 0-0.7 ft**	**H03-10 0-3.4 ft**	**H03-11 0-0.7 ft**	**H03-12 0-3.8 ft**
0-Dieldrin	27 U	2900 U	110 U	410 U	21 U	85 U
2,4´-DDE	15 C1, J	4400 U	110 U	410 U	21 U	85 U
2,4´-DDT	27 U	2900 U	110 U	410 U	21 U	85 U
2,4'-DDD	27 U	3600	140	1400	13 C1, J	250
4,4'-DDD	52	20000 J, B1	600	6300	58	1100
4,4'-DDE	27 U	2900 U	110 U	300 J	21 U	87
4,4'-DDT	25 C1, J	30000	140	4500	14 C1, J	680
Aldrin	14 U	1500 U	57 U	210 U	11 U	44 U
alpha-BHC	14 U	1500 U	57 U	210 U	11 U	44 U
alpha-Chlordane	14 U	1500 U	57 U	210 U	11 U	44 U
beta-BHC	14 U	1500 U	57 U	210 U	11 U	44 U
delta-BHC	14 U	1500 U	57 U	210 U	11 U	44 U
Endosulfan I	14 U	1500 U	57 U	210 U	11 U	44 U
Endosulfan II	27 U	2900 U	110 U	410 U	21 U	85 U
Endosulfan sulfate	27 U	2900 U	110 U	410 U	21 U	85 U
Endrin	27 U	2900 U	110 U	410 U	21 U	85 U
Endrin aldehyde	27 U	2900 U	110 U	410 U	21 U	85 U
Endrin ketone	27 U	2900 U	110 U	410 U	21 U	85 U
gamma-BHC (Lindane)	14 U	1500 U	57 U	210 U	11 U	44 U
gamma-Chlordane	14 U	1500 U	57 U	210 U	11 U	44 U
Heptachlor	14 U	1500 U	57 U	210 U	11 U	44 U
Heptachlor epoxide	14 U	1500 U	57 U	210 U	11 U	44 U
Methoxychlor	140 U	15000 U	570 U	2100 U	110 U	440 U
Toxaphene	1400 U	150000 U	5700 U	21000 U	1100 U	4400 U
Aroclor 1016	270 U	29000 U	1100 U	4100 U	210 U	850 U
Aroclor 1221	540 U	58000 U	2200 U	8100 U	420 U	1700 U
Aroclor 1232	270 U	29000 U	1100 U	4100 U	210 U	850 U
Aroclor 1242	270 U	29000 U	1100 U	4100 U	210 U	850 U
Aroclor 1248	270 U	29000 U	1100 U	4100 U	210 U	850 U
Aroclor 1254	270 U	29000 U	1100 U	4100 U	210 U	850 U
Aroclor 1260	270 U	29000 U	1100 U	4100 U	210 U	850 U
Surrogate Recovery						
2,4,5,6-Tetrachloro-m-xylene	52 %	65 %	60 %	58 %	50 %	52 %
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	53 %	95 %	67 %	75 %	54 %	66 %

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