REPORT

Fort Edward Dam
PCB Remnant Containment
1992 Post-Construction Monitoring Program

General Electric Company
Corporate Environmental Programs
Albany, New York

August 1993

O'BRIEN & GERE
ENGINEERS, INC.

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GENERAL ELECTRIC COMPANY
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SECTION 1 - INTRODUCTION

1.01 Objectives

This report presents the results of the 1992 Post-Construction Remnant Deposit Monitoring Program (PCRDMP). The primary objective was to determine, what, if any, impact the recent deposits are having on polychlorinated biphenyl (PCB) loading in the Hudson River. This work was performed in accordance with the civil action between the United States and General Electric Company (General Electric), Consent Decree 90-CV-575. The PCRDMP was focused on the evaluation of water mediated transport of polychlorinated biphenyls (PCBs) from the remediated remnant deposit areas. This monitoring included sampling and analysis of water samples collected from the Hudson River at locations upstream, downstream, and adjacent to the remnant deposit areas.

The 1992 PCRDMP was performed in accordance with a Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) prepared by O'Brien & Gere (O'Brien & Gere, 1992a and 1992b, respectively). The content of the QAPP was modelled after previous work by Harza Engineering Company (Harza). General Electric submitted the above plans to the United States Environmental Protection Agency (USEPA) in June 1992. Comments were provided by USEPA on the QAPP in a letter to General Electric dated March 10, 1993, after completion of the 1992 program. A response to these comments was submitted on May 27, 1993. Comments on the FSP were not provided by USEPA during the 1992 program.

Background details of the site, previous remnant monitoring activities, and an overview of the project are presented in the subsections of this introduction which follow. The remainder of this document is organized as follows:

Section 2	Methods and Materials
Section 3	Data Production, Reporting, and Validation
Section 4	Results
Section 5	Discussion
Section 6	Conclusions
Section 7	Recommendations

Details of each of these components are presented in their respective sections.

1.02 Site Background

Over a 30-year period ending in 1977, two General Electric capacitor manufacturing plants near Fort Edward and Hudson Falls, New York discharged PCBs to the Hudson River (NUS, 1984). Much of the PCBs were contained in the pool behind the Fort Edward Dam (located at river mile 194.9) until 1973 when the 100-year-old dam was removed. Removal of the dam dropped water levels in the dam pool and left an estimated 1.5 million cubic yards of sediment deposits along the banks of the river up to 1.5 miles upstream of Fort Edward (NUS, 1984).

Five discrete remnant deposits were identified (NUS, 1984) and are shown in Figure 1. Remnant Site 1 originally appeared as an island; however, floods in 1976 and 1983 scoured much of the sediment associated with this deposit, submerging portions of the island during high flow periods. Remnant Site 1 currently consists of

several islands spread out over approximately 1,500 feet, centered at river mile 196.1. Remnant Site 2 occupies approximately 8 acres along the western bank of the river at river mile 195.7. Remnant Site 3 is located along the eastern edge of the river at river mile 195.5 and encompasses approximately 19 acres. Remnant Site 4 occupies 21 acres located on the western and southern banks of the river where the river bends sharply to the east. Remnant Site 5 is located immediately upstream of the old Fort Edward Dam on the north bank of the Hudson occupying approximately 4 acres (NUS, 1984).

Several limited remedial activities involving the remnant deposits were performed between 1974 and 1978 (NUS, 1984). In 1975, bank stabilization activities were conducted at Remnant Sites 2, 3 and 5 (NUS, 1984). Approximately 1,100 feet of shoreline along Remnant Site 5 was covered with rip-rap. A small amount of stone rip-rap was also placed along the bank of Remnant Site 3. In addition, the steep bank of Remnant Site 2 was cut back to a more shallow slope. In 1977 and 1978, approximately 17,000 cubic yards of exposed sediment at Site 3 were excavated and disposed in a lined containment cell located in the Town of Moreau, New York (NUS, 1984).

A feasibility study (FS) of the Hudson River Superfund site was performed by NUS (1984) to examine potential remedial alternatives and recommend one remedial alternative which meets goals and objectives established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Remedial actions which were evaluated for the remnant deposits included no remedial action, restricted access, in-place containment, and chemical treatment. Remedial alternatives were evaluated with respect to criteria focusing on

effectiveness, implementability, and cost. In September 1984, a Record of Decision (ROD) was issued by the USEPA. For the sediments, the ROD selected no-action. For the remnant deposits, the ROD outlined plans for in-place containment of Remnant Sites 2, 3, 4, and 5 by application of soil cover, vegetation of the cover and bank stabilization (USEPA, 1984). No remediation plans were proposed for Site 1. Remediation activities have been completed by General Electric and are described in the Remedial Action Report (JL Engineering, 1992).

1.03 Results of Previous Remnant Monitoring Activities

Previous monitoring efforts were aimed at evaluating the potential impact of construction activities on PCB transport through the different media including biota, air, and water. An environmental monitoring program was conducted before, during and after the completion of the remedial construction activities by Harza Engineering Company (Harza 1990a and b; 1992a and b). The environmental activities performed by Harza included the collection and analysis of water, sediment, air, and aquatic biota samples employing various techniques. The results of this monitoring indicate that there is little, if any, measurable PCB concentrations leaving the remnant deposit areas. The airborne concentrations of PCB, on and surrounding the remnant deposit areas, were largely undetected. Detected airborne concentrations were not considered to be attributable to remnant deposit contributions. Other conclusions indicate that sediment analysis is a poor indicator of short term impacts from the remnant deposits due to the typical slow and delayed nature of a response to any PCB contributions (Harza 1992a and b).

Dialysis membrane bag sampling was performed as a method of concentrating the PCB levels in the water column. This procedure was employed primarily due to the use of a method detection limit (MDL) of 0.1 ug/l for the analysis of PCBs in water samples. This MDL was above the concentrations found in the majority of the water samples analyzed, resulting in the reporting of estimated values only. After a review of the dialysis membrane bag sampling technique, Harza concluded that the procedure has not been subjected to adequate research activities to determine the reproducibility of the data generated. Therefore, Harza determined that this technique should be discontinued (Harza 1992b).

Water sampling conducted at discrete locations along the remnant deposit areas did not indicate localized releases of PCB to the water column. Biota sampling was employed as a means of addressing the high method detection limit for PCB in water. Generally, biota sampling and analysis yielded varied results which were difficult to interpret. However, during 1989-1991 approximately equal concentrations of PCBs were detected in biota sampled upstream and downstream of the remnant area during the sampling period (Harza 1992a and b). A retrospective analysis of this data now indicates the presence of a PCB source upstream of the remnant area.

Increased concentrations of PCB were detected in the air, water, and aquatic biota in samples collected in September and October of 1991 (Harza, 1992b). These concentrations were identified both upstream and downstream of the remnant deposit areas, and coincided with data obtained during float surveys performed by O'Brien & Gere during the same time frame. The results of the float surveys confirmed the presence of similar PCB concentrations in the water column at locations in the vicinity of the remnant deposits (O'Brien & Gere, 1993). The sources of PCB

upstream of the remnant deposit near the Baker Falls region of the River (Bakers Falls Source) is the subject of an investigation being conducted by General Electric with oversight by New York State Department of Environmental Conservation (NYSDEC).

1.04 Project Overview

The 1992 PCRDMP consisted of three components:

- March-December Weekly Water Column Monitoring;
- Float Surveys; and
- Shore Sampling Verification Study.

Weekly water column monitoring was performed to monitor overall spatial and temporal trends of PCBs in the river. Float surveys were conducted to monitor a single water mass in this region of the river. Finally, a shore sampling verification study was performed to examine localized variability in river water column PCB concentrations. Details of each of these components are presented separately below.

SECTION 2 - METHODS AND MATERIALS

2.01 Water Column Characterization

Water column characterization is being conducted to identify potential PCB contributions from the capped remnant deposits. This characterization consists of approximately weekly sampling from river locations upstream and downstream of the remnants which began on March 25, 1992 and continues at present. This report presents the results of the water column characterization through December, 1992 only. A sample collection schedule, for the sampling completed through December, is presented in Table 1.

2.01.01 Sampling Locations

Water column samples were obtained from three stations on the River (Table 1, Figure 1). The first station was located on the abandoned Fenimore Bridge above Bakers Falls and upstream of the remnant deposits at approximate Hudson River Mile (HRM) 197.0. The next sampling station was located downstream of Bakers Falls, but upstream of the remnant deposits near approximate HRM 196.8. A third station was located on the Rt. 197 Bridge(s) in Fort Edward (HRM 194.2).

Samples collected at HRM 197.0 and HRM 194.2 consisted of stratified composite samples as described in Section 2.01.02 below. These samples were collected from the middle of the channel at bridges spanning these sections of the river. Samples collected from HRM 196.8 were grab samples obtained from the western shore of the river. This collection method was used because

the middle of the channel at this location is accessible only by boat. Since the river near HRM 196.8 is shallow (generally less than two feet deep), with rapidly flowing water, with a bed consisting of cobbles and exposed bedrock, routine sampling by boat was not practical. There was a concern that the grab samples collected from shore at HRM 196.8 might not yield samples representative of the water in the main channel of that point in the river. To address this concern, an evaluation procedure designed to compare data collected from the shore versus the middle of the channel was conducted on two occasions; June 25, 1992 and July 29, 1992. The results of this evaluation are presented in Section 2.03.

2.01.02 Sample Collection Procedures

Procedures and specifications defined in the FSP and QAPP (O'Brien & Gere, 1992a and 1992b) were followed for sampling the three water column characterization locations. Sampling procedures employed at each location are described below:

Fenimore Bridge - HRM 197.0

At location HRM 197.0, samples were collected near the middle of the channel from Fenimore Bridge using a stainless steel Kemmerer bottle. The Kemmerer bottle sampler consisted of a stainless steel 1.2-liter cylinder equipped with closeable stoppers at each end. Samples collected using the Kemmerer bottle were vertically stratified composites made up of equal volumes of discrete aliquots collected at three-foot intervals throughout the water column. To collect the sample, the

Kemmerer bottle sampler was lowered to the desired depth in the water column in the open position. Then, the sampler was closed by sending a mechanical messenger down the suspending cable, thereby collecting a discrete aliquot. Upon retrieval, the sample was discharged into a stainless steel compositing container.

Route 197 - HRM 194.2

Samples were collected from the Rt. 197 Bridge (HRM 194.2) in Ft. Edward, in the same manner as samples collected from Fenimore Bridge. A previous investigation identified higher PCB loading in the east channel at HRM 194.2 during high flow (Tofflemire, 1984). For the PCRDMP, three sampling methods were performed to evaluate the potential concentration differences between the east and west channels at this location during elevated PCB loadings observed in 1992:

- The western channel which is the main channel carrying the majority of the river flow at this location, was sampled as a single vertically stratified composite sample.
- Both the east and west channels were sampled as two discrete vertically stratified composite samples.
- Both east and west channels were sampled as vertically stratified composite samples which were then combined in equal volumes to produce a single sample for analysis.

Currently, samples from this location are collected as equally weighted composites from both east and west channels (as described above).

Canoe Carry - HRM 196.8

Samples collected at HRM 196.8 were surface grab samples collected from the western shore by immersing new, dedicated one-gallon glass sampling containers directly into the water column to retrieve samples.

Between sampling locations the Kemmerer bottle sampler was thoroughly decontaminated according to procedures specified in the QAPP developed for this project (O'Brien & Gere, 1992b). Field logs maintained by sampling personnel are presented in Appendix A (bound separately).

2.02 Float Surveys

Float surveys were conducted in an effort to identify specific remnant deposit areas which may be contributing PCBs to the water column. The float surveys were designed to monitor a single water mass as it passed the remnant deposit areas allowing an analysis of spacial profiles of water column PCBs as the water mass moved through the river. Six float surveys were conducted on an approximately monthly basis beginning in May 1992 and continuing through October 1992. A sample collection schedule is presented in Table 1. The float surveys were scheduled to coincide with the weekly water column sampling.

2.02.01 Sampling Locations

Five locations were utilized for the PCRDMP float surveys. These locations included HRM 196.8, HRM 196.4, HRM 195.8, HRM 195.3, and HRM 194.7. These locations are described in Table 1 and illustrated on Figure 1.

2.02.02 Sample Collection Procedures

Sampling procedures defined in the FSP and QAPP (O'Brien & Gere, 1992a and 1992b) were followed for the float surveys. Shallow and rapid flowing conditions in the remnant deposit area limited access by conventional water crafts. Samples were therefore collected by launching an inflatable boat (Zodiac) near Bakers Falls, paddling to the middle of the river, and then drifting with the current downstream to the northern tip of Rogers Island, in Fort Edward. The samples consisted of grab samples collected from the surface of the water column, near the middle of the channel. Samples were collected by immersing new, dedicated one-gallon glass sampling containers directly into the water. Field logs maintained by sampling personnel are presented in Appendix A.

2.03 Shore Sampling Verification Study

The Shore Sampling Verification Study compared water column PCB concentrations of samples collected across a transect of the river. Data from the various sampling locations were compared to determine if samples collected from shore were representative of PCB concentrations in the river channel. This study was

conducted at HRM 196.8 (approx.) by concurrently collecting six grab samples from the shore sampling station and six grab samples along a transect across the channel at the same HRM location. Sample collection procedures were similar to those employed for the float surveys, as described in Section 2.01.02, above. Two shore sampling verification studies were conducted, one on June 25 and the other on July 29, 1992. Both studies were conducted under low flow conditions (approximately 3,200 cfs and 2,600 cfs, respectively), for safety reasons. Reported flow rates were instantaneous readings measured at the Fort Edward U.S.G.S. gaging station. The middle channel samples were collected from an inflatable boat (Zodiac). Field logs maintained by sampling personnel are presented in Appendix A.

2.04 Sample Handling Procedures

Samples were handled in accordance with procedures presented in the QAPP (O'Brien & Gere, 1992b). Upon collection, samples were placed in appropriate containers, chilled to 4°C, and transported to the analytical laboratory for analysis. Each sample was assigned a unique sample designation, identifying sample location, date, and time. Standard chain of custody procedures were followed, as detailed in the QAPP (O'Brien & Gere, 1992b).

2.05 Quality Assurance/Quality Control

The data quality objectives are defined for the PCRDMP in the QAPP (O'Brien & Gere, 1992b) and include the generation of data of sufficient quality to support both qualitative and quantitative determination regarding PCB flux from the Fort Edward Dam remnant deposit sites to Hudson River water.

Quality assurance/quality control (QA/QC) samples were collected on a routine basis during the PCRDMP in accordance with the QAPP (O'Brien & Gere, 1992b). The data validation process, as described in Section 3.03 was performed to facilitate evaluation of data quality from results of QA/QC sample analyses. A summary of the data validation results is provided in the data validation technical memorandum, presented as Appendix B (bound separately). The QA/QC samples included the collection and analysis of matrix spike, blind field duplicate, field replicate, and equipment blank samples. The locations of the QA/QC samples were selected, from the three routine sampling locations (HRM 197.0, HRM 196.8, and HRM 194.2), on a rotational basis. Matrix spike samples consisted of duplicate samples spiked by the laboratory with a known quantity of analyte. The percent recovery of the analyte was recorded upon quantitation. Blind field duplicate samples were submitted to the laboratory without indication to the laboratory of where the samples were collected. Matrix spike and blind duplicate samples were separate aliquots taken from the same source as the original samples. For the shore sampling verification study, field duplicate samples were collected by sequentially collecting separate samples at the same location. For duplicate samples, a relative percent difference (RPD) was calculated as:

$$RPD = (C_1 - C_2)/((C_1+C_2)/2)$$

where C_1 is the original sample and C_2 is the duplicate sample.

Equipment blank samples were prepared in the field by decontaminating the sampling equipment, followed by rinsing the Kemmerer bottle sampler and compositing container with organic free water obtained from OBG Laboratories, Inc.

The rinse water was collected and submitted to the laboratory for the appropriate analyses. Equipment blank analytical results were examined for detectable PCBs.

2.06 Laboratory Analyses

A summary of the laboratory analyses for each component of the PCRDMP is provided below:

Sample Collection Dates	Analyses
Weekly Water Column Monitoring	
March 25 to December 3	PCB Congeners, Total Suspended Solids (TSS)
December 9 to December 22	PCB Aroclors, TSS
Float Surveys	
May to October	PCB Congeners, TSS
Shore Sampling Verification Study	
June and July	PCB Congeners

All analyses were performed on whole water samples.

Whole water congener specific PCB analyses were performed by Northeast Analytical, Inc. (NEA) using capillary column methodology according to Method NEA-608 CAP, Rev. 3.0 (NEA, 1990). The DB-1 column utilized in this method allows the reporting of 118 peaks. Significant research has been performed to determine which PCB congeners elute in which peak for this column. In standard PCB mixtures (e.g., aroclors), the amount of each congener in co-eluting peaks has been determined. In environmentally altered PCBs, the relative proportions of congeners in a given peak may be different from the standards. However, this information allows reliable total PCB and PCB homolog distribution to be calculated.

In addition, key congeners (or congener groups) can be tracked, allowing evaluation of PCB sources in the river (which are characterized using the same technique). The project does not required the identification of all individual congeners. Further details on the analytical method are provided in the QAPP (O'Brien & Gere, 1992b).

The gas chromatography instrumentation used to analyze samples for PCBs consisted of a Varian Model 3400 Gas Chromatograph (GC) equipped with capillary on-column injection, temperature programmable oven, Model 8000 automatic sampler and fast time constant electron capture detector. A data system (Dynamic Solutions, Maxima Workstation) for chromatographic operations and integration of detector signal was interfaced to the GC. Output from the GC system was processed into a real time chromatogram and a sample specific report that included peak identification, retention time, peak name, integrated peak area, amount of solution, homolog concentrations, and sample amount. In addition, the data package included a PCB congener report as described in Section 3.01 below. Each package included a separate QA/QC data summary report, detailing QA/QC data for spikes, U.S. EPA check samples, duplicates and method blanks. Weekly water column characterization samples collected between December 9, 1992 and December 22, 1992 were analyzed for Aroclors using packed column methodologies according to EPA Method 8080 (USEPA, 1986), with a detection limit of 11 ng/l. TSS analyses were performed by OBG Laboratories according to EPA Method 160.1 (USEPA, 1983). Details of analytical methodologies are provided in the PCRDMP QAPP (O'Brien & Gere, 1992b).

2.07 Health and Safety

Field activities were conducted in accordance with the health and safety procedures presented in the project specific Health and Safety Plan (O'Brien & Gere, 1992c).

SECTION 3 - DATA PRODUCTION, REPORTING, AND VALIDATION

3.01 Northeast Analytical, Inc.

Northeast Analytical, Inc. (NEA) was responsible for analyzing water column samples for whole water PCBs for the PCRDMP. The majority of samples, were analyzed as whole water PCB analyses utilizing a capillary column (DB-1) with a method detection limit (MDL) of 11 ng/l(NEA, 1990). This analytical method is consistent with Green Bay methodology used by USEPA.

To determine the lowest detectable concentration, and to establish the Practical Quantitation Limit (PQL) for PCBs that would be reliably achieved in 1-liter water samples collected from the Hudson River, NEA conducted a MDL study. The MDL study was performed using organic-free water samples picked with PCBs in accordance with 40 CFR Part 136 (USEPA, 1985). The MDL is defined as the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. This is determined from analysis of a sample in a given matrix containing the analyte. The PQL is defined as the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operations.

The results of the MDL study indicated an average MDL value of 7.7 nanograms per liter (ng/l) for three methodologies. The laboratory elevated the MDL for reporting purposes to 11 ng/l to account for potential matrix interferences within Hudson River water. The PQL, based on this MDL, was set to 44 ng/l PCB concentrations observed in samples collected during the PCRDMP which are

between the MDL and PQL (from 11 to 44 ng/l) are considered estimates and for this report they reported with a "P" qualifier.

Weekly water column characterization samples collected between December 9, 1992 and December 22, 1992 were analyzed for whole water PCB Aroclors by USEPA Method 8080, with a MDL of 11 ng/l.

A specific New York State Department of Environmental Conservation - Analytical Services Protocol (NYSDEC ASP; NYSDEC, 1991) reporting requirement does not exist for analysis of PCB congeners by capillary column. Therefore, a reporting package and quality control program was developed which adheres to the guidelines set forth in the NYSDEC ASP Superfund PCB/pesticide requirements. The data reporting package and quality control program developed for congener specific PCB analyses contains the following components:

- title page;
- sign-off sheet;
- table of contents;
- case narrative;
- sample result form;
- O'Brien & Gere chain of custody forms;
- sample log-in sheet;
- internal sample control record (internal sample tracking sheet);
- matrix spike results table;
- duplicate results table;
- method blank results table;
- sample raw data;

- analyst sample injection log;
- standards results tables; and
- standards/QC sample (blanks, matrix spikes, duplicates) raw data.

The data summary reports are included in Appendix C of this report (bound separately). The organization of this appendix is presented in the Table of Contents of this report.

3.02 OBG Laboratories, Inc.

O'Brien & Gere Laboratories, Inc. (OBG Laboratories) was responsible for the analysis of water column samples for TSS (USEPA method 160.1; USEPA, 1983).

Upon completion of the analyses, OBG Laboratories generated a series of data reports entitled Laboratory Report, General Electric Company, Post-Construction Monitoring Program, Hudson River, N.Y. These data reports were prepared consistent with NYSDEC ASP Category B reporting requirements. The data reports contain the following components:

- title page;
- sign-off sheet;
- table of contents;
- case narrative;
- sample result form;
- chain of custody forms;
- sample log-in sheet;
- internal sample control record (internal sample tracking sheet);
- matrix spike summary table;

- duplicate summary table;
- method blank summary table;
- sample raw data;
- analyst sample injection log;
- standards summary tables; and
- standards/QC sample (blanks, matrix spikes, duplicates) raw data.

These data reports are presented as Appendix D of this report (bound separately). The organization of this Appendix is presented in the Table of Contents of this report.

OBG Laboratories also analyzed 10 split samples for PCBs using NEA methodology described in Section 3.01 above. The total PCB results of these analyses were used as a QA/QC check on NEA overall performance. Data reports of PCB analyses performed by OBG Laboratories are provided in Appendix E (bound separately). The results of OBG Laboratories PCB analyses were not validated.

3.03 PCB Data Validation

Data validation is a systematic process of evaluating analytical data quality by comparing the data generation process (sample collection through sample analysis) to quality control criteria established prior to the initiation of the field investigation. As a result of the validation process, sample data are determined to be useable as is, approximate, or unusable for the particular use established by the project data quality objectives.

PCB data generated for the PCRDMP were subjected to an electronic data validation process by O'Brien & Gere. In addition to the electronic data validation, 10 percent of the data were validated manually and compared to the results of the computer validation output as a check. A detailed description of the electronic and manual data validated processes and results are presented in Appendix B (bound separately). Data validation results are briefly discussed in Section 4 of this report.

SECTION 4 - RESULTS

Results of the 1992 PCRDMP presented in this section include summaries of weekly water column monitoring, float surveys, and the shore sampling verification study in separate subsections. The river PCB data were evaluated for four parameters:

- Spatial Trends,
- Temporal Trends,
- Homolog Distributions, and
- Congener Distributions.

River spatial trends of water column PCB concentrations were examined to evaluate PCB loading originating from upstream of the remnant areas to the Route 197 bridge, downstream of the remnants. Similar flows at each sampling location allows the direct comparison of PCB concentrations at each site to infer loading contributions. Temporal trends provide a range of water column PCB concentrations over various flows to assess average and extreme conditions. PCB homolog and congener distributions were compared to Aroclor 1242 standard to evaluate potential differences over this stretch of the river. In addition, a summary of QA/QC data is also provided in this section, primarily focusing on an assessment of precision and accuracy. The data summary tables (Tables 2 through 6), discussed in the subsections below, include PCB data qualifiers identified during the data validation process. For PCB concentrations reported below the method detection limit, <11 ng/l is reported in the summary tables. Finally, PCB concentrations which were

less than the PQL, 44 ng/l, were noted with a "P" to indicate that concentrations above the MDL (11 ng/l), but below the PQL (44 ng/l) are estimated concentrations.

4.01 Weekly Water Column Monitoring

The weekly water column monitoring program included the collection of water column samples from three stations located at approximate HRM 197.0, HRM 196.8, and HRM 194.2 which were portions of the river that represent background, upstream of remnants and the Hudson Falls Plant (upstream location), and downstream of remnants (downstream location), respectively. Sampling locations are identified in Figure 1. Samples were collected once per week from March 25, 1992 to December 30, 1992 and analyzed for PCBs and TSS, as discussed previously in Section 2.06. Forty-two rounds of water column samples were collected from the three weekly monitoring stations. Results of weekly monitoring are presented in Table 2 and Figure 2. These data have been previously supplied to USEPA and the NYSDEC in the monthly progress reports.

PCB Homolog distributions for each sampling result are presented separately in Table 3 and a statistical summary of the homolog distribution data is provided in Table 4. Total PCB concentrations ranged from less than the method detection limit (<11 ng/l) to 941 ng/l. Figure 3 depicts the PCB concentration mean and 95 percent confidence interval about the mean for each sampling location. TSS concentrations ranged from 1 mg/l to 29 mg/l.

In background samples collected at the abandoned Fenimore Bridge (HRM 197.0), PCBs were below the method detection limit in 95 percent of the samples. However, low concentrations of PCBs (near the detection limit) were detected in

three out of 41 samples. The highest concentration detected at the background site was 44 ng/l, which is the PQL for this monitoring program. Homolog composition of these samples resembled Aroclor 1242. In summary, the PCB concentrations at sampling location HRM 197.0 were low or below the detection limit, therefore the data support the use of the Fenimore Bridge sampling location as a background site, which is unaffected by the upstream source or the remnant deposits. The remainder of this summary focuses on a comparison of data from the stations immediately upstream of the remnant deposits upstream (HRM 196.8) and downstream (HRM 194.2) location.

At the upstream location (HRM 196.8), PCB concentrations ranged from less than 11 ng/l to 721 ng/l with a geometric mean, median, and standard deviation of 154, 44, and 166 ng/l, respectively (Table 2). Concentrations varied by greater than 1.5 orders of magnitude. The high degree of variability in PCB concentrations in samples collected from this site is reflected in the frequency distribution diagram presented in Figure 3.

Downstream (HRM 194.2) monitoring results had highly variable PCB concentrations and temporal trends similar to upstream results. PCB concentrations from this location ranged from less than 11 ng/l to 941 ng/l with a geometric mean, median, and standard deviation of 113, 77, and 245 ng/l, respectively (Table 2). Concentrations varied by nearly 2 orders of magnitude. Figure 2 depicts the PCB concentrations observed at the downstream site over the study period.

Samples were collected at HRM 194.2 to compare the PCB concentrations in the east and west channels. Ten sample sets were collected for this purpose and generally the results were similar for both channels. To evaluate the variability

between these two locations, sample sets collected from both channels were compared. As such, RPD values, which are generally used to evaluate duplicate analyses, were calculated for the 10 data sets. The mean RPD for the 10 sample sets examined was 28 percent and the RPD values ranged from 6 to 99 percent. The mean RPD was similar to that expected for duplicate analyses and the range was consistent with additional observations of PCB concentration variability in this portion of the river. Therefore, it was concluded that a composite sample which combined separate aliquots from the east and west channels would adequately represent PCB concentrations at this location, and subsequent sampling utilized this approach.

4.01.01 Spatial Trends

Spatial PCB concentration differences between the upstream and downstream sampling locations were evident. Generally, PCB concentrations increased downstream. Upstream of the remnant areas at HRM 196.8, PCB concentrations were, on average, approximately 60 percent of the concentration downstream at HRM 194.2. However, as Figure 4 indicates, the upstream (HRM 196.8) PCB concentrations ranged from 16 to 100 percent of downstream PCB concentrations. An interesting phenomenon is illustrated in Figure 4 which shows similar concentrations at both HRM 196.8 and HRM 194.2 during high loading. After loading decreases a lagging effect occurs whereby the PCB previously released upstream are resuspended and the downstream concentrations (HRM, 194.2) remain elevated for an extended period.

There are several limitations in the direct quantitative comparison of the data from the two locations which need to be addressed when examining the data:

- Comparison of the data from the two locations may include biases due to differences in sampling methods. The upstream samples (HRM 196.8) were generally collected as a single grab sample along the western shore, whereas the downstream samples (HRM 194.2) were collected as depth integrated composite samples collected at the center of the river channel from a bridge.
- The relationship between the PCB concentrations at the two sites may be dynamic, as PCB concentrations at the upstream location represented 16 to 100 percent of PCB concentrations at the downstream location. The data also suggest that under certain conditions, flow patterns may not allow complete mixing of water between Bakers Falls and the HRM 196.8 sampling station. This is the approximate location of the Bakers Falls PCB source.

Therefore, when comparing data from the two data sites, the downstream PCB concentrations may be an overestimate of remnant contributions to water column PCB concentrations.

4.01.02 Temporal Trends

Water column PCB concentrations both upstream and downstream of the remnant areas were highly variable over the ten month study period, as presented in Figure 2. Concentration patterns for both sampling locations were similar. Low water column PCB concentrations corresponded to Spring and Fall months. In contrast, elevated water column PCB concentrations occurred between June and October corresponding to periods of low flow (Figure 5). Water column PCB concentrations were not correlated with TSS (Figure 6). Nor, was any correlation of TSS with flow evident (Figure 7). Possible explanations for these observations are outlined in Section 5.04.

4.01.03 PCB Homolog and Congener Distributions

Table 2 presents the homolog distribution in weight percent for samples with detectable quantities of PCBs. Mean homolog distributions for sampling station HRM 196.8 and HRM 194.2 are presented in Figure 8. The homolog patterns were similar for both sites, with the primary homologs in the tri- and tetra-chlorinated forms. For comparison purposes, the homolog distribution for Aroclor 1242 analyzed by NEA methodology is also presented in Figure 8. Mean homolog distributions for HRM 196.8 and HRM 194.2 closely resemble that of Aroclor 1242.

Appendix F presents comparisons of individual homolog distributions for the upstream and downstream locations. The figures show an overall 1:1 agreement between the homolog distributions for the two sites. For comparison purposes, the homolog distribution for Aroclor 1242 is also

presented. Homolog distributions for HRM 196.8 and HRM 194.2 closely resemble that of Aroclor 1242. Tri- and tetra- chlorinated PCBs were the most prevalent forms at both sites, however, differences in other chlorinated forms were observed. At times, the upstream location had higher percentages of penta- and hexa-chlorinated PCBs, whereas at downstream location, mon- and di-chlorinated percentages were occasionally higher. Outliers were generally attributed to low concentrations, near the method detection limit. Due to the general lack of detectable quantities of PCBs, a homolog distribution is not presented for the HRM 197.0 site.

Congener distributions for weekly water column monitoring for sampling dates representing low and high loading are presented in Figures 9, and 10, respectively. Congener distributions for a single sampling date with a large concentration difference between the two locations is presented in Figure 11. Congener peak distributions for each loading condition examined were similar for both locations. However, under high loadings the weight percent of lower congener peaks appeared somewhat higher than those observed under low loading. Apparent increases in mono-chlorinated biphenyls may be due to enhanced analytical sensitivity at the higher concentrations.

Appendix G presents comparisons of individual congener distributions for the upstream and downstream locations. The figures show an overall 1:1 agreement between congeners for the two sites. There were occasional deviations from the agreement of congeners between the sites. Congener peak 2 was higher at the downstream site during July and August samplings

when the highest PCB concentrations were observed. Again, apparent increases in mono-chlorinated biphenyls may be due to enhanced analytical sensitivity at the higher concentrations. Congener peak 48 was noticeably higher at the upstream site on three occasions.

In the evaluation of homolog and congener data, it is assumed that different sources may be identifiable by individual patterns associated with alterations caused by biological, chemical and physical processes. The overall consistency of homolog and congener patterns between the two locations suggest a single source of PCBs in the river.

4.02 Float Surveys

Six monthly float surveys were conducted from May to October 1992. Samples were collected from five locations - HRM 196.8, HRM 196.4, HRM 195.8, HRM 195.3 and HRM 194.7. Samples were analyzed for congener specific and TSS as discussed previously in Section 2.06. Results of the float surveys are presented in Table 5 and Figure 12. For comparison, data for water column samples collected at HRM 197.0 and HRM 194.2 on the same days as the float surveys are also presented. Samples collected at location HRM 197.0 were used to indicate background PCB levels. PCBs were not detected (< 11 ng/l) in any of the background samples collected at the time of the float surveys.

4.02.01 Spatial Trends

Several of the float surveys included duplicate samples collected at the same river mile location, but from different locations across the channel. The resulting data were used to examine spatial variability across the river, although short-term temporal variability (in minutes) could be inferred, as well. Results of the duplicate analyses are presented below.

Date Collected	Location (HRM)	PCB Concentration (ng/l)			RPD
		West	Center	East	
May 28	196.8	35	21	--	50
May 28	196.4	--	31	65	71
May 28	194.2	92	--	98	6
June 25	194.2	489	--	165	99
July 29	194.2	377	--	471	22

For the five duplicate samples used for this comparison, the mean RPD was 50 percent and the range was 6 to 99 percent. The high variability between duplicates suggests that PCB concentrations are not uniform in the river channel. No trends were evident to otherwise explain the differences.

4.02.02 Temporal Trends

Results of float surveys were consistent with weekly monitoring results. Total PCB and TSS concentration ranges for locations HRM 196.8, HRM 196.4, HRM 195.8, HRM 195.3, and HRM 194.7 were as follows for each float survey:

Float Survey Date	PCB Conc. Range (ng/l)	TSS Conc. Range (mg/l)ng/l
5/28/92	21-72	1-5
6/25/92	129-242	3-8
7/29/92	372-525	5-8
8/26/92	266-348	2-6
9/30/92	114-266	2-7
10/22/92	40-100	5-8

Figures 12 and 13 depict temporal variations that were observed. The highest PCB concentrations occurred during the summer months, similar to observations of weekly monitoring. There is no consistent pattern to spatial differences observed between sampling locations. Generally, PCB concentrations increased slightly from upstream to downstream. However, the July data was a notable exception to this trend and showed that PCBs increased from HRM 196.8 to HRM 195.8 and then decreased further downstream. Relative loading for each location is presented in Figure 13. The upstream location (HRM 196.8) averaged 60 percent of the total PCB loading. The data indicate that the periods of elevated PCB concentrations during July and August were accompanied by increases in the importance of loading upstream of samples location HRM 196.8.

Concentration differences observed between sampling locations were generally on the same order of magnitude as variability observed in the shore sampling site verification study results, discussed in subsection 4.03 below.

Therefore, it is uncertain whether trends were the result of field conditions or introduced by sampling variability.

4.02.03 PCB Homolog and Congener Distributions

Table 5 presents the nominal homolog distribution in weight percent for samples with detectable quantities of PCBs. Mean homolog distributions for float survey sampling stations are presented in Figure 14. The mean homolog distribution patterns were similar for all sampling sites, with the primary homologs in the tri- and tetra- forms. For comparison purposes, the homolog distribution for Aroclor 1242 analyzed using NEA Standards is also presented in Figure 14. Mean homolog distributions for the float survey data closely resemble that of Aroclor 1242. A homolog distribution is not presented for the HRM 197.0 site since PCBs were generally not detected at the site. Homolog distributions for each float survey are presented in Appendix H. July increases in mono-chlorinated homologs were observed at all sites sampled. August increases were observed at HRM 194.2 only.

Float survey mean congener distributions for all sample collection dates are presented by location. Upstream and downstream results are presented in Figure 15. For comparison, sample locations within the remnant deposit area of the river are present separately in Figure 16. The mean congener distributions were similar for each location.

4.03 Shore Sampling Verification Study

4.03.01 Spatial Trends

Two rounds of shore verification sampling were performed at HRM 196.8 and various locations across the river during low flow. River flow at the Fort Edward gaging station was measured as 3,200 and 2,600 cfs for the June and July sampling rounds, respectively. Results of the shore sampling verification study are presented in Table 6. QA/QC qualifiers for PCB data identified during the data validation process are included in the Tables, as well as qualifiers to note PCB concentrations less than the PQL, 44 ng/1 (O'Brien & Gere, 1992b). Statistical data consisting of mean, maximum, minimum, and standard deviation are included on Table 6 for shore sample and center channel sample PCB concentrations and homolog distributions.

The study results provide a sense of the dynamics of the river PCB concentrations. Substantial variations were observed in PCB concentrations collected at sampling locations across the river, as presented in Figure 15. Field duplicate RPDs for the June and July sampling were 81 and 39 percent, respectively indicating high field variability. Results of shore sampling were comparable to sampling results from the middle of the river. Shore sampling verification study PCB data indicate high variation in PCB concentrations of grab samples collected from the shore over a four minute period. PCB concentrations were shown to very as much as 100 percent in samples collected within one minute of each other. Samples collected from the center of the channel across the transect exhibited approximately the same degree of variation in PCB concentrations as the shore samples. A correlation

between distance from shore and PCB concentrations is not apparent. PCB concentrations detected during the July sampling round (2,600 cfs at Fort Edward) were approximately three times higher than PCB concentrations detected during the June sampling round (3,200 cfs at Fort Edward). Shore samples collected at one minute intervals had standard deviations of 48 and 51 for the June and July samplings, respectively. The study demonstrates short-term variations in PCB concentrations in near shore and river channel PCB concentrations. Concentration patterns were different for each sampling round.

4.03.02 Homolog and Congener Distributions

Homolog distributions and congener distributions are presented in Figures 18 and 19, respectively. Homolog and congener distributions are similar for shore samples and center channel samples. June and July sampling event do vary slightly though, with the main difference being the presence of mono-chlorinated PCBs in July 1992. The presence of mono-chlorinated PCBs may be due to increased concentrations, above the method detection limit for mono-chlorinated biphenyls.

Due to the similarity in the degree of variation in PCB concentrations and the similarity in homolog and congener distributions for shore and center channel samples, shore samples appear to provide a fairly representative indication of center channel characteristics under low flow conditions.

4.04 Quality Assurance/Quality Control

The results of the data validation performed on the PCRDMP PCB data collected between March 25, 1992 and December 3, 1992 are presented in the data validation technical memorandum in Appendix B (bound separately). A computerized data validation method was utilized to evaluate these data, these automated procedures were supplemented by manual validation of 10 percent of the data to confirm the results. The results of the manual and computer validation were 100 percent consistent, thereby verifying the accuracy of computer validation. PCB data generated after December 3, 1992 are scheduled to be validated in the future.

The results of the data validation indicate that the data met the validation criteria to the extent that 98.5 percent of the data were useable for quantitative purposes. One-hundred-ninety-five water samples were validated; 30 samples exhibited data quality excursions. The most serious excursions resulted in three sample results which were rejected and five sample results which were approximated for exceeding retention time window criteria. The majority of excursions were due to the approximation of results which were outside of duplicate RPD and internal standard area performance criteria. Due to method blank contamination, non-detected sample results or "detection limits" were raised to the detected sample concentrations for two samples. As a result, the two environmental samples affected by the contaminated method blank received the designation "U". This designation does not imply that the data are unusable. The data are usable quantitatively as a non-detected sample result.

Field sampling and laboratory analytical precision were assessed through results of duplicate analyses which are provided in Appendix B (bound separately).

Briefly, 36 duplicates were analyzed along with weekly water columns and monitoring float survey samples. Nine samples which were non-detect for PCBs, were not included in the statistical analysis. The remaining 27 samples had an average RPD of 11 percent. Duplicate RPDs for two sampling dates - August 7, RPD 48; November 20, RPD 113 - were outside expected ranges. Evaluation of the field data associated with these two sets of duplicate data accounted for the apparent precision limitations. Comparison of original and duplicate sample results by homologs are provided in Appendix I. Original and duplicate sample homolog distributions generally indicated precision was within expected ranges. In summary, overall duplicate analytical precision was within expected ranges and could not account for consistent field variability observed in the studies conducted for the post-construction monitoring program. For field duplicates samples collected at location HRM 196.8 during the shore sampling verification study, the RPDs were higher. The RPDs for these samples were 48 and 113 percent for the June and July sampling rounds, respectively. The results were thought to be indicative of field variability, rather than an indication of sampling and analysis precision.

For an assessment of PCB data accuracy, matrix sample results were examined. Thirty-six matrix spike samples were analyzed. The average matrix spike recovery was 94.6 percent. The calculated average excluded the matrix spike sample for the September 23rd sampling round due to the unusually high recovery for that sample. No analytical difficulties were apparent from further assessment of analytical accuracy through review of surrogate recoveries, continuing calibration results, and organic free water spike sample recoveries. Therefore, based on review of the data and conversations with the laboratory, the source of the 1108 percent recovery

reported for that matrix spike sample was not clear. It may due to PCBs in the water column or sample contamination.

Laboratory reports containing PCB data along with supporting documentation is provided in Appendix C (bound separately), according to the organization presented in the table of contents. Data that did not meet the data quality objectives are not included in this summary report. The level of completeness in this data set exceeds the normal level of completeness for work of this nature.

A comparison of water column split samples analyzed for PCBs is provided in Table 7. Samples were split between NEA and OBG Laboratories and analyzed by Capillary column using NEA methodology. To evaluate total PCB results from the two laboratories, the results were compared and RPDs for the split samples were calculated. The mean RDP for the split samples was 46 and the RPD ranged from 35 to 57. Analytical differences appeared random as four NEA results were higher than OBG Laboratories results and four NEA results were lower than OBG Laboratories results. Interlaboratory differences were within anticipated ranges.

SECTION 5 - DISCUSSION

Post-Construction remnant deposit monitoring during 1992 confirmed previously reported observations of PCBs in the water column upstream of remnant deposits (Tofflemire, 1984; Harza 1991, 1992). Results of weekly water column monitoring and float surveys suggest that the primary source of PCBs in this region of the river originates from an unidentified upstream source(s) in the vicinity of Bakers Falls. The water column PCB mass in the river upstream of the remnant deposits accounted for an average of 60 percent of the concentration observed further downstream, in the vicinity of the remnant deposits. Furthermore, the cumulative evidence suggests that downstream concentration increases may be a secondary remobilization of PCBs from the Bakers Falls source and that the contributions of PCBs from the remnant deposits are insignificant. Support for this interpretation is provided by several observations which provide evidence for correlations between the two sites:

- Spatial Trends,
- PCB Homolog and Congener Patterns,
- Field Variability, and
- Correlation between PCB concentrations with TSS and Flow
- Temporal Trends

Each of these topics is discussed in detail below.

5.01 Spatial Trends

The high degree of correlation between PCB loading trends upstream of the remnant deposits and apparent loading through the remnant pool depicted in Figure 20, ($r^2 = 0.80$) suggests that a PCB source(s) upstream of the remnants is responsible for the presence of PCBs in this stretch of the river. To further investigate the auto-correlation between upstream and downstream PCB concentrations, the medians for the upstream and downstream monitoring locations were compared using box plot analyses (Reckhow and Chapra 1983) (Figure 21). The box plots present data from the weekly water column monitoring, float surveys and shore sampling. For sample dates with multiple data for the same location, the mean PCB concentration was utilized in the statistical analysis. Box plots provide a summary of seven statistical components:

- Mean is represented by a "+" sign.
- Median is represented by a horizontal bar in the interior of the box.
- First and third quartilies are represented by the upper and lower limits of the box.
- Interquartile ranges of up to 1.5 are represented by the central vertical lines called "whiskers".
- Values outside of the 1.5 interquartile range, but inside 3 interquartile ranges of the box are marked by zeros (0).
- Standard deviation of the median is represented by the notch height. When the notches of any two boxes overlap in a vertical sense, the medians are not significantly different at about the 95 percent confidence level.

- Relative sample sizes can be judged by box widths.

The box plot evaluation indicted that the upstream and downstream median water column PCB concentrations were statistically similar, as given by the vertical overlap of the box plot notches for these two sample locations.

The Wilcoxon rank sum test (Reckhow and Chapra 1983) was also used to statistically analyze the correlation between weekly water column data from HRM 196.8 and HRM 194.2. The analysis examined the null hypothesis (H_o) that the mean PCB concentrations at the two locations were equal. At a 95 percent confidence level (α = 0.05) the mean PCB concentrations at the two locations are not statistically different. However, at a 90 percent confidence level (α = 0.10) the mean PCB concentrations are statistically different. Therefore, the statistical evidence suggests that the mean PCB concentrations for the two locations appear different, but the possibility that concentrations are derived from the same source can not be ruled out.

Differences in water column PCB concentration observed may be due to remobilization of PCBs originating from the Bakers Falls source and stored in the Remnant deposit pool. Float surveys results found no consistent trends to characterize each sampling location. Generally, concentrations increased slightly from upstream to downstream. However, the highest PCB concentrations observed during the float surveys occurred in the July sampling round and concentrations actually decreased through the remnant areas. The similarity of homolog and congener patterns for each location sampled during the float survey provides further evidence that the PCB concentrations are derived from the same source. Therefore, float

survey spatial trends suggest that the remnant deposits contribution to water column PCB concentrations are insignificant.

5.02 PCB Homolog and Congener Distributions

Data collected from sampling locations upstream of the remnant deposits indicate that the Bakers Falls source consists predominantly of Aroclor 1242 that has not been altered or degraded by environmental processes. This is unusual because it is common for PCB homolog and congener patterns to change when exposed to the environment over extended periods, due to weathering. Therefore, the similarity of PCB in samples collected near the Bakers Falls to that unaltered Aroclor 1242 is significant because it allows the "fingerprinting" of the PCBs in the river originating from this source.

Aroclor 1242 is distinguished by the presence of primarily tri- and tetra-chlorinated biphenyls. Likewise, similar homolog distributions were identified in the samples collected for the PCRDMP, from Bakers Falls to the sampling location downstream of the remnant deposits. In contrast, historic research identified the PCBs buried in upper river sediments to contain primarily mono- and di-chlorinated biphenyls (Brown et al. 1987a, Brown et al. 1987b, Brown et al. 1984).

The remnant deposits, were buried sediments until the removal of the Fort Edward Dam in 1973. Therefore, these PCB should show evidence of environmental weathering as observed in Hudson River sediments. Unfortunately, characterization conducted in association with the sediment deposits containment consisted of low-resolution GC chromatography and PCB concentrations were reported as Aroclors. These data alone are insufficient to determine the PCB congener patterns of the

remnant deposits. The original chromatograms are currently being reanalyzed to provide more definitive information on the PCB congener distribution of the remnant deposits.

5.03 Field Variability

The shore sampling verification study established the validity of using shore sampling PCB results at HRM 196.8 to represent center channel concentrations at low flow. Shore sampling and river channel results were similar. In addition, the results provided insight into the dynamics of the river. Both sampling rounds identified highly variable PCB concentrations in the river. Two comparisons provide a basis for this assessment:

- Field duplicate RPDs were 136 and 48 for June and July sampling rounds, respectively. The high field variation was not attributed to analytical imprecision, as overall duplicate RPDs averaged 11 percent for the remainder of the PCRDMP PCB analyses.
- Overall sampling variability was relatively high for shore replicate samples and transect samples. Standard deviation ranged from 25 to 83 ng/l and the difference between minimum and maximum concentrations ranged from 63 to 213 ng/l.

This variability may reflect differences in water column mixing due to turbulent flows prevalent in this stretch of the river. It follows that results of the shore sampling verification study provide a basis for extrapolating field variability associated with weekly water column and float survey data. It is anticipated that similar variability may be associated with the other sampling locations monitored for the PCRDMP.

Therefore, the lack of consistent trend between locations sampled for the float survey may be reflective of this mechanism. For weekly sampling, it is possible that the sampling scheme may have missed a portion of the loading past sampling station HRM 196.8 which was subsequently detected in sampling at RM 194.2. Longterm trends should be considered a more reliable indicator of site conditions then results of individual sample dates.

5.04 Correlation of PCB concentrations with TSS and Flow

Flow and TSS were monitored for the PCRDMP to determine if water column PCB concentrations could be attributed to scouring of remnant deposits. Under such circumstance it might be anticipated that elevated PCB concentrations would be correlated with TSS and/or high flow. The results of the 1992 PCRDMP provide no evidence of such correlations. On the contrary, elevated PCB concentrations were correlated with low flow at HRM 196.8 and 194.2 (r^2= 0.54 and r^2=0.38, respectively) (Figure 5) and TSS was not correlated with PCB concentrations (r^2=0.089 and r^2=0.044, respectively) (Figure 6). The lack of association of water column PCB concentrations with TSS suggests that mechanisms other than scouring are responsible for transport of PCBs in the river for the monitoring period. In fact, elevated PCB concentrations occurred during summer months when the river flow was low. Therefore, it might be speculated that observed PCB concentration increases were due to increased mobility of PCBs from the Bakers Falls source due to increased water temperatures during the summer months. However, additional data would be required to confirm this observation.

5.05 Temporal Trends

While water column PCB concentrations were highly variable over the monitoring period, the temporal trends of PCBs in the water column within the remnant deposit pool may be controlled at least in part, by hydrologic dynamics of the river. Figure 22 describes the hypothesized PCB river dynamics in this region of the river. Upstream of Bakers Falls, water column PCB concentrations are generally less than the method detection limit (< 11 ng/l). The recent identification of a PCB source area immediately downstream of Bakers Falls and upstream of the remnant deposits may account for the majority of water column PCBs in the remnant deposit pool. Transport and deposition of PCBs downstream appears to be controlled by river hydraulics. Transport of PCBs is facilitated by increases in river flow, whereas steady flow and decreases in flow tends to allow PCB deposition and limit PCB resuspension. Figure 4 illustrates some of the trends in transport and deposition of PCBs. Comparison of data from HRM 196.8, above the remnant deposits, and data from HRM 194.2, below the remnant deposits, provides evidence for the transport and deposition dynamics conceptualized in Figure 22. PCB levels at these two locations were similar during "recharging" periods, when increases in loading occurred (Figure 4, July 1992). However, PCB concentrations at these two locations diverged during "discharging" periods, when PCB loading above the remnant areas decreased and PCB concentrations below the remnant areas remained elevated (Figure 4, September 1992). This difference appears to be associated with PCBs stored in the river bed which become a secondary source of PCBs following periods of elevated loading from the Bakers Falls source area. Thus, during periods of low PCB loading from the Bakers Falls source, the relative contribution of PCBs stored in the river

bed becomes the predominant contribution of water column PCBs downstream of the Bakers Falls source area.

SECTION 6 - CONCLUSIONS

Several conclusions can be drawn as a result of the 1992 PCRDMP:

- The source of water column PCBs flowing past the remnant deposits is located between the background PCB sampling site (where PCB concentrations for the study period were generally less than the method detection limit of 11 ng/l) and the upstream sampling site (HRM 196.8) located just below Baker's Falls.
- PCB concentrations of samples collected both upstream and downstream of the remnant deposits varied widely during the ten month study period.
- Seasonal PCB concentration trends were apparent. The highest concentrations during the March to December monitoring period occurred during summer months.
- Both sites had similar temporal trends.
- Congener and Homolog distributions of PCBs detected at sampling stations HRM 196.8 and HRM 194.2 are similar and both closely resemble Aroclor 1242 patterns indicating a single source of PCB is responsible for the loading at both sites.
- Samples collected from shore at location HRM 196.8 are reasonably representative of center channel characteristics at low flow.
- Float survey data indicate a general increase in water column PCB concentrations in the vicinity of the remnant deposits. However, it

appears that the PCBs originate from a single source located upstream of the remnant deposits just below Bakers Falls.

- The remnant deposits contribution to PCB concentrations in the water column is insignificant. This conclusion will be verified by continued monitoring.

SECTION 7 - RECOMMENDATIONS

To further define the transport of PCBs in the vicinity of the remnant deposits, a sampling and analysis program should be implemented to track the impact of the Bakers Falls PCB source reduction on water column PCB concentrations in the vicinity of the remnant deposits. Once the Bakers Falls source has been controlled, water column PCB concentrations will decline to levels low enough to confirm the observations that the remnants are contributing insignificant PCB concentrations. It is recommended that the 1993 program include:

- Weekly water column sampling and analysis for PCBs and TSS at locations HRM 197.0, HRM 196.8, and HRM 194.2 with transition to bi-weekly monitoring starting August 1, 1993.
- Six float surveys during different flow conditions between May and October, with water column sampling and analysis for PCBs and TSS.

REFERENCES

Brown, J.F., Jr., D.L. Bedard, M.J. Brennan, J.C. Carnahan, H. Feng, and R.E. Wagner. Polychlorinated Biphenyl Dechlorination in Aquatic Sediments. Science. 236:709-712. 1987a.

Brown, J.F., Jr., R.E. Wagner, H. Feng, D.L. Bedard, M.J. Brennan, J.C. Carnahan, and R.J. May. Environmental Dechlorination of PCBs. Environmental Toxicology and Chemistry. 6:579-593. 1987b.

Brown, J.F., R.E. Wagner, D.L. Bedard, M.J. Brennan, J.C. Carnahan, R.J. May, and T.J. Tofflemire. PCB Tranformations in Upper Hudson River Sediments. Northeastern Environmental Science. 3:166-178. 1984.

Harza Engineering Company. Ft. Edward Dam PCB Remnant Deposit Containment Environmental Monitoring Program. Report of 1990 Results. January 1992.

Harza Engineering Company. Ft. Edward Dam PCB Remnant Deposit Containment Environmental Monitoring Program. Report of 1991 Results. Volume I. March 1992.

Harza Engineering Company. 1989 Baseline Monitoring Program. May 1990a.

Harza Engineering Company. 1990 Baseline Monitoring Program. May 1990b.

Harza Engineering Company. Quality Assurance Project Plan FT. Edward Dam PCB Remnant Deposit Monitoring Program Baseline Studies. October 1989.

J.L. Engineering. Final Remedial Action Report: PCB Remnant Deposit Sites 2, 3, 4 and 5 Fort Edward, New York. Report of Remediation and Construction Activities (Oct. 1989 - Sept. 1990). September 25, 1992.

Malcolm Pirnie, Inc. Hudson River PCB Dredging Reclamation/Demonstration Project Environmental Information Document. 1986.

New York State Department of Environmental Conservation. *Analytical Services Protocol.* December 1991.

Northeast Analytical, Inc. Method NEA-608CAP, Rev. 3.0, 6/90. (Includes guidelines set forth in *Quality Assurance Plan.* Green Bay Mass Balance Study, I. PCBs and Dieldrin, U.S. EPA Great Lakes National Program Office. Prepared by Deborah L. Swackhamer, Quality Assurance Coordinator, Field and Analytical Methods Committees, University of Minnesota, December 11, 1987 (Appendix C, bound separately).

REFERENCES
(Continued)

NUS. Feasibility Study; Hudson River PCB Site; New York; Volume I. U.S. Environmental Protection Agency; Region II Office; New York, New York. 1984.

O'Brien & Gere Engineers, Inc. 1992a. Field Sampling Plan. Post-Construction Monitoring Program. Fort Edward Dam PCB Remnant Deposit Containment. June 1992.

O'Brien & Gere Engineers, Inc. 1992b. Quality Assurance Project Plan. Post-Construction Monitoring Program. Fort Edward Dam PCB Remnant Deposit Containment. June 1992.

O'Brien & Gere Engineers, Inc. 1992c. Health and Safety Plan. Post-Construction Monitoring Program. Fort Edward Dam PCB Remnant Deposit Containment. June 1992.

O'Brien & Gere Engineers, Inc. 1993. Data Summary Report. Hudson River Project 1991 Float Survey Program, May 1993.

Reckhow, K.H. and S.C. Chapra. Engineering Approaches for Lake Management. Butterwoth Publishers; Boston, Massachusetts. 1983.

Tofflemire, T.J. PCB Transport in the Ft. Edward Area. Northeastern Environmental Science, 3:202-208. 1984.

U.S. Environmental Protection Agency. *Methods for Chemical Analysis of Water and Wastes*. USEPA-600/4-79-020. Revised 1983.

U.S. Environmental Protection Agency. Record of Decision - Hudson River PCB Site. September 25, 1984.

U.S. Environmental Protection Agency. *Test Methods for Evaluating Solid Wastes*. SW-846 Third Edition. November, 1986.

Tables

TABLE 1

GENERAL ELECTRIC COMPANY
POST-CONSTRUCTION REMNANT DEPOSIT MONITORING

SAMPLING LOCATIONS AND SAMPLE COLLECTION SCHEDULE

Sample Location	Location Description	Time Frame	Collection Frequency	Laboratory Analyses
WATER COLUMN CHARACTERIZATION				
HRM 197.0	Fenimore Bridge; Hudson Falls, NY	03/25/92 - 12/03/92	Approximately 1x/week	Whole Water PCB by congener specific methodology; TSS
HRM 196.8	Shore Access Approximately 0.2 Miles Downstream of Bakers Falls, Hudson Falls, NY	12/09/92 - 12/22/92	Approximately 1x/week	Whole Water PCB Aroclors by USEPA Method 8080*; TSS
HRM 194.2	Route 197 Bridge; Fort Edward, NY			
FLOAT SURVEY				
HRM 196.8	Center of Channel, Approximately 0.2 Miles Downstream of Bakers Falls, Hudson Falls, NY	May 1992 - October 1992	1x/month	Whole Water PCB by congener specific methodology; TSS
HRM 196.4	Center of Channel, Approximately 0.6 Miles Downstream of Bakers Falls, Hudson Falls, NY			
HRM 195.8	Center of Channel, Approximately 1.2 Miles Downstream of Bakers Falls, Hudson Falls, NY			
HRM 195.3	Center of Channel, Approximately 1.7 Miles Downstream of Bakers Falls, Hudson Falls, NY			
HRM 194.7	Center of Channel, Approximately 2.1 Miles Downstream of Bakers Falls, Hudson Falls, NY			
SHORE SAMPLING VERIFICATION STUDY				
HRM 196.8	Approximately 0.2 Miles Downstream of Bakers Falls, Hudson Falls, NY	June 1992-July 1992	2X	Whole Water PCB by congener specific methodology

TSS = Total Suspended Solids
HRM Approximate Hudson River mile; HRM 0.0 located at the Battery in New York City.
* Method modified for a detection limit of 11 ng/l.

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TABLE 2

GENERAL ELECTRIC COMPANY
POST-CONSTRUCTION REMNANT DEPOSIT MONITORING

WEEKLY WATER COLUMN PCB RESULTS

Date Collected	USGS Flow (4) (cfs)	HRM 197.0 (1) Total PCBs (ng/L)	TSS (mg/L)	Comments	HRM 196.8 (1) Total PCBs (ng/L)	TSS (mg/L)	Comments	HRM 194.2W (1) Total PCBs (ng/L)	TSS (mg/L)	Comments	HRM 194.2E (1) Total PCBs (ng/L)	TSS (mg/L)	Comments
03/25/92	4430	<11	28	-	23.4	5	P	36.5	6	P	-	-	-
04/01/92	5742	<11	10	-	<11	8	P	38.4	11	P	-	-	-
04/08/92	2870	<11	12	UJ	54.5 [33]	7	J	67.0	7	J	-	-	-
04/15/92	7393	12.2 [<11]	9	P	12.2	3	P	27.5	6	P	-	-	-
04/22/92	11000	<11	4	-	91.4	7	-	125 [70]	3	-	-	-	-
05/01/92	7480	<11	7	-	12.6	10	P	41.3	6	P	-	-	-
05/08/92	13200	<11 [12]	8	-	<11	10	P	46.6	7	-	-	-	-
05/13/92	9030	<11	4	-	19.8	3	P	47.1	5	-	-	-	-
05/21/92	4600	<11	7	-	18.9 [34]	8	P	62.9	5	-	-	-	-
05/28/92	3050	<11	4	-	35.4	5	P	92.2	7	-	98	-	-
06/04/92	8740	<11	5	-	18.9	8	P	78.7 [56]	6	-	-	-	-
06/10/92	9630	<11	4	-	56.6	3	-	77.5	4	-	-	-	-
06/18/92	2860	<11	7	-	70.4 [107]	4	-	163	1	J	-	-	-
06/25/92	3000	<11	6	-	78.4	8	(2)	489	8	-	165	-	-
07/01/92	3250	44.1	5	P	129	3	-	141 [202]	1	-	225	1	-
07/08/92	3140	<11	5	-	180	4	-	197	4	-	335	4	-
07/16/92	3810	<11	6	-	289	7	-	314	2	-	369	2	-
07/24/92	3270	<11	6	-	288	8	-	328	6	-	354	4	-
07/29/92	2560	<11	8	-	416	8	(2)	377	6	-	471	4	-
08/06/92	2960	<11	6	-	319	5	-	539	4	-	653	6	-
08/13/92	3310	<11	8	-	721	14	-	869	6	J	770	6	J
08/19/92	3020	<11	5	UJ	424	6	J	572	5	J	616	<1	J
08/26/92	3050	<11	3	-	289	3	J	499	4	J	-	-	-
09/03/92	3110	<11	9	-	318	10	-	369	7	-	-	-	-

Notes:

(1) Approximate River Mile; For sample location HRM 194.2 E = East channel; c = Composite sample of West and East channels; W = West (main) channel.

(2) Total PCB concentration represent means of five shore samples collected during verification study.

(3) Data collected as part of Bakers Falls Investigation; unvalidated.

(4) USGS flow data from Fort Edward gauging station

A = Alternate PCB analytical method used, modified USEPA method 8080. No congener analysis performed.

P = practical quantitation limit (PQL) note for values between <11 and 44 ng/l.

Data Validation Qualifiers: U = elevated detection limit or concentration reduced to less than detection limit due to results of validation, R = rejected,

J = approximated concentration, UJ = approximated detection limit, and "-" = no qualification.

Geometric means calculated, using a value of one-half the detection limit for total PCB results less than the detection limit.

[] Data presented in brackets are results of analyses performed by OBG Laboratories using NEA methodology.

TABLE 2

GENERAL ELECTRIC COMPANY
POST-CONSTRUCTION REMNANT DEPOSIT MONITORING

WEEKLY WATER COLUMN PCB RESULTS

Date Collected	USGS Flow (4) (cfs)	HRM 197.0 (1) Total PCBs (ng/L)	TSS (mg/L)	Comments	HRM 196.8 (1) Total PCBs (ng/L)	TSS (mg/L)	Comments	HRM 194.2W (1) Total PCBs (ng/L)	TSS (mg/L)	Comments	HRM 194.2E (1) Total PCBs (ng/L)	TSS (mg/L)	Comments
09/09/92	3880	<11	2	–	198	5	–	473	1	c	–	–	c
09/17/92	3090	<11	5	–	492	5	–	822	4	–	–	–	–
09/23/92	3930	<11	4	–	356	4	J	941	3	c	–	–	c
09/30/92	3090	<11	4	–	135	6	–	231	2	c	–	–	c
10/08/92	2950	<11	5	–	136	3	–	212	4	c	–	–	c
10/15/92	4370	<11	1	–	70.2	3	–	123	4	c	–	–	c
10/22/92	4710	<11	9	–	44.2	7	–	114	8	c	–	–	c
10/28/92	4610	<11	4	–	40.5	4	P	230	6	c	–	–	c
11/04/92	7190	<11	7	–	28.7	7	PU	91.6	7	cU	–	–	c
11/11/92	6260	<11	5	UJ	36.8	2	PJ	68.0	4	cJ	–	–	c
11/19/92	7800	–	4	R	–	5	R	–	4	cR	–	4	c
11/24/92	10400	<11	9	–	22.0	11	P (3)	60.0	7	c (3)	–	–	c
12/03/92	8120	13.2	6	PUJ	<13	<1	PUJ	54.4	1	cUJ	–	–	c
12/09/92	7020	<11	7	A (3)	<11	4	A (3)	13	4	cA (3)	–	–	c
12/10/92	6680	<11	4	A (3)	15.0	2	A (3)	15	3	cA (3)	–	–	c
12/16/92	6460	<11	5	A (3)	<11	2	A (3)	13.8	3	A (3)	–	–	c
12/22/92	6870	<11	2	A	<11	3	A	11	1	cA	–	–	c
12/30/92	—	<11	1	A	<11	24	A	11.0	3	A	–	–	c
		STATISTICAL SUMMARY											
Geom. Mean	5413	<11	5	—	54	5	—	113	4	—	–	–	—
Median	4430	11.0	5	—	44.0	5	—	77.0	5	—	–	–	—
Minimum	2560	<11	1	—	<11	<1	—	11.0	1	—	–	–	—
Maximum	13200	44.1	12	—	721	14	—	941	11	—	–	–	—
Std. Dev.	2674	6.1	4.1	—	166	4.0	—	245	2.2	—	–	–	—

Notes:

(1) Approximate River Mile; For sample location HRM 194.2 E = East channel; c = Composite sample of West and East channels; W = West (main) channel.

(2) Total PCB concentration represent means of five shore samples collected during verification study.

(3) Data collected as part of Bakers Falls Investigation; unvalidated.

(4) USGS flow data from Fort Edward gauging station

A = Alternate PCB analytical method used, modified USEPA method 8080. No congener analysis performed.

P = practical quantitation limit (PQL) note for values between <11 and 44 ng/l.

Data Validation Qualifiers: U = elevated detection limit or concentration reduced to less than detection limit due to results of validation, R = rejected, J = approximated concentration, UJ = approximated detection limit, and "–" = no qualification.

Geometric means calculated, using a value of one-half the detection limit for total PCB results less than the detection limit.

[] Data presented in brackets are results of analyses performed by OBG Laboratories using NEA methodology.

Table 3

General Electric Company
Post-Construction Remnant Deposit Monitoring

Weekly Water Column Data
PCB Homolog Distributions

Background Location - HRM 197.0 (1)										
Date Collected	Total PCB (ng/l)	Comments	Homolog Distribution (weight %)							
			Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
03/25/92	<11	-	-	-	-	-	-	-	-	-
04/01/92	<11	-	-	-	-	-	-	-	-	-
04/08/92	<11	UJ	-	-	-	-	-	-	-	-
04/15/92	12.2	P	0.0	0.8	34.4	24.9	29.4	10.5	0.0	0.0
04/22/92	<11	-	-	-	-	-	-	-	-	-
05/01/92	<11	-	-	-	-	-	-	-	-	-
05/08/92	<11	-	-	-	-	-	-	-	-	-
05/13/92	<11	-	-	-	-	-	-	-	-	-
05/21/92	<11	-	-	-	-	-	-	-	-	-
05/28/92	<11	-	-	-	-	-	-	-	-	-
06/04/92	<11	-	-	-	-	-	-	-	-	-
06/10/92	<11	-	-	-	-	-	-	-	-	-
06/18/92	<11	-	-	-	-	-	-	-	-	-
06/25/92	<11	-	-	-	-	-	-	-	-	-
07/01/92	44.1	-	0.0	8.2	36.3	34.4	13.7	7.3	0.0	0.0
07/08/92	<11	-	-	-	-	-	-	-	-	-
07/16/92	<11	-	-	-	-	-	-	-	-	-
07/24/92	<11	-	-	-	-	-	-	-	-	-
07/29/92	<11	-	-	-	-	-	-	-	-	-
08/06/92	<11	-	-	-	-	-	-	-	-	-
08/13/92	<11	-	-	-	-	-	-	-	-	-
08/19/92	<11	UJ	-	-	-	-	-	-	-	-
08/27/92	<11	-	-	-	-	-	-	-	-	-
09/03/92	<11	-	-	-	-	-	-	-	-	-
09/09/92	<11	-	-	-	-	-	-	-	-	-
09/17/92	<11	-	-	-	-	-	-	-	-	-
09/23/92	<11	-	-	-	-	-	-	-	-	-
09/30/92	<11	-	-	-	-	-	-	-	-	-
10/08/92	<11	-	-	-	-	-	-	-	-	-
10/15/92	<11	-	-	-	-	-	-	-	-	-
10/22/92	<11	-	-	-	-	-	-	-	-	-
10/28/92	<11	-	-	-	-	-	-	-	-	-
11/04/92	<11	-	-	-	-	-	-	-	-	-
11/11/92	<11	UJ	-	-	-	-	-	-	-	-
11/19/92	-	R	-	-	-	-	-	-	-	-
11/24/92	<11	-	-	-	-	-	-	-	-	-
12/03/92	13.2	PUJ	0.0	1.6	34.6	31.2	24.7	7.9	0.0	0.0
12/09/92	<11	A	-	-	-	-	-	-	-	-
12/10/92	<11	A	-	-	-	-	-	-	-	-
12/16/92	<11	A	-	-	-	-	-	-	-	-
12/22/92	<11	A	-	-	-	-	-	-	-	-
12/30/92	<11	A	-	-	-	-	-	-	-	-

Note:
(1) Approximate River Mile; For sample location HRM 194.2 E = East channel; c = Composite sample of West and East channels; W = West (main) channel.
(2) Total PCB concentration and homolog distribution represent means of five shore samples collected during verification study.
(3) Data collected as part of Bakers Falls Investigation; unvalidated.
A=Alternate PCB analytical method used modifed USEPA method 8080. No congener analysis performed.
P = practical quantitation limit (PQL) note for values between <1 and 44 ng/l.
Data Validation Qualifiers: U = elevated detection limit or concentration reduced to less than detection limit due to results of validation, R = rejected,
= approximated concentration, UJ = approximated detection limit.
" = no qualification
Geometric Means calculated using a value of one-half the detection limit for Total PCB results less than the detection limit.

Table 3

General Electric Company
Post-Construction Remnant Deposit Monitoring

Weekly Water Column Data
PCB Homolog Distributions

Upstream of Remnant Areas - HRM 196.8 (1)										
Date	Total PCB	Homolog Distribution (weight %) (2)								
Collected	(ng/l)	Comments	Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
03/25/92	23.4	P	0.0	1.3	51.9	27.5	13.4	5.9	0.0	0.0
04/01/92	10.8	P	0.0	1.5	44.4	26.1	19.2	8.9	0.0	0.0
04/08/92	54.5	J	0.0	6.5	36.9	37.6	12.4	6.6	0.0	0.0
04/15/92	12.2	P	0.0	1.3	42.5	29.5	19.2	7.6	0.0	0.0
04/22/92	91.4	-	0.0	13.7	41.9	31.0	9.4	4.0	0.0	0.0
05/01/92	12.6	P	0.0	1.7	41.6	31.1	17.8	7.9	0.0	0.0
05/08/92	7.9	P	0.0	0.0	25.4	44.6	19.7	10.4	0.0	0.0
05/13/92	19.8	P	0.0	10.0	36.4	29.8	16.3	7.5	0.0	0.0
05/21/92	18.9	P	0.0	1.7	45.9	36.4	12.1	4.0	0.0	0.0
05/28/92	35.4	P	0.0	11.8	35.7	36.8	13.2	2.5	0.0	0.0
06/04/92	18.9	P	0.0	14.1	35.4	26.8	19.1	4.7	0.0	0.0
06/10/92	56.6	-	0.0	13.3	40.4	33.8	9.7	2.9	0.0	0.0
06/18/92	70.4	-	0.0	6.6	37.3	40.9	10.4	4.9	0.0	0.0
06/25/92	78.4	(2)	0.0	10.6	36.8	34.5	12.4	5.7	0.0	0.0
07/01/92	129	-	0.0	15.8	40.1	32.8	8.4	2.8	0.0	0.0
07/08/92	180	-	0.0	10.7	38.6	37.5	9.5	3.7	0.0	0.0
07/16/92	289	-	0.0	14.5	43.4	33.0	7.3	2.1	0.0	0.0
07/24/92	288	-	1.1	13.8	40.2	34.6	8.0	2.3	0.0	0.0
07/29/92	416	(2)	0.8	18.3	42.0	29.3	7.7	1.9	0.0	0.0
08/06/92	319	-	0.0	18.6	42.2	29.8	7.5	1.9	0.0	0.0
08/13/92	721	-	0.9	19.4	41.1	30.1	6.9	1.6	0.0	0.0
08/19/92	424	J	2.0	17.8	40.6	31.6	6.4	1.6	0.0	0.0
08/27/92	289	J	0.0	14.1	41.1	34.4	8.3	2.1	0.0	0.0
09/03/92	318	-	0.0	15.9	43.1	31.6	7.5	1.9	0.0	0.0
09/09/92	198	-	0.0	16.4	40.0	33.3	7.9	2.4	0.0	0.0
09/17/92	492	-	0.7	15.4	39.9	32.7	7.4	3.2	0.8	0.0
09/23/92	356	J	0.9	14.5	40.4	35.3	7.3	1.7	0.0	0.0
09/30/92	135	-	0.0	14.8	41.3	33.7	7.5	2.7	0.0	0.0
10/08/92	136	-	0.0	14.8	40.2	33.5	8.4	3.1	0.0	0.0
10/15/92	70.2	-	0.0	12.6	39.4	37.2	8.1	2.8	0.0	0.0
10/22/92	44.2	-	0.0	12.4	37.6	33.9	11.3	4.8	0.0	0.0
10/28/92	40.5	P	0.0	15.1	34.7	35.7	11.4	3.0	0.0	0.0
11/04/92	28.7	PU	0.0	15.3	36.1	36.7	8.9	3.0	0.0	0.0
11/11/92	36.8	PJ	0.0	16.1	41.0	31.2	8.7	3.0	0.0	0.0
11/19/92	-	R	-	-	-	-	-	-	-	-
11/24/92	22.0	P (3)	0.0	8.1	36.3	42.8	9.2	3.5	0.0	0.0
12/03/92	13.4	PUJ	0.0	1.7	43.1	28.5	19.2	7.5	0.0	0.0
12/09/92	11.0	A	-	-	-	-	-	-	-	-
12/10/92	15.0	A	-	-	-	-	-	-	-	-
12/16/92	11.0	A	-	-	-	-	-	-	-	-
12/22/92	11.0	A	-	-	-	-	-	-	-	-
12/30/92	11.0	A	-	-	-	-	-	-	-	-

Note:
(1) Approximate River Mile; For sample location HRM 194.2 E = East channel; c = Composite sample of West and East channels; W = West (main) channel.
(2) Total PCB concentration and homolog distribution represent means of five shore samples collected during verification study.
(3) Data collected as part of Bakers Falls Investigation; unvalidated.
A=Alternate PCB analytical method used modifed USEPA method 8080. No congener analysis performed.
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pproximated concentration, UJ = approximated detection limit.
= no qualification
Geometric Means calculated using a value of one-half the detection limit for Total PCB results less than the detection limit.

Table 3

General Electric Company
Post-Construction Remnant Deposit Monitoring

Weekly Water Column Data
PCB Homolog Distributions

Downstream of Remnant Areas - HRM 194.2 West (1)									
Date Collected	Total PCB (ng/l)	Comments	Homolog Distribution (weight %) (2)						
			Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
03/25/92	36.5	P	0.0	11.1	44.3	29.7	10.7	4.2	0.0	0.0
04/01/92	38.4	P	0.0	12.9	39.2	30.4	13.3	4.2	0.0	0.0
04/08/92	67.0	J	0.0	8.0	35.7	37.9	13.4	5.0	0.0	0.0
04/15/92	27.5	P	0.0	13.9	42.2	27.9	11.7	4.3	0.0	0.0
04/22/92	125	-	0.0	9.6	42.1	35.1	8.9	4.2	0.0	0.0
05/01/92	41.3	P	0.0	12.7	42.3	33.6	9.1	2.3	0.0	0.0
05/08/92	46.6	-	0.0	11.5	36.7	35.1	14.0	2.7	0.0	0.0
05/13/92	47.1	-	0.0	10.6	38.9	29.5	13.3	7.8	0.0	0.0
05/21/92	62.9	-	0.0	11.9	40.6	34.2	10.8	2.5	0.0	0.0
05/28/92	92.2	-	0.0	7.9	34.0	36.2	16.3	5.5	0.0	0.0
06/04/92	78.7	-	0.0	12.8	38.7	34.1	10.8	3.7	0.0	0.0
06/10/92	77.5	-	0.0	11.5	38.0	37.3	10.4	3.0	0.0	0.0
06/18/92	163	J	0.0	5.6	35.4	44.7	11.2	3.2	0.0	0.0
06/25/92	489	-	0.0	7.9	42.5	38.7	8.6	2.2	0.0	0.0
07/01/92	141	-	0.0	14.7	39.4	33.7	9.0	3.1	0.0	0.0
07/08/92	197	-	0.0	14.4	39.7	34.9	8.1	2.9	0.0	0.0
07/16/92	314	-	0.0	14.9	41.9	33.2	8.2	1.8	0.0	0.0
07/24/92	328	-	0.9	14.4	40.7	33.9	7.8	2.3	0.0	0.0
07/29/92	377	-	2.1	17.3	40.5	30.7	7.5	1.8	0.0	0.0
08/06/92	539	-	0.0	19.0	42.0	29.8	7.4	1.8	0.0	0.0
08/13/92	869	J	1.4	19.5	41.7	29.4	6.5	1.5	0.0	0.0
08/19/92	572	J	1.5	16.4	39.0	32.8	8.1	2.3	0.0	0.0
08/27/92	499	J	3.1	17.0	40.9	29.7	7.5	1.8	0.0	0.0
09/03/92	369	-	0.0	16.9	41.8	31.3	8.1	1.9	0.0	0.0
09/09/92	473	c	1.4	15.5	38.4	32.6	7.8	3.4	0.8	0.0
09/17/92	822	-	1.0	13.8	37.5	34.5	8.7	3.7	0.8	0.0
09/23/92	941	c	0.9	15.7	40.8	32.8	6.9	2.4	0.4	0.0
09/30/92	231	c	0.0	13.7	40.5	35.6	7.9	2.3	0.0	0.0
10/08/92	212	c	0.0	12.5	36.0	37.6	10.4	3.5	0.0	0.0
10/15/92	123	c	0.0	12.4	41.2	34.3	8.8	3.3	0.0	0.0
10/22/92	114	c	0.0	12.9	41.4	34.4	8.6	2.8	0.0	0.0
10/28/92	230	c	0.0	6.5	42.9	36.8	10.2	3.5	0.0	0.0
11/04/92	91.6	cU	0.0	10.7	39.3	36.6	10.2	3.2	0.0	0.0
11/11/92	68.0	cJ	0.0	10.5	37.2	38.7	10.0	3.5	0.0	0.0
11/19/92	-	R	-	-	-	-	-	-	-	-
11/24/92	60.0	c (3)	0.0	7.8	41.8	38.8	10.0	1.6	0.0	0.0
12/03/92	54.4	cUJ	0.0	15.3	38.6	33.9	9.0	3.2	0.0	0.0
12/09/92	13.0	cA	-	-	-	-	-	-	-	-
12/10/92	15.0	cA	-	-	-	-	-	-	-	-
12/16/92	13.8	A	-	-	-	-	-	-	-	-
12/22/92	11.0	cA	-	-	-	-	-	-	-	-
12/30/92	11.0	A	-	-	-	-	-	-	-	-

Note:
(1) Approximate River Mile; For sample location HRM 194.2 E = East channel; c = Composite sample of West and East channels; W = West (main) channel.
(2) Total PCB concentration and homolog distribution represent means of five shore samples collected during verification study.
(3) Data collected as part of Bakers Falls Investigation; unvalidated.
A=Alternate PCB analytical method used modifed USEPA method 8080. No congener analysis performed.
P = practical quantitation limit (PQL) note for values between <1 and 44 ng/l.
Validation Qualifiers: U = elevated detection limit or concentration reduced to less than detection limit due to results of validation, R = rejected,
pproximated concentration, UJ = approximated detection limit.
- = no qualification
Geometric Means calculated using a value of one-half the detection limit for Total PCB results less than the detection limit.

Table 3

General Electric Company
Post-Construction Remnant Deposit Monitoring

Weekly Water Column Data
PCB Homolog Distributions

Downstream of Remnant Areas - HRM 194.2 East (1)										
Date Collected	Total PCB (ng/l)	Comments	Homolog Distribution (weight %) (2)							
			Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
05/28/92	98	-	0.0	8.1	41.5	37.5	9.8	3.1	0.0	0.0
06/25/92	165	-	0.0	14.5	40.1	34.9	7.8	2.8	0.0	0.0
07/01/92	225	-	0.0	11.9	38.3	39.1	8.1	2.6	0.0	0.0
07/08/92	335	-	2.1	15.2	41.3	33.6	6.2	1.7	0.0	0.0
07/16/92	369	-	0.0	14.3	42.1	34.0	7.7	1.9	0.0	0.0
07/24/92	354	-	1.0	14.1	40.3	35.4	7.3	2.0	0.0	0.0
07/29/92	471	-	1.2	16.8	41.7	31.7	6.9	1.8	0.0	0.0
08/06/92	653	-	1.5	19.0	42.2	29.1	6.5	1.6	0.0	0.0
08/13/92	770	J	2.0	19.6	41.4	28.9	6.7	1.5	0.0	0.0
08/19/92	616	J	1.9	18.7	41.8	30.4	5.8	1.5	0.0	0.0

Note:
(1) Approximate River Mile; For sample location HRM 194.2; E = East channel; c = Composite sample of West and East channels; W = West (main) channel.
(2) Total PCB concentration and homolog distribution represent means of five shore samples collected during verification study.
(3) Data collected as part of Bakers Falls Investigation; unvalidated.
A=Alternate PCB analytical method used modifed USEPA method 8080. No congener analysis performed.
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ta Validation Qualifiers: U = elevated detection limit or concentration reduced to less than detection limit due to results of validation, R = rejected, approximated concentration, UJ = approximated detection limit.
"-" = no qualification

Geometric Means calculated using a value of one-half the detection limit for Total PCB results less than the detection limit.

Table 4

General Electric Company
Post-Construction Remnant Deposit Monitoring

Weekly Water Column Data
Statistical Summary of PCB Homolog Distributions

BACKGROUND LOCATION HRM 197.0								
	Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
Geom. Mean	0.0	2.5	35.4	29.3	20.1	8.7	0.0	0.0
Minimum	0.0	0.8	34.4	24.9	13.7	7.3	0.0	0.0
Maximum	0.0	8.2	36.3	34.4	29.4	10.5	0.0	0.0
Std. Dev.	0.0	3.7	0.9	4.8	7.8	1.6	0.0	0.0

UPSTREAM LOCATION HRM 196.8								
	Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
Geom. Mean	0.0	5.9	39.6	33.2	10.3	3.5	0.0	0.0
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum	2.0	19.4	51.9	44.6	19.7	10.4	0.8	0.0
Std. Dev.	0.4	6.0	7.6	6.8	4.5	2.3	0.1	0.0

DOWNSTREAM LOCATION HRM 194.2 W								
	Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
Geom. Mean	0.0	12.3	39.8	34.0	9.5	2.9	0.0	0.0
Minimum	0.0	5.6	34.0	27.9	6.5	1.5	0.0	0.0
Maximum	3.1	19.5	44.3	44.7	16.3	7.8	0.8	0.0
Std. Dev.	0.7	3.4	2.4	3.4	2.2	1.2	0.2	0.0

DOWNSTREAM LOCATION HRM 194.2 E								
	Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa
Geom. Mean	0.0	14.8	41.0	33.3	7.2	2.0	0.0	0.0
Minimum	0.0	8.1	38.3	28.9	5.8	1.5	0.0	0.0
Maximum	2.1	19.6	42.2	39.1	9.8	3.1	0.0	0.0
Std. Dev.	0.9	3.3	1.1	3.3	1.1	0.6	0.0	0.0

Geometric Means calculated using a value of one-half the detection limit for Total PCB results less than the detection limit.

TABLE 5
General Electric Company
Post-Construction Remnant Deposit Monitoring
Float Survey Results

Date Collected	Sample Location (1)	TSS (mg/l)	Total PCB (ng/l)	Comments	Homolog distribution (weight %)									
					Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa	Nona	Deca
5/28/92	HRM 197.0 M	4	<11	-	--	--	--	--	--	--	--	--	--	--
	HRM 196.8 W	5	35	P	0.0	11.8	35.7	36.8	13.2	2.5	0.0	0.0	0.0	0.0
	HRM 196.8 M	3	21	P	0.0	9.5	43.1	33.7	11.3	2.4	0.0	0.0	0.0	0.0
	HRM 196.4 M	1	31	P	0.0	8.9	41.8	36.6	10.5	2.3	0.0	0.0	0.0	0.0
	HRM 196.4 E	--	65	-	0.0	9.3	41.3	38.4	8.6	2.4	0.0	0.0	0.0	0.0
	HRM 195.8 M	4	45	-	0.0	12.0	42.6	34.9	8.8	1.6	0.0	0.0	0.0	0.0
	HRM 195.3 M	5	72	-	0.0	9.8	38.6	37.0	10.9	3.7	0.0	0.0	0.0	0.0
	HRM 194.7 M	3	66	-	0.0	9.5	41.1	35.9	10.3	3.1	0.0	0.0	0.0	0.0
	HRM 194.2 W	7	92	-	0.0	7.9	34.0	36.2	16.3	5.5	0.0	0.0	0.0	0.0
	HRM 194.2 E	--	98	-	0.0	8.1	41.5	37.5	9.8	3.1	0.0	0.0	0.0	0.0
6/25/92	HRM 197.0 M	6	<11	-	--	--	--	--	--	--	--	--	--	--
	HRM 196.8	8	148	(2)	0.0	13.8	41.0	33.8	9.2	2.2	0.0	0.0	0.0	0.0
	HRM 196.4 M	5	129	-	0.0	16.2	42.3	32.5	7.7	1.3	0.0	0.0	0.0	0.0
	HRM 195.8 M	8	163	-	0.0	15.2	43.1	32.4	8.0	1.4	0.0	0.0	0.0	0.0
	HRM 195.3 M	6	242	-	0.0	14.8	41.7	33.7	7.5	2.2	0.0	0.0	0.0	0.0
	HRM 194.7 M	3	183	-	0.0	12.9	39.5	36.7	8.2	2.7	0.0	0.0	0.0	0.0
	HRM 194.2 W	8	489	-	0.0	7.9	42.5	38.7	8.6	2.2	0.0	0.0	0.0	0.0
	HRM 194.2 E	--	165	-	0.0	14.5	40.1	34.9	7.8	2.8	0.0	0.0	0.0	0.0
7/29/92	HRM 197.0 M	8	<11	-	--	--	--	--	--	--	--	--	--	--
	HRM 196.8 T	8	372	(2)	1.5	16.7	40.3	32.8	6.9	1.9	0.0	0.0	0.0	0.0
	HRM 196.4 M	6	467	-	1.0	15.3	42.2	33.2	6.6	1.7	0.0	0.0	0.0	0.0
	HRM 195.8 M	5	525	-	1.4	16.9	41.8	32.1	6.3	1.5	0.0	0.0	0.0	0.0
	HRM 195.3 M	5	523	-	0.9	15.4	40.9	34.0	7.1	1.8	0.0	0.0	0.0	0.0
	HRM 194.7 M	5	443	-	1.3	17.1	41.9	31.7	6.5	1.6	0.0	0.0	0.0	0.0
	HRM 194.2 W	6	377	-	2.1	17.3	40.5	30.7	7.5	1.8	0.0	0.0	0.0	0.0
	HRM 194.2 E	4	471	-	1.2	16.8	41.7	31.7	6.9	1.8	0.0	0.0	0.0	0.0

(1) Approximate river mile; W, M, E indicate river channel location of sample collection (West, Middle, East, respectively); C indicates composite sample of East and West channels.
Transect samples collected across channel during verification study;
T-Total PCB concentrations and homolog distribution presented represent means of transect samples collected.

(2) Value for one sample collected along transect (C6) was estimated (J).

P = practical quantitation limit (PQL) note for values between <11 and 44 ng/l.

Data Validation Qualifiers: U = elevated detection limit or concentration reduced to less than detection limit due to results of validation, R = rejected,
J = approximated concentration, UJ = approximated detection limit.

TABLE 5
General Electric Company
Post-Construction Remnant Deposit Monitoring
Float Survey Results

Date Collected	Sample Location (1)	TSS (mg/l)	Total PCB (ng/l)	Comments	Homolog distribution (weight %)									
					Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa	Nona	Deca
8/26/92	HRM 197.0 M	3	<11	-	--	--	--	--	--	--	--	--	--	--
	HRM 196.8 M	3	334	-	0.0	19.1	41.7	30.1	7.7	1.4	0.0	0.0	0.0	0.0
	HRM 196.4 M	6	266	-	0.0	19.7	40.6	30.0	8.2	1.7	0.0	0.0	0.0	0.0
	HRM 195.8 M	4	314	-	0.0	19.4	42.7	29.2	7.0	1.7	0.0	0.0	0.0	0.0
	HRM 195.3 M	4	340	-	0.0	19.5	42.2	28.9	7.6	1.8	0.0	0.0	0.0	0.0
	HRM 194.7 M	2	348	J	0.0	18.7	42.4	29.6	7.5	1.8	0.0	0.0	0.0	0.0
	HRM 194.2 C	4	499	J	3.1	17.0	40.9	29.7	7.5	1.8	0.0	0.0	0.0	0.0
9/30/92	HRM 197.0 M	4	<11	-	--	--	--	--	--	--	--	--	--	--
	HRM 196.8 M	4	114	-	0.0	17.6	40.8	30.3	8.6	2.7	0.0	0.0	0.0	0.0
	HRM 196.4 M	2	201	-	0.0	16.3	40.4	33.2	7.9	2.3	0.0	0.0	0.0	0.0
	HRM 195.8 M	3	218	-	0.0	17.0	41.1	32.6	7.3	2.0	0.0	0.0	0.0	0.0
	HRM 195.3 M	7	266	-	0.0	15.3	40.2	34.5	7.9	2.2	0.0	0.0	0.0	0.0
	HRM 194.7 M	4	244	-	0.0	15.3	42.0	33.5	7.4	2.0	0.0	0.0	0.0	0.0
	HRM 194.2 C	2	231	-	0.0	13.7	40.5	35.6	7.9	2.3	0.0	0.0	0.0	0.0
10/22/92	HRM 197.0 M	9	<11	-	--	--	--	--	--	--	--	--	--	--
	HRM 196.8 M	8	40	P	0.0	16.3	38.1	33.7	9.0	3.0	0.0	0.0	0.0	0.0
	HRM 196.4 M	7	74	-	0.0	14.5	37.9	34.9	9.0	3.7	0.0	0.0	0.0	0.0
	HRM 195.8 M	5	100	-	0.0	13.9	41.9	32.6	8.3	3.3	0.0	0.0	0.0	0.0
	HRM 195.3 M	6	59	-	0.0	13.4	40.9	33.0	9.3	3.5	0.0	0.0	0.0	0.0
	HRM 194.7 M	5	81	-	0.0	13.3	42.1	31.9	9.2	3.5	0.0	0.0	0.0	0.0
	HRM 194.2 C	8	114	-	0.0	12.9	41.4	34.4	8.6	2.8	0.0	0.0	0.0	0.0

(1) Approximate river mile; W, M, E indicate river channel location of sample collection (West, Middle, East, respectively); C indicates composite sample of East and West channels.
Transect samples collected across channel during verification study;
T-Total PCB concentrations and homolog distribution presented represent means of transect samples collected.

(2) Value for one sample collected along transect (C6) was estimated (J).
P = practical quantitation limit (PQL) note for values between <11 and 44 ng/l.
Data Validation Qualifiers: U = elevated detection limit or concentration reduced to less than detection limit due to results of validation, R = rejected,
J = approximated concentration, UJ = approximated detection limit.

TABLE 6

General Electric Company
Post-Construction Remnant Deposit Monitoring Program

Shore Sampling Verification Study Results – HRM 196.8

June 25, 1992 Sampling Round													
Sample ID	Sample Time	Site Location (1)	Total PCB (ng/L)	Comments	Homolog Distribution (weight %)									
					Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa	Nona	Deca
C0	11:16	0.00	78	-	0.0	10.6	36.8	34.5	12.4	5.7	0.0	0.0	0.0	0.0
C0	11:17	0.00	138	-	0.0	13.0	41.8	33.8	8.3	3.2	0.0	0.0	0.0	0.0
C0	11:18	0.00	111	-	0.0	16.7	41.0	31.5	7.6	3.2	0.0	0.0	0.0	0.0
C0	11:19	0.00	141	-	0.0	16.2	41.8	31.3	8.0	2.7	0.0	0.0	0.0	0.0
C0	11:20	0.00	78	-	0.0	13.7	38.6	32.9	10.6	4.2	0.0	0.0	0.0	0.0
C0	11:21	0.00	97	-	0.0	17.6	40.9	29.9	8.5	3.2	0.0	0.0	0.0	0.0
C1	11:16	0.15	207	-	0.0	15.7	41.1	31.6	8.9	2.8	0.0	0.0	0.0	0.0
C2	11:17	0.30	93	-	0.0	12.2	41.4	34.5	9.8	2.1	0.0	0.0	0.0	0.0
C3	11:18	0.45	117	-	0.0	14.7	40.7	33.5	9.7	1.5	0.0	0.0	0.0	0.0
C4	11:19	0.60	123	-	0.0	16.4	40.3	31.5	10.1	1.6	0.0	0.0	0.0	0.0
C5	11:20	0.75	138	-	0.0	12.8	41.5	33.8	8.8	3.1	0.0	0.0	0.0	0.0
C6	11:21	0.90	107	-	0.0	15.0	40.5	33.7	9.1	1.8	0.0	0.0	0.0	0.0
Rep C6 (2)	11:21	0.90	253	-	0.0	9.8	41.7	38.0	8.0	2.5	0.0	0.0	0.0	0.0
SHORE SAMPLE STATISTICS (C0)														
Geom. Mean			104		0.0	14.4	40.1	32.3	9.1	3.6	0.0	0.0	0.0	0.0
Maximum			141		0.0	17.6	41.8	34.5	12.4	5.7	0.0	0.0	0.0	0.0
Minimum			78		0.0	10.6	36.8	29.9	7.6	2.7	0.0	0.0	0.0	0.0
Standard Deviation			25		0.0	2.4	1.9	1.6	1.7	1.0	0.0	0.0	0.0	0.0
CENTER CHANNEL SAMPLE STATISTICS (C1-C6)														
Geom. Mean			139		0.0	13.6	41.0	33.7	9.2	2.1	0.0	0.0	0.0	0.0
Maximum			253		0.0	16.4	41.7	38.0	10.1	3.1	0.0	0.0	0.0	0.0
Minimum			93		0.0	9.8	40.3	31.5	8.0	1.5	0.0	0.0	0.0	0.0
Standard Deviation			55		0.0	2.2	0.5	2.0	0.7	0.6	0.0	0.0	0.0	0.0

(1) Location relative to shoreline, where the western shore equals 0 and the eastern shore equals 1. Locations approximate.

(2) Replicate (Rep) sample collected immediately following Sample C6, same location

P = practical quantitation limit (PQL) note values between <11 and 44 ng/l.

Data Validation Qualifier: U = elevated detection limit, J = estimated concentration, R = rejected, UJ = approximated detection limit, and "-" = no qualification.

TABLE 6

GENERAL ELECTRIC COMPANY
POST-CONSTRUCTION REMNANT DEPOSIT MONITORING PROGRAM
SHORE SAMPLING VERIFICATION STUDY RESULTS - HRM 196.8

July 29, 1992 Sampling Round													
Sample ID	Sample Time	Site Location (1)	Total PCB (ng/L)	Comments	Homolog Distribution (weight %)									
					Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa	Nona	Deca
C0	11:35	0.00	416	-	0.8	18.3	42.0	29.3	7.7	1.9	0.0	0.0	0.0	0.0
C0	11:36	0.00	274	-	2.5	14.8	38.7	33.2	8.6	2.2	0.0	0.0	0.0	0.0
C0	11:37	0.00	273	-	2.8	17.2	40.1	30.0	8.0	1.9	0.0	0.0	0.0	0.0
C0	11:38	0.00	295	-	2.9	14.5	39.6	32.7	8.2	2.1	0.0	0.0	0.0	0.0
C0	11:39	0.00	266	-	3.2	18.0	40.5	29.2	7.3	1.8	0.0	0.0	0.0	0.0
C0	11:40	0.00	479	-	1.3	15.7	42.2	31.4	7.9	1.6	0.0	0.0	0.0	0.0
C1	11:33	0.15	424	-	1.3	14.1	39.6	35.5	7.6	2.0	0.0	0.0	0.0	0.0
C2	11:33	0.30	422	-	1.0	15.7	41.1	33.4	7.0	1.9	0.0	0.0	0.0	0.0
C3	11:34	0.45	332	-	1.5	17.1	40.5	32.2	6.9	1.9	0.0	0.0	0.0	0.0
C4	11:34	0.60	392	-	1.1	17.8	39.4	33.0	6.5	2.1	0.0	0.0	0.0	0.0
C5	11:35	0.75	357	-	1.9	16.9	40.5	31.9	6.9	1.8	0.0	0.0	0.0	0.0
C6	11:35	0.90	273	-	2.3	18.8	40.0	30.6	6.5	1.8	0.0	0.0	0.0	0.0
Rep C6 (2)	11:35	0.90	405	-	1.4	16.3	41.2	32.9	6.7	1.6	0.0	0.0	0.0	0.0
SHORE SAMPLE STATISTICS (C0)														
Geom. Mean			324	-	2.0	16.4	40.5	30.9	7.9	1.9	0.0	0.0	0.0	0.0
Maximum			479	-	3.2	18.3	42.2	33.2	8.6	2.2	0.0	0.0	0.0	0.0
Minimum			266	-	0.8	14.5	38.7	29.2	7.3	1.6	0.0	0.0	0.0	0.0
Standard Deviation			83	-	0.9	1.5	1.2	1.6	0.4	0.2	0.0	0.0	0.0	0.0
CENTER CHANNEL SAMPLE STATISTICS (C1-C6)														
Geom. Mean			368	-	1.4	16.6	40.3	32.8	6.8	1.9	0.0	0.0	0.0	0.0
Maximum			424	-	2.3	18.8	41.2	35.5	7.6	2.1	0.0	0.0	0.0	0.0
Minimum			273	-	1.0	14.1	39.4	30.6	6.5	1.6	0.0	0.0	0.0	0.0
Standard Deviation			51	-	0.4	1.4	0.6	1.4	0.3	0.1	0.0	0.0	0.0	0.0

(1) Location relative to shoreline, where the western shore equals 0 and the eastern shore equals 1. Locations approximate.

(2) Replicate (Rep) sample collected immediately following Sample C6, same location

P = practical quantitation limit (PQL) not for values between <11 and 44 ng/l.

Data Validation Qualifiers: U = elevated detection limit, J = estimated concentration, R = rejected, UJ = approximated detection limit, and "-" = no qualification.

Table 7
General Electric
Post Construction Remnant Deposit Monitoring Program
NEA and OBG Laboratories Comparison
Results of Water Column Split Sample Analyses

Sample Date	Sample Description	Total PCBs (ng/L)		
		NEA	OBG	RPD
08-Apr-92	HRM-196.8	55	33	49
15-Apr-92	HRM-197.0	12	<11	NC
22-Apr-92	HRM-194.2	125	70	57
08-May-92	HRM-197.0	<11	12	NC
21-May-92	HRM 196.8	19	34	57
04-Jun-92	HRM-194.2	79	56	34
18-Jun-92	HRM 196.8	70	107	41
01-Jul-92	HRM-194.2	141	202	35

Notes:
HRM = approximate Hudson River Mile.
NEA = Northeast Analytical Laboratory, Inc.
OBG = OBG Laboratories, Inc.
RPD = Relative Percent Difference, calculated as the absolute value of the difference of the two results, divided by the mean of the two results, multiplied by 100.
NC = Not calculated.

Figures

EPA REGION II
SCANNING TRACKING SHEET

DOC ID # 67563

DOC TITLE/SUBJECT:

HUDSON RIVER PCBS UPDATE #8
FIGURE 1 – SITE PLAN
(Page: 315619)

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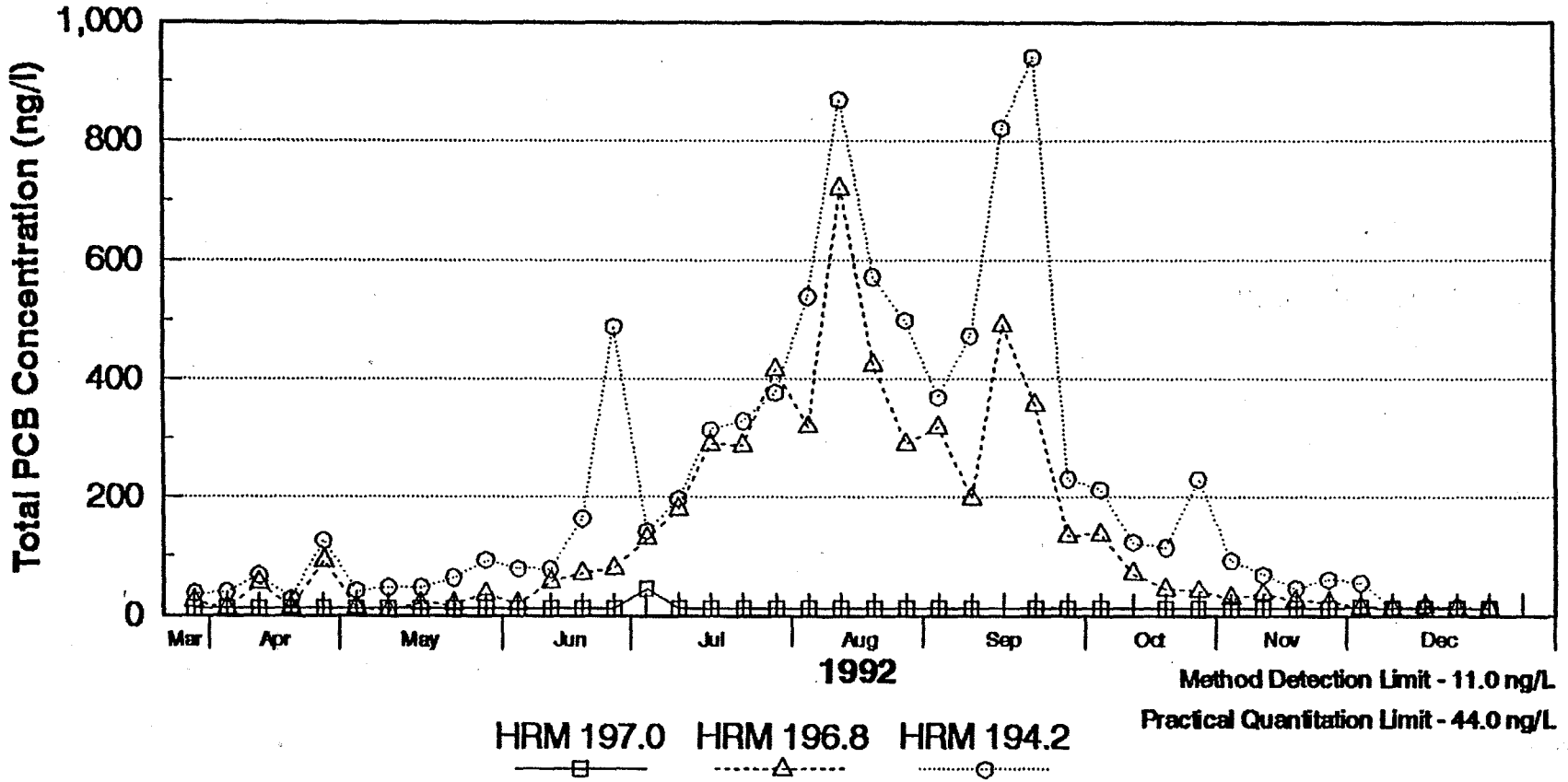
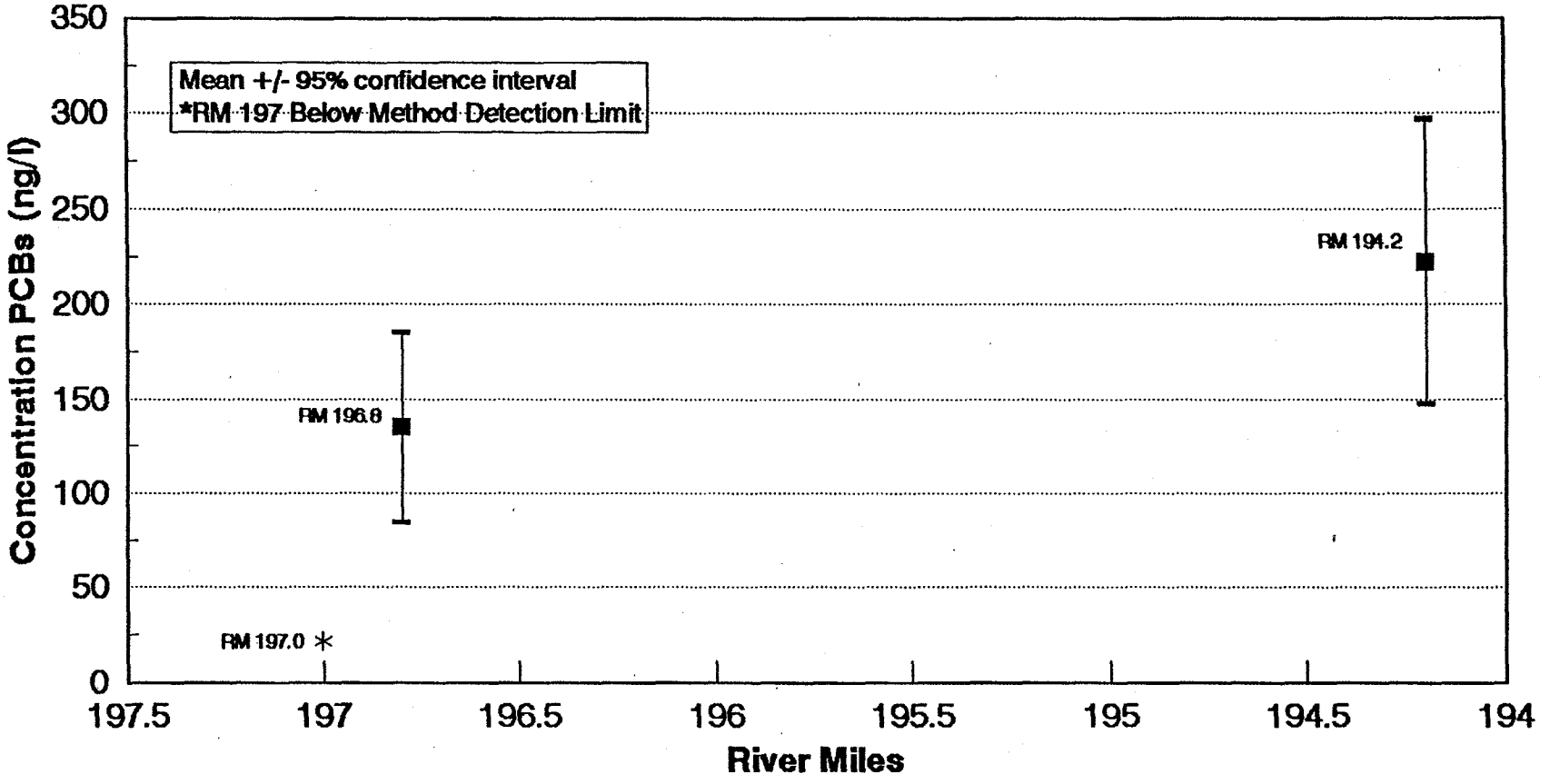
NEW YORK, NY 10007

Figure 2
General Electric Company
Post-Construction Remnant Deposit Monitoring
Water Column Total PCB Concentration vs Time



Note: For dates on which main and east channel samples were collected, data for HRM 194.2 main channel is plotted.

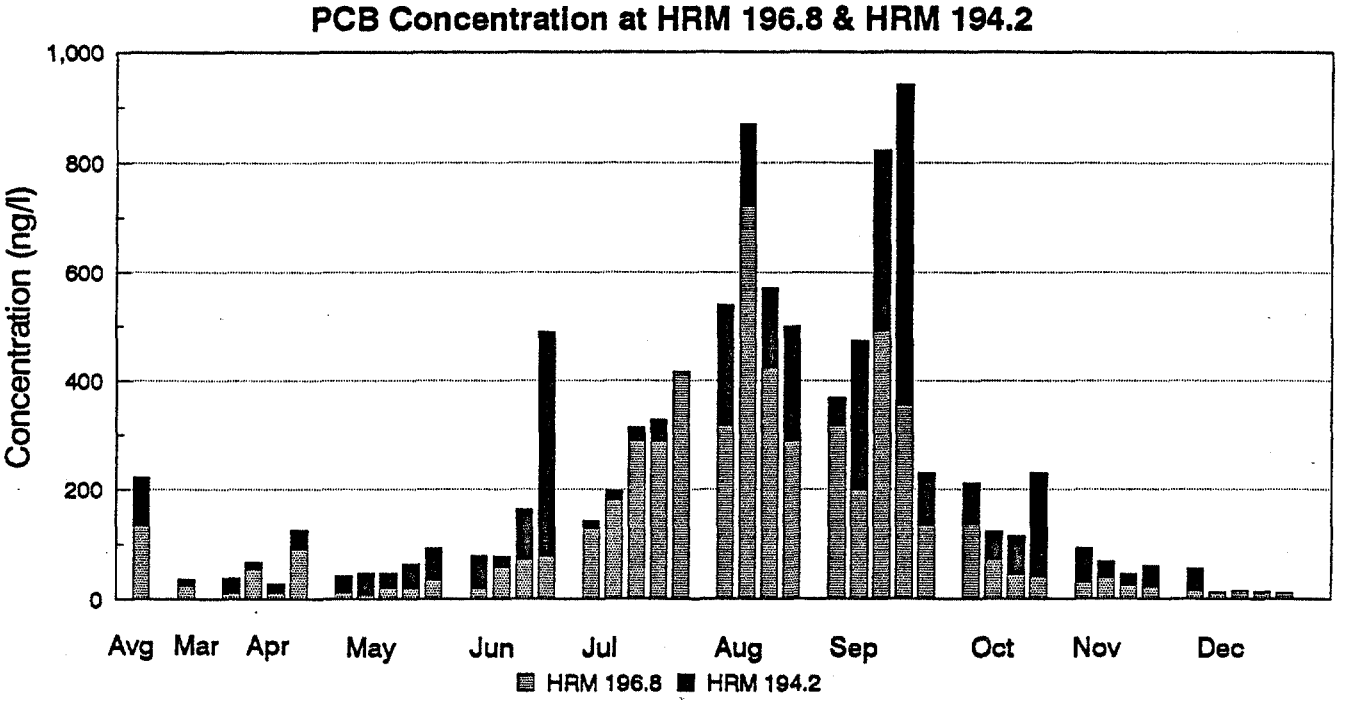
Figure 3
General Electric Company
Post-Construction Remnant Deposit Monitoring
Statistical Summary - 03/25/92 to 12/22/92

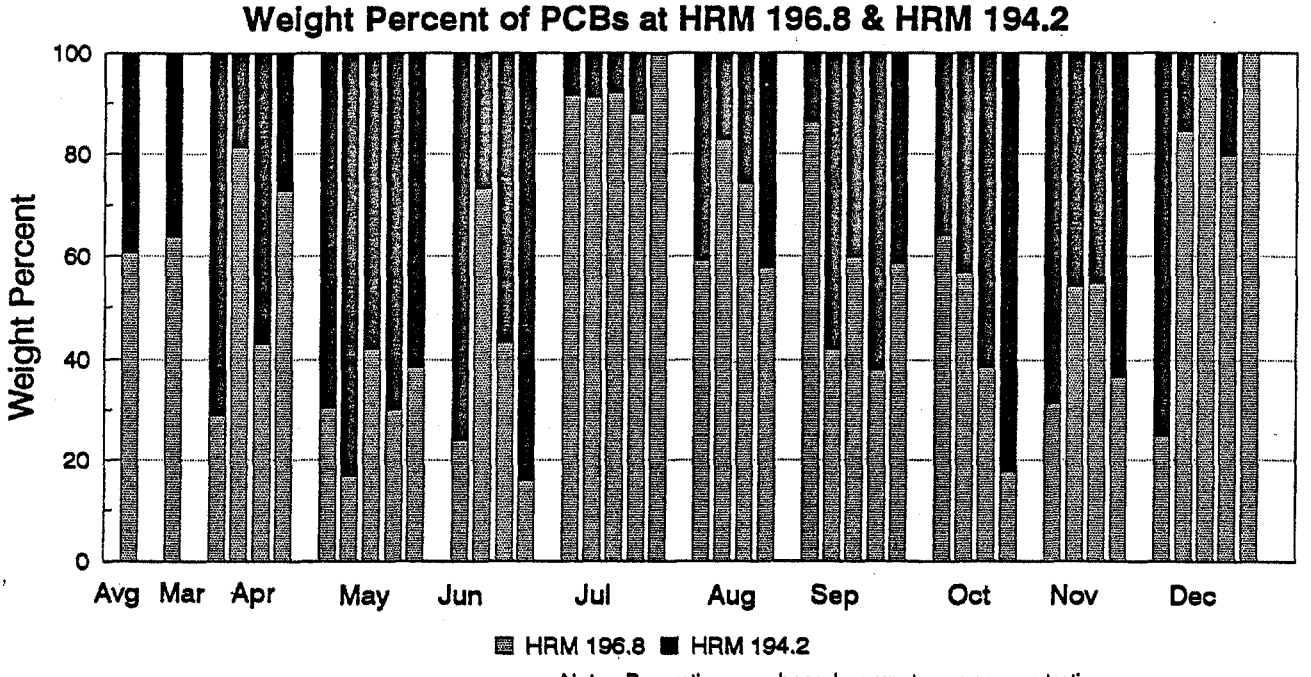


Practical Quantitation Limit = 44.0 ng/L

Figure 4

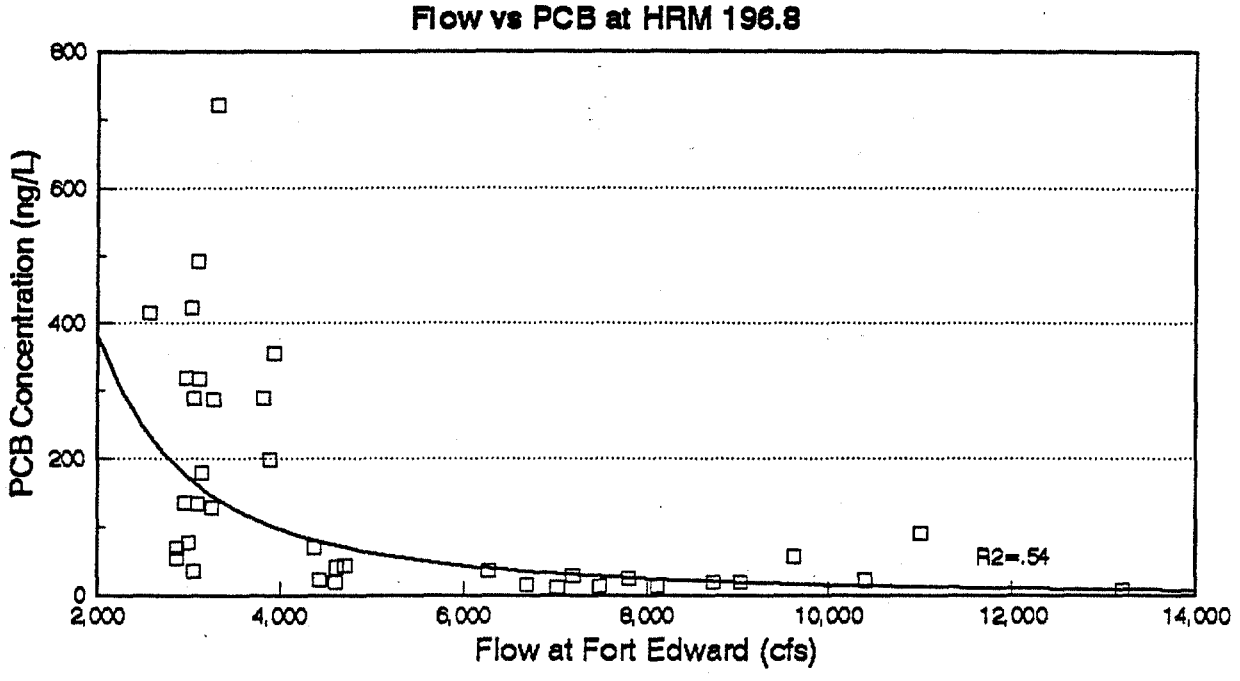
General Electric Company
Post Construction Remnant Deposit Monitoring
Relative Apparent PCB Loading

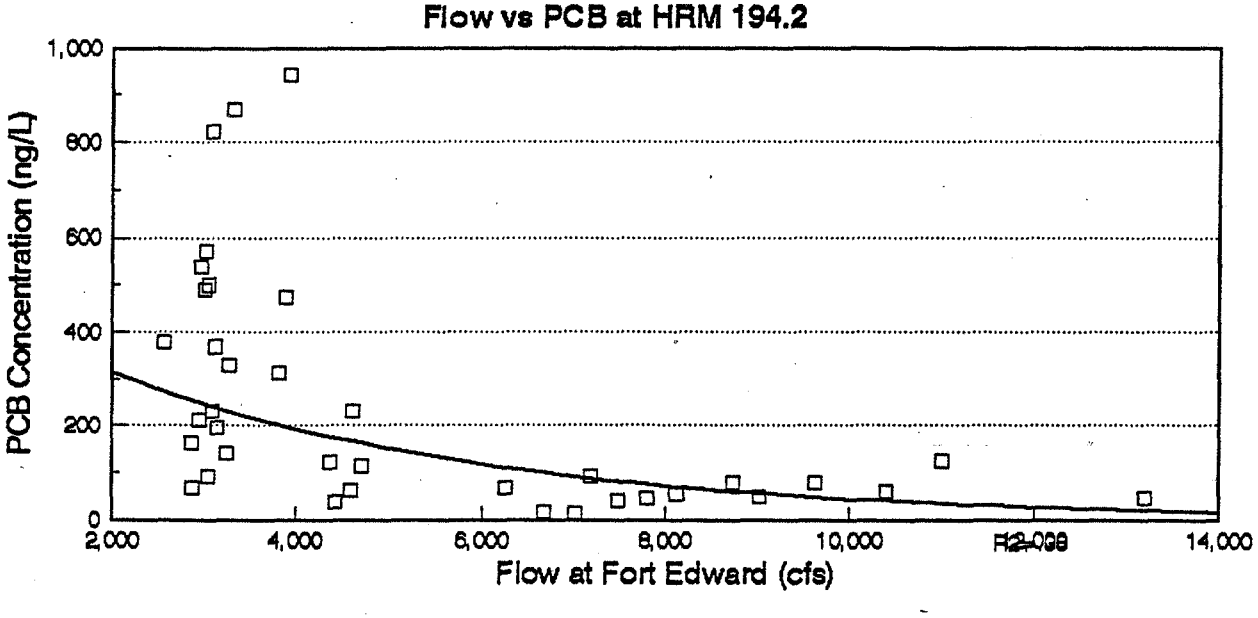




Note: Proportions are based on upstream concentrations subtracted from downstream concentrations.

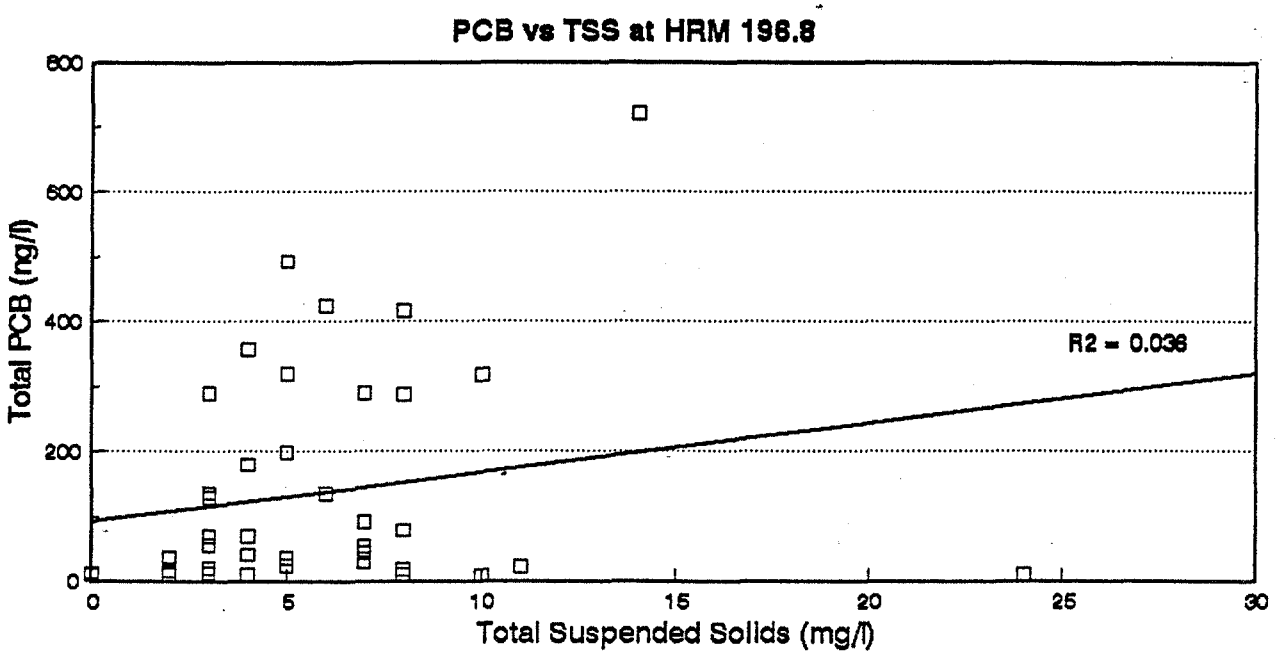
Figure 5
General Electric Company
Post-Construction Remnant Deposit Monitoring





Source of flow data: United States Geologic Survey

Figure 6
General Electric Company
Post-Construction Remnant Deposit Monitoring



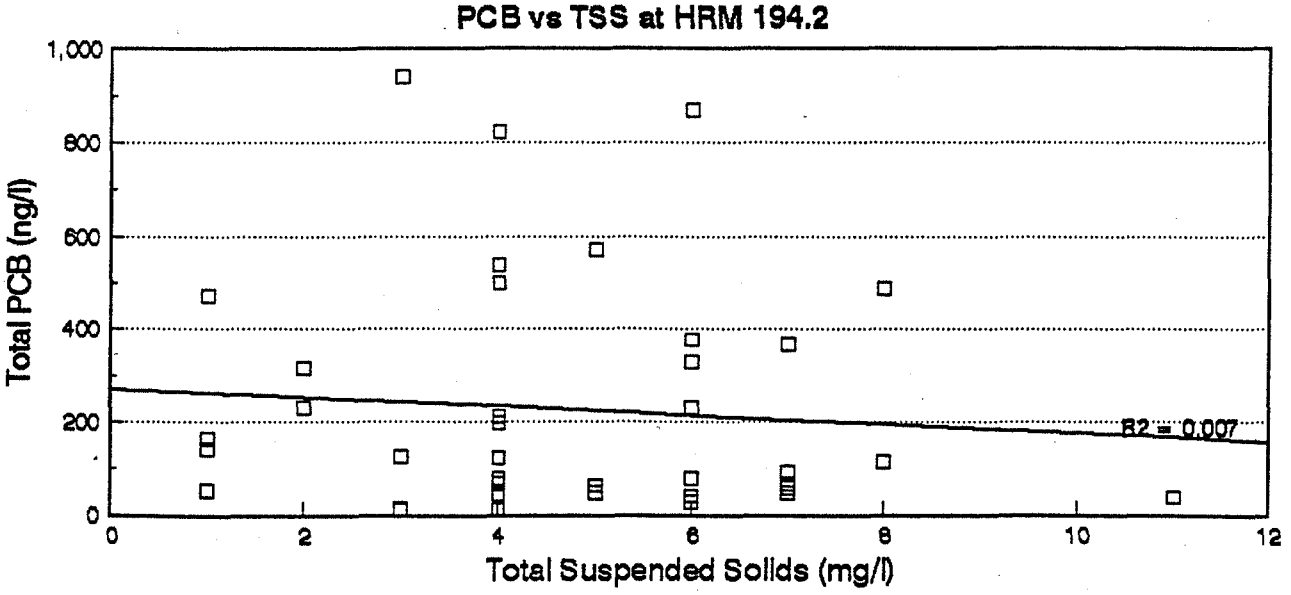
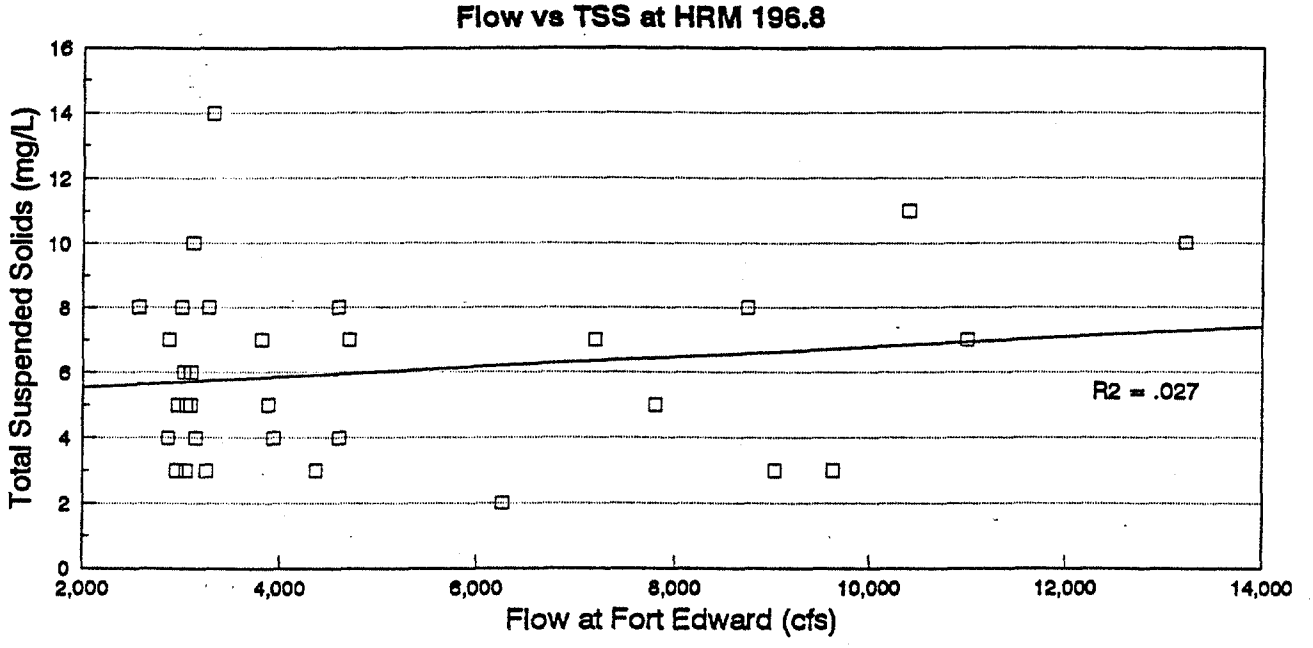
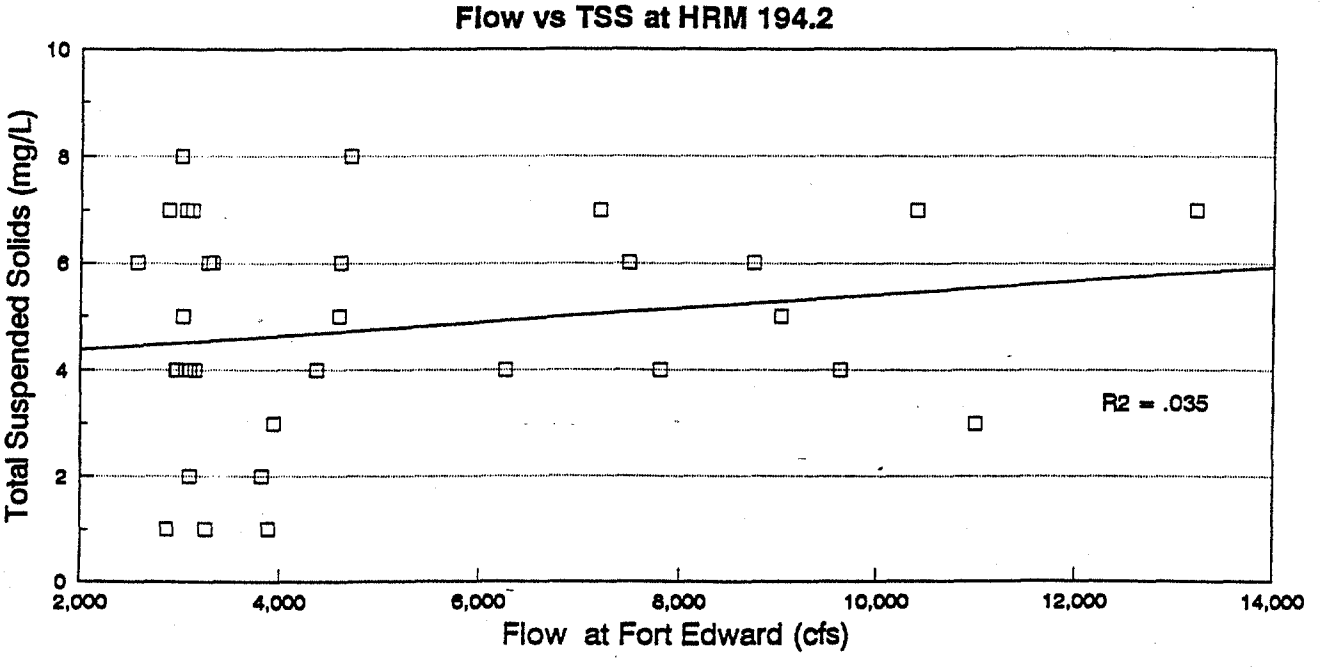


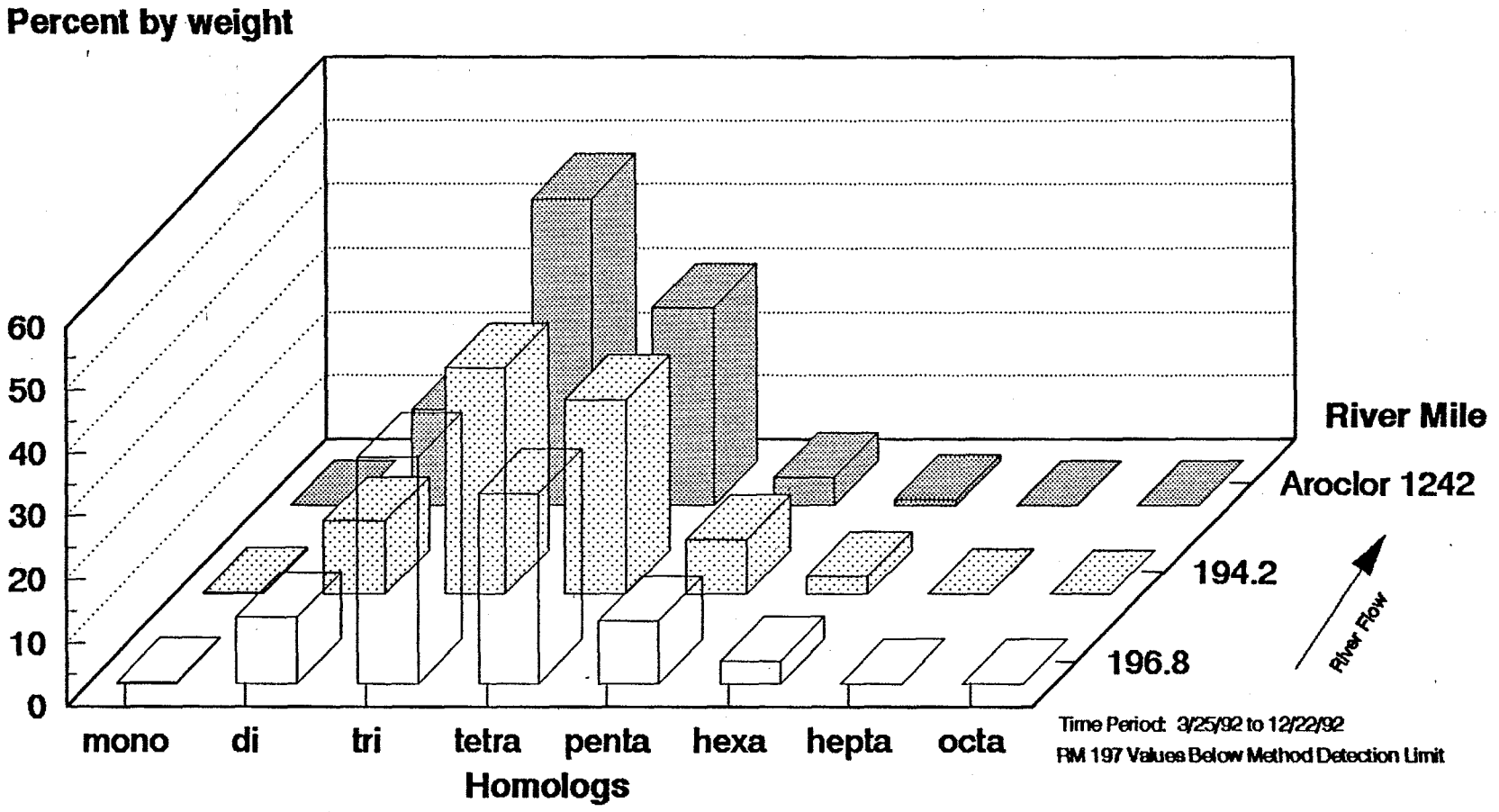
Figure 7
General Electric Company
Post-Construction Remnant Deposit Monitoring





Source of flow data: United States Geologic Survey

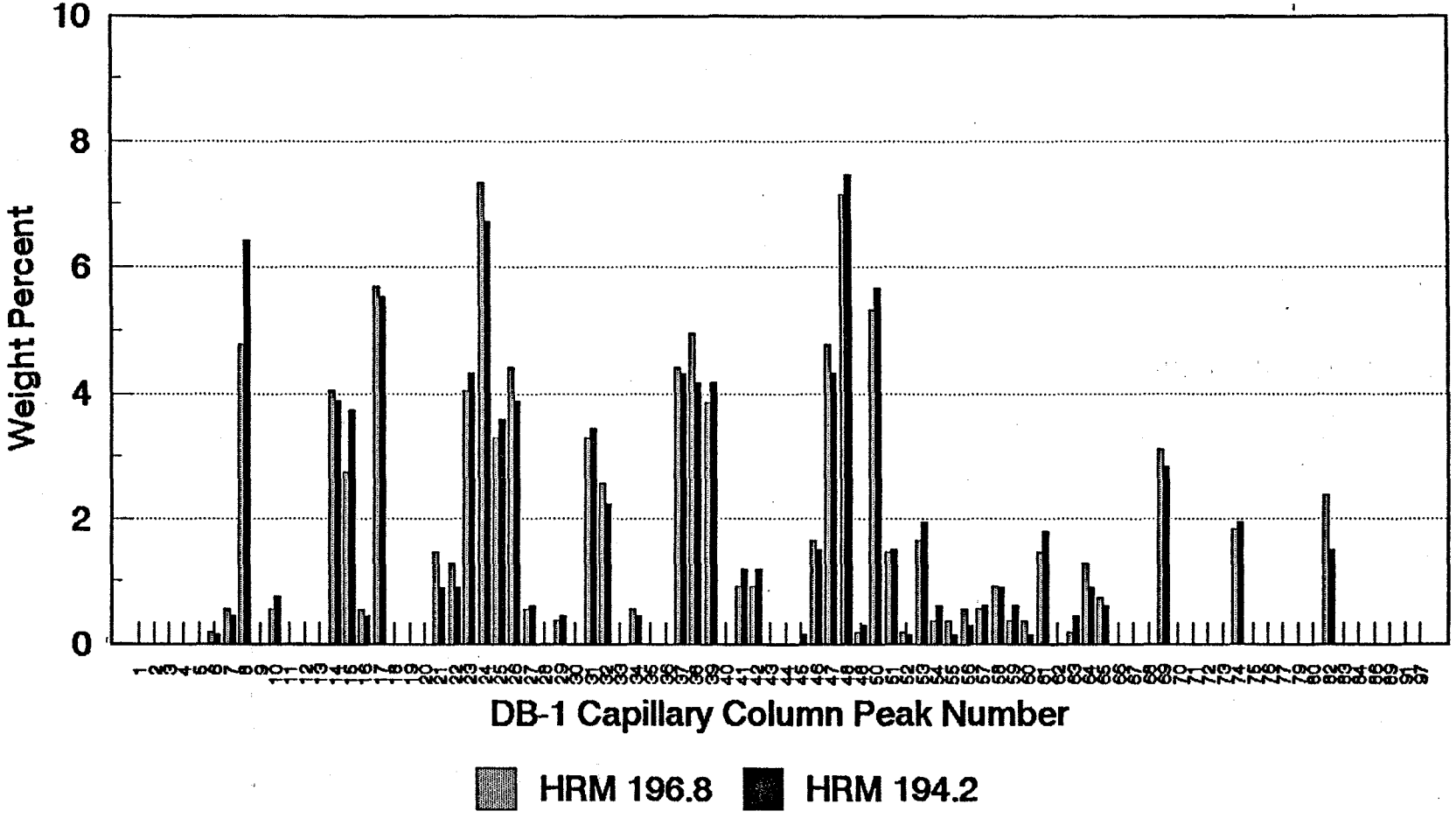
Figure 8
General Electric Company
Post-Construction Remnant Deposit Monitoring
Mean Weekly Water Column Homolog Distribution



Source of Aroclor 1242 Information: Northeast Analytical. March 1993. Analysis of Aroclor Standards by NEA-606CAP Green Bay Mass Balance Method.

Figure 9

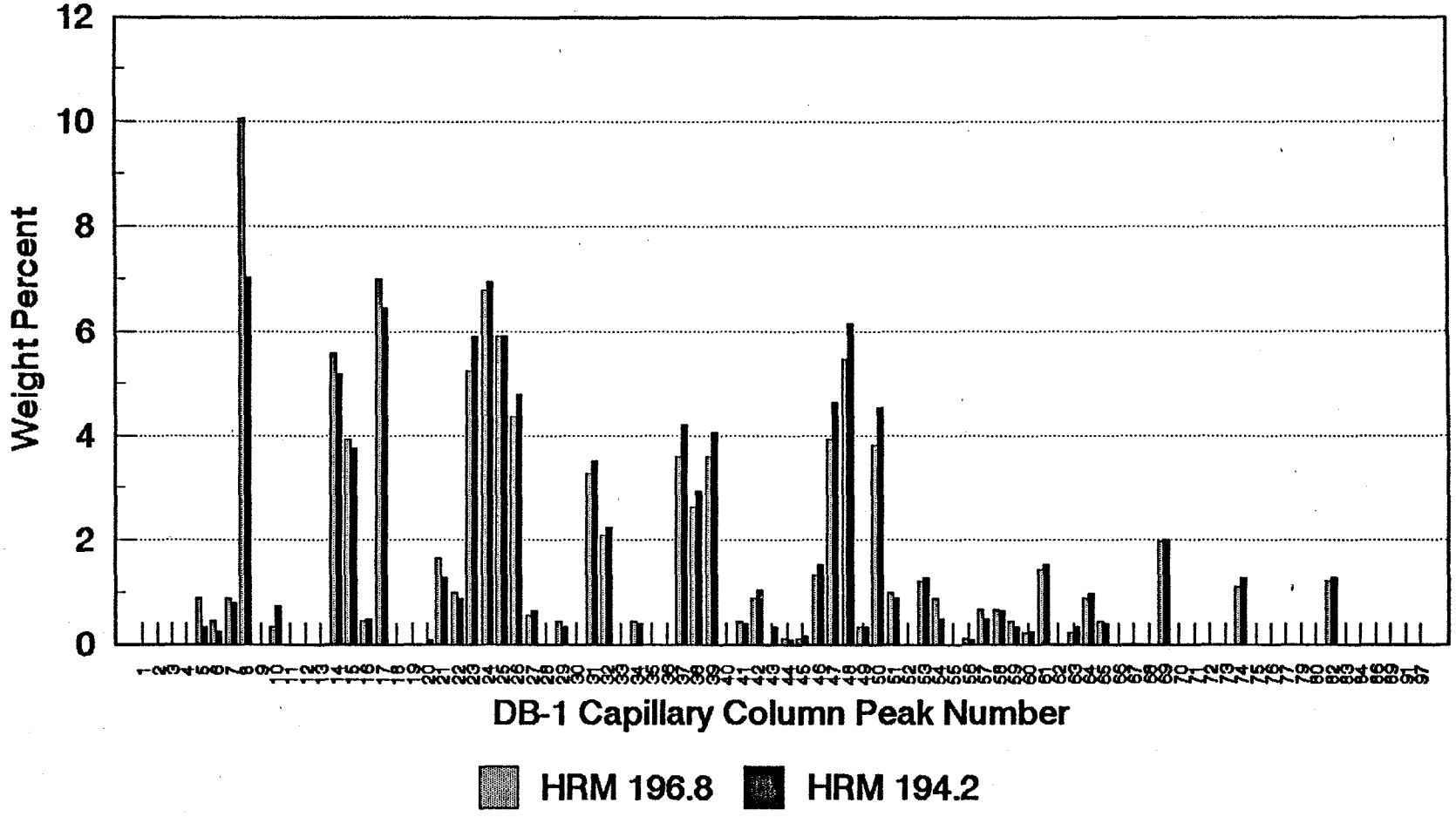
General Electric Company
Post-Construction Remnant Deposit Monitoring
Low Loading Congener Distribution, 196.8 & 194.2



Total PCB Concentration at RM 196.8 = 55 ppt
Total PCB Concentration at RM 194.2=67ppt
Flow at Fort Edward = 2870 cfs
Sample Collection Date: 4/08/92

Figure 10

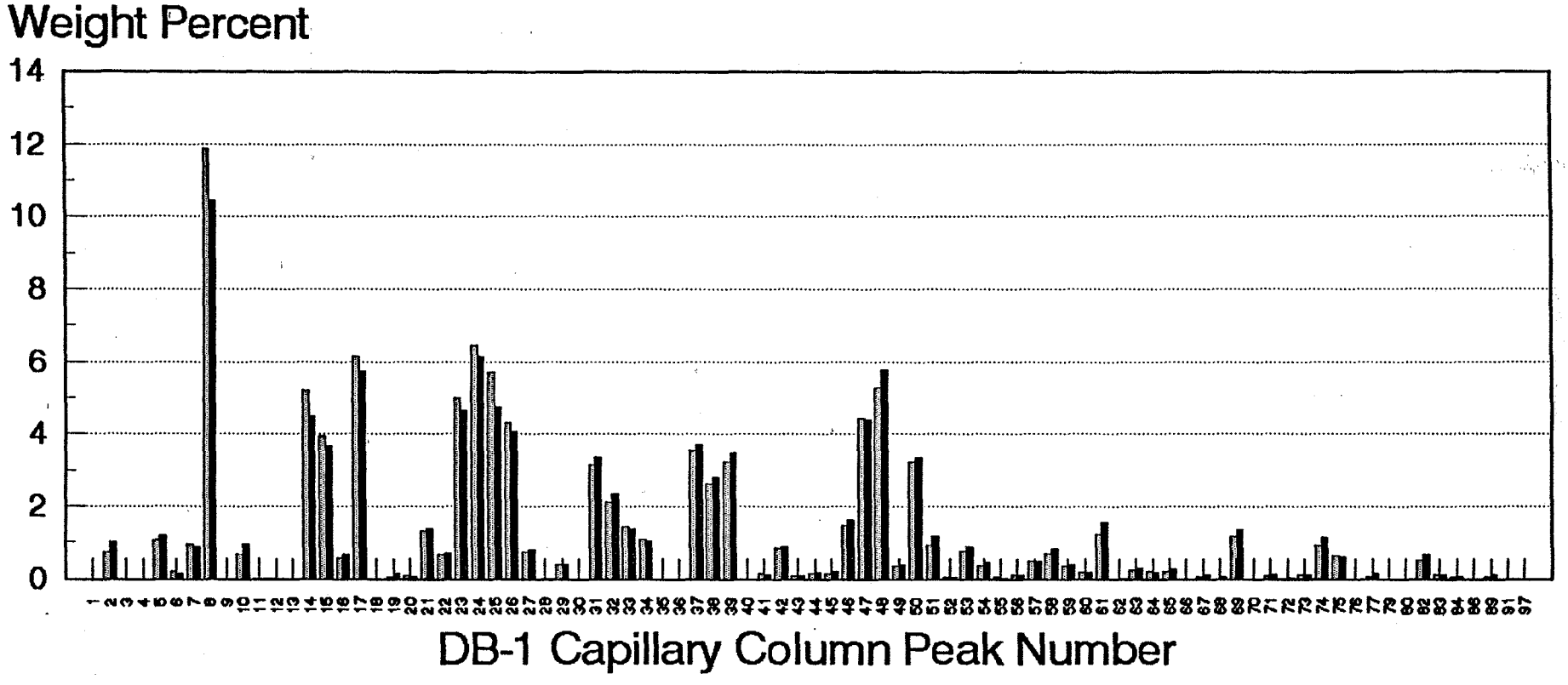
General Electric Company
Post-Construction Remnant Deposit Monitoring
High Loading Congener Distribution 196.8 & 194.2



Total PCB Concentration at RM 196.8 = 91.4 ppt
Total PCB Concentration at RM 194.2 = 125 ppt
Flow at Fort Edward = 11000 cfs
Sample Collection Date: 4/22/92

Figure 11

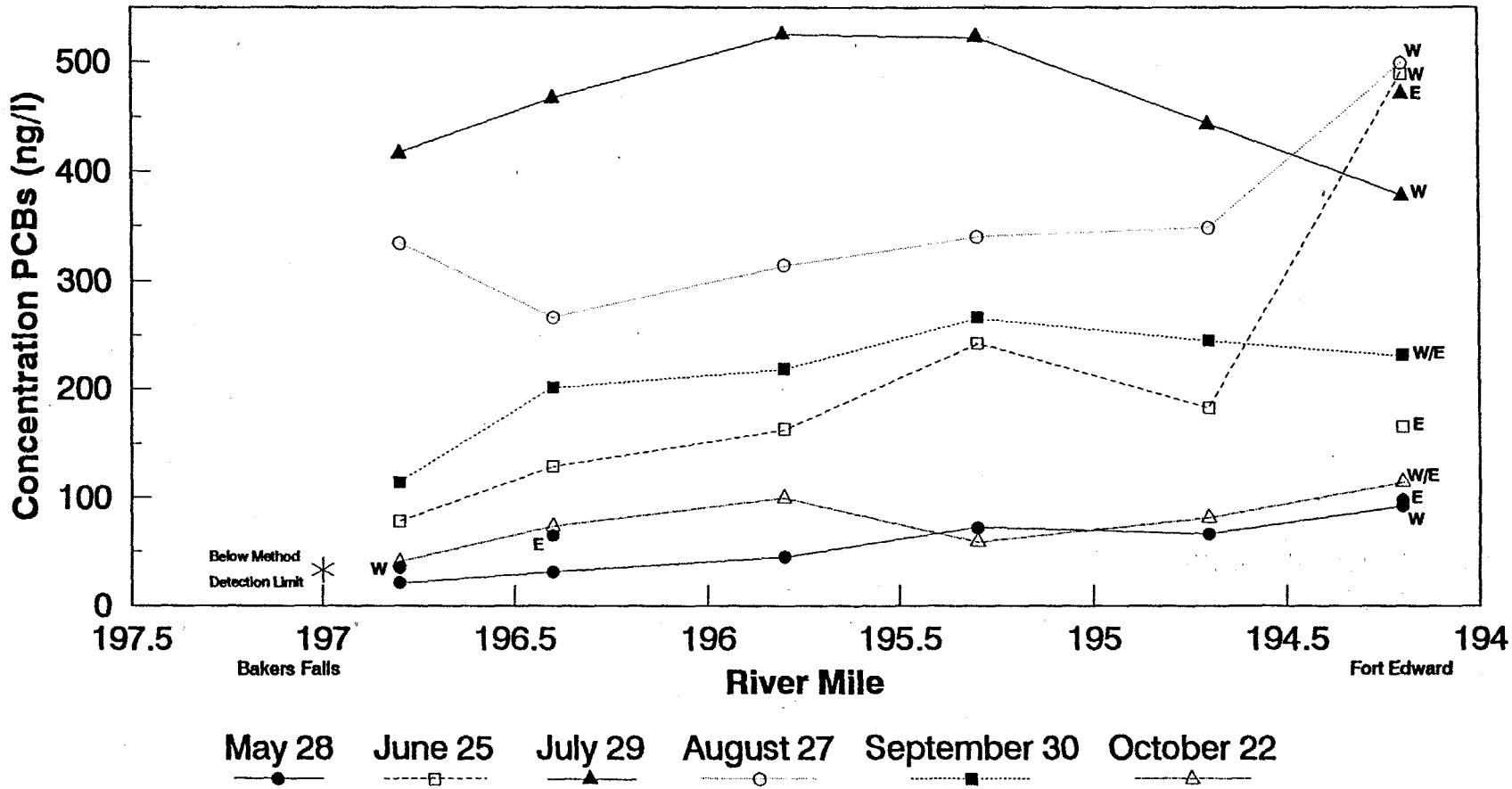
General Electric Company
Post-Construction Remnant Deposit Monitoring
Contrast in High and Low Mass Loading, 9/17/92



Notes: * High Loading at HRM 194.2 (822 ng/l) contrasted with low loading at HRM 196.8 (196.8 ng/l) for sampling date 9/17/92.
* Flow at Fort Edward = 3090 cfs.

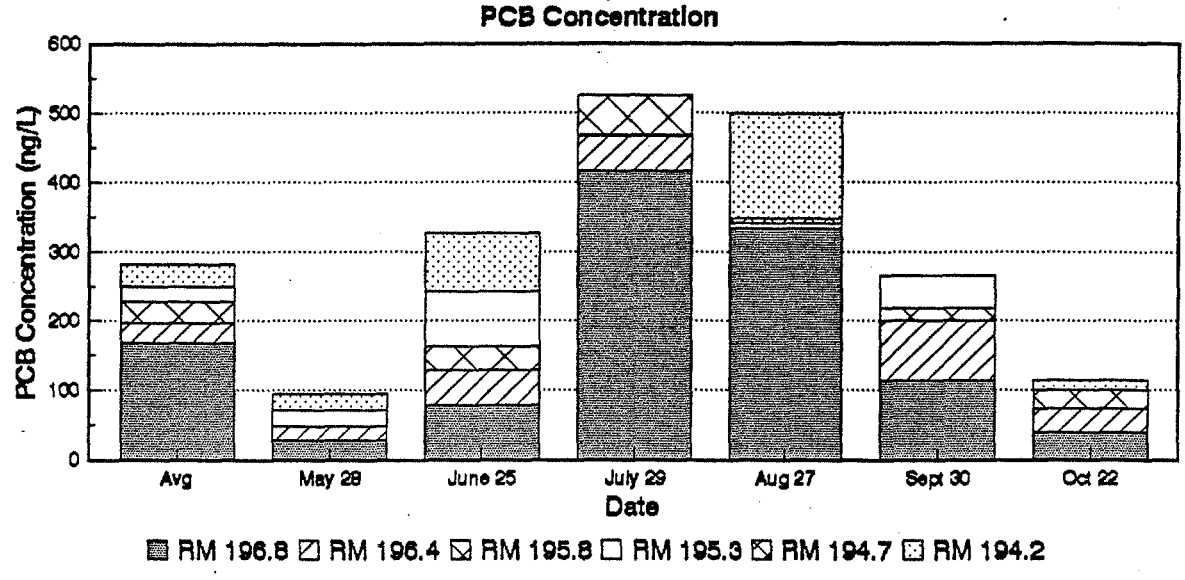
Privileged and Confidential
Attorney-Client Communication
Work Product

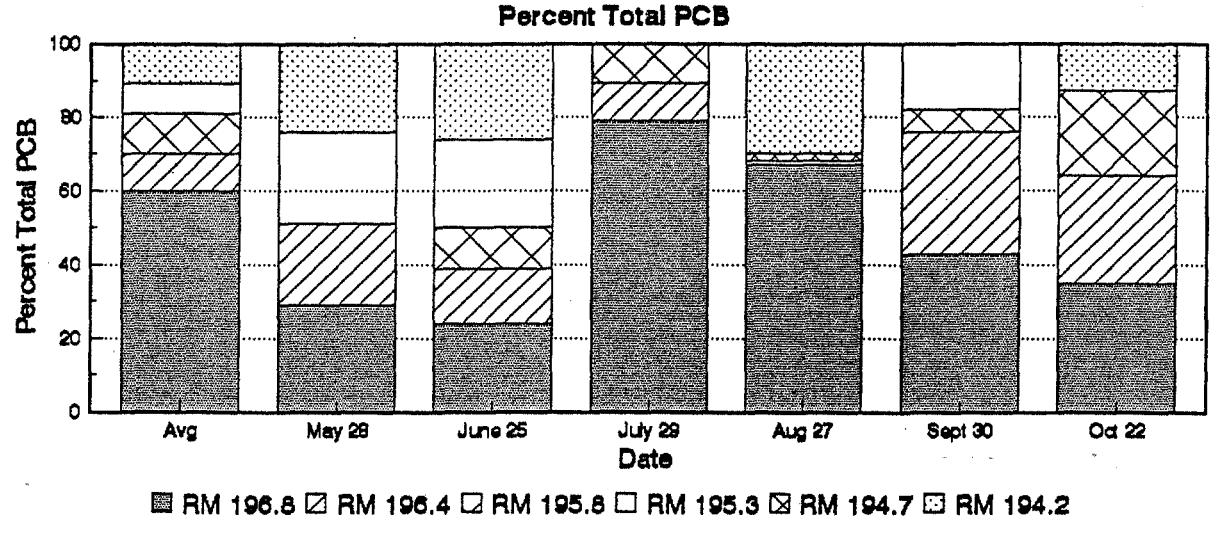
Figure 12
General Electric Company
Post-Construction Remnant Deposit Monitoring
Float Survey PCB Monitoring Results - 1992



Practical Quantitation Limit = 44.0 ng/L
River channel sampled in Center unless otherwise noted.
W/E indicates composite sample of West and East channels

Figure 13
General Electric Company
Post-Construction Remnant Deposit Monitoring
Float Survey Results

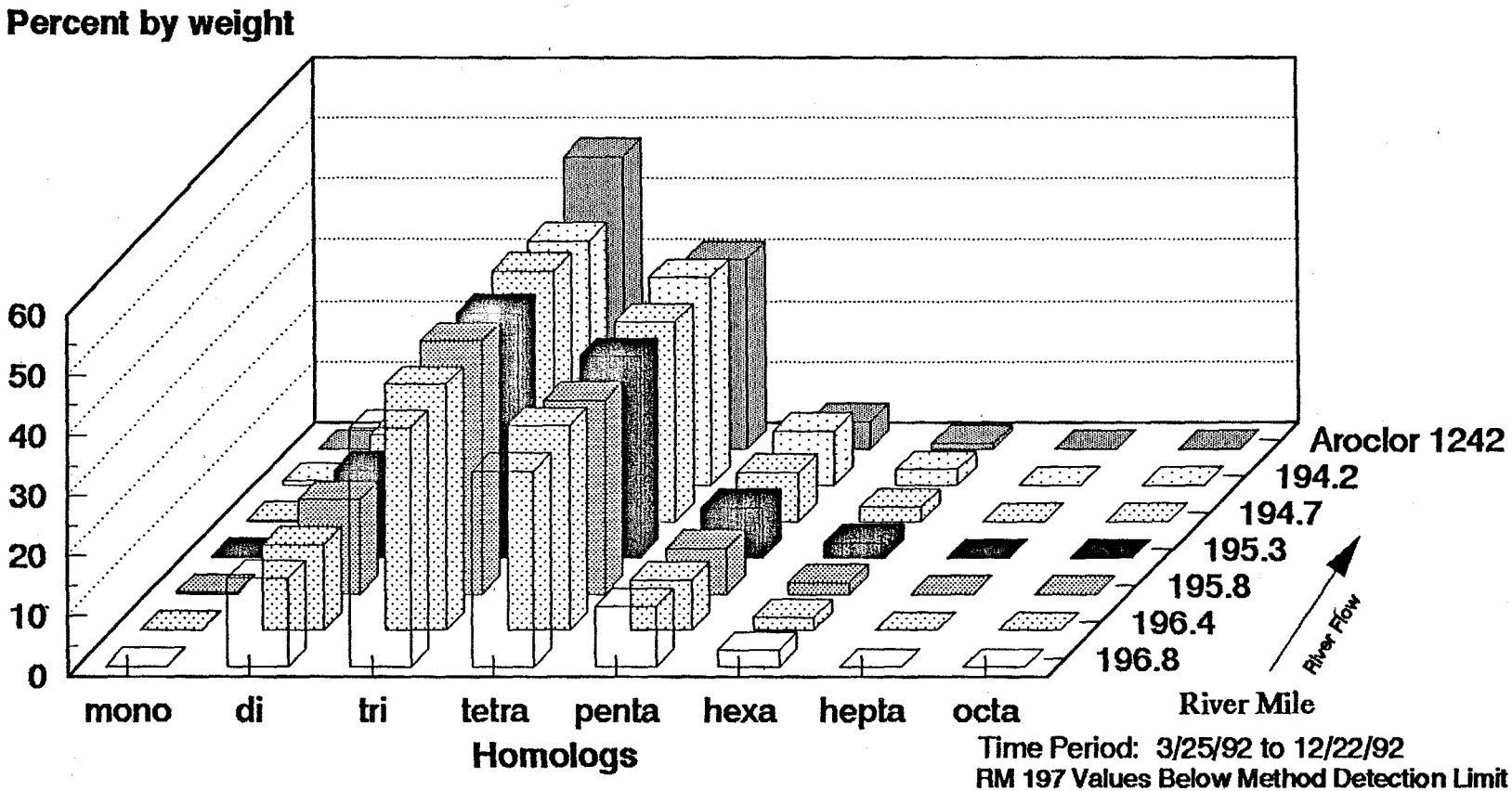




Notes: * PCB concentrations were below detection limits (<11ng/L)at HRM 197.

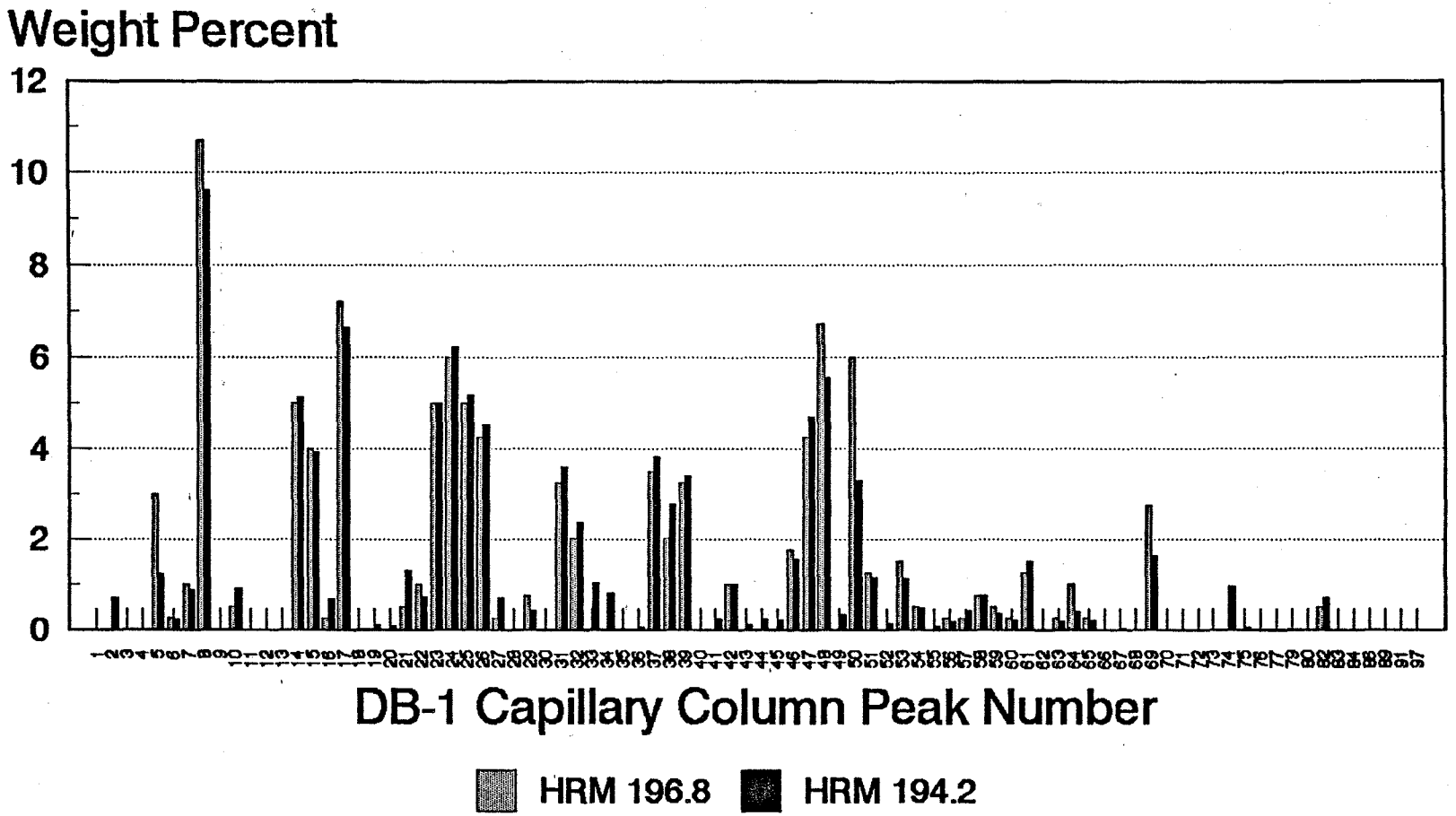
* Proportions are based on upstream concentrations subtracted from downstream concentrations.

Figure 14
General Electric Company
Post-Construction Remnant Deposit Monitoring
Float Survey Mean Homolog Distribution



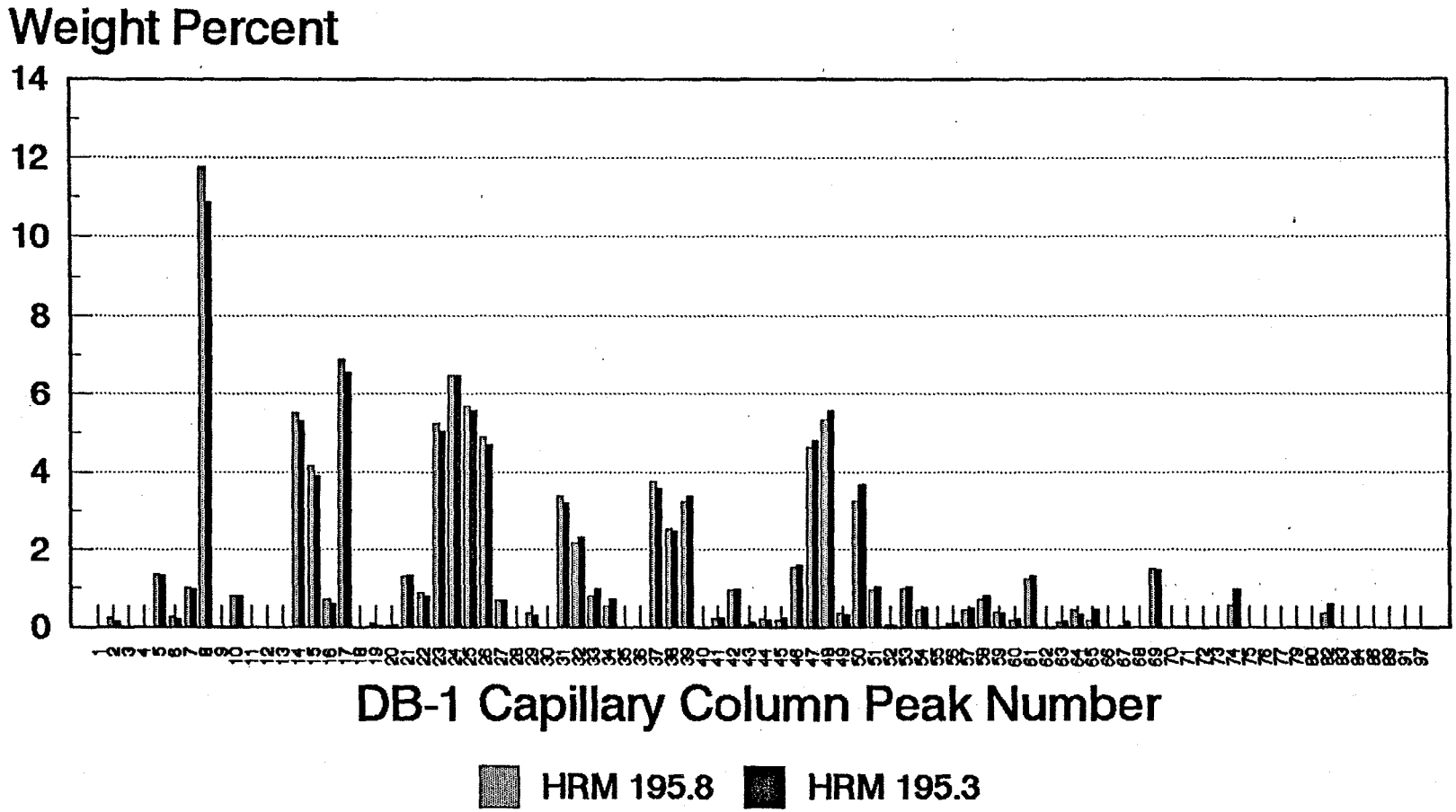
Source of Aroclor 1242 Information: Northeast Analytical, March 1993. Analysis of Aroclor Standards by by NEA-608CAP Green Bay Mass Balance Method.

Figure 15
General Electric Company
Post-Construction Remnant Deposit Monitoring
Congener Distribution at HRM 196.8 & HRM 194.2



Source of information: 1992 Float Survey Results

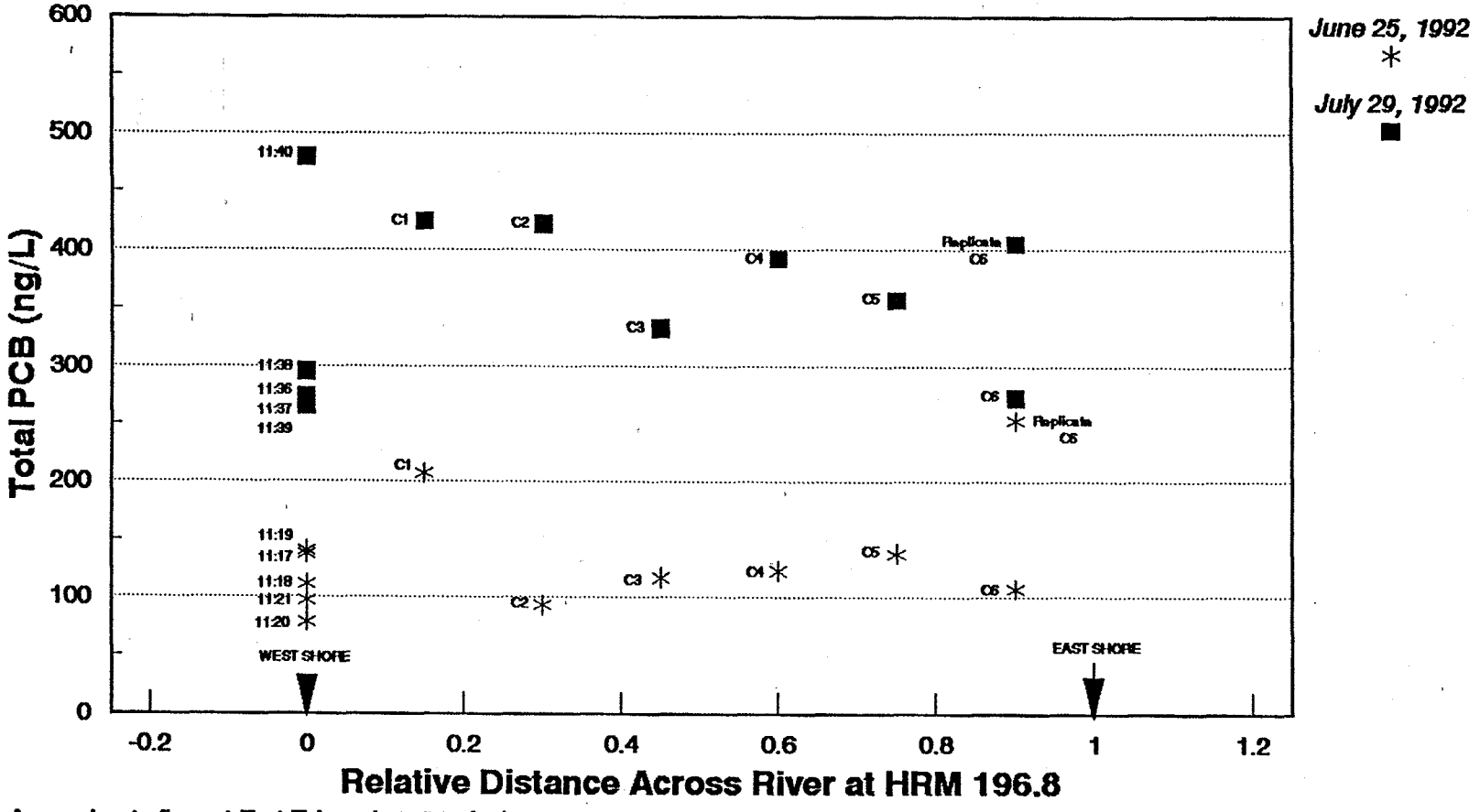
Figure 16
General Electric Company
Post-Construction Remnant Deposit Monitoring
Congener Distribution at Remnant Area



Source of Information: 1992 Float Survey Results

Figure 17

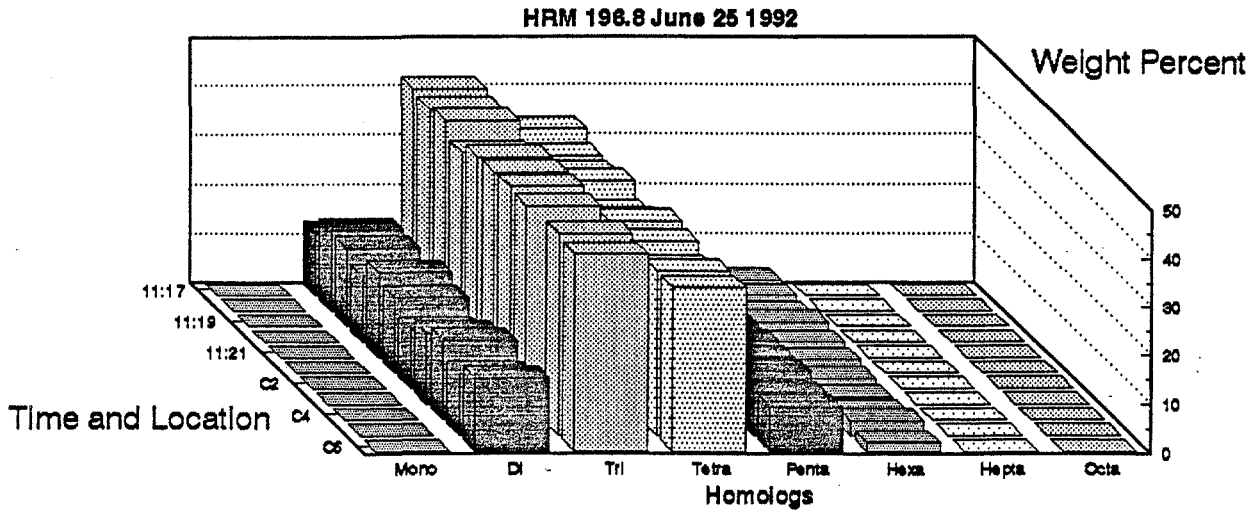
General Electric Company
Post-Construction Remnant Deposit Monitoring
Shore Sampling Site Verification Study Results



Approximate flow at Fort Edward: 3200 cfs June
Approximate flow at Fort Edward: 2600 cfs July

Figure 18

General Electric Company
Post-Construction Remnant Deposit Monitoring
Shore Sampling Homolog Distribution



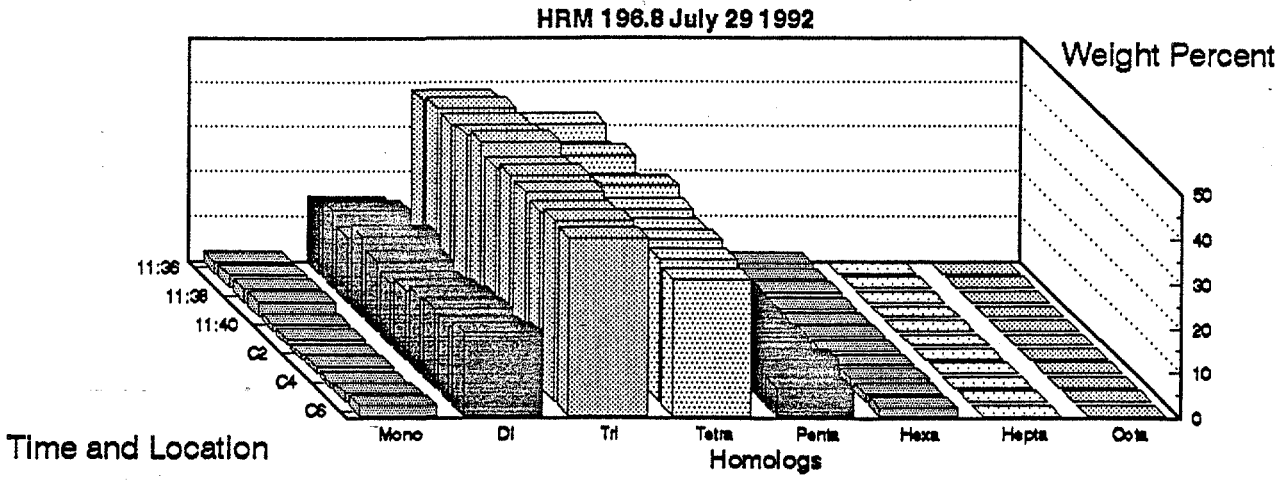
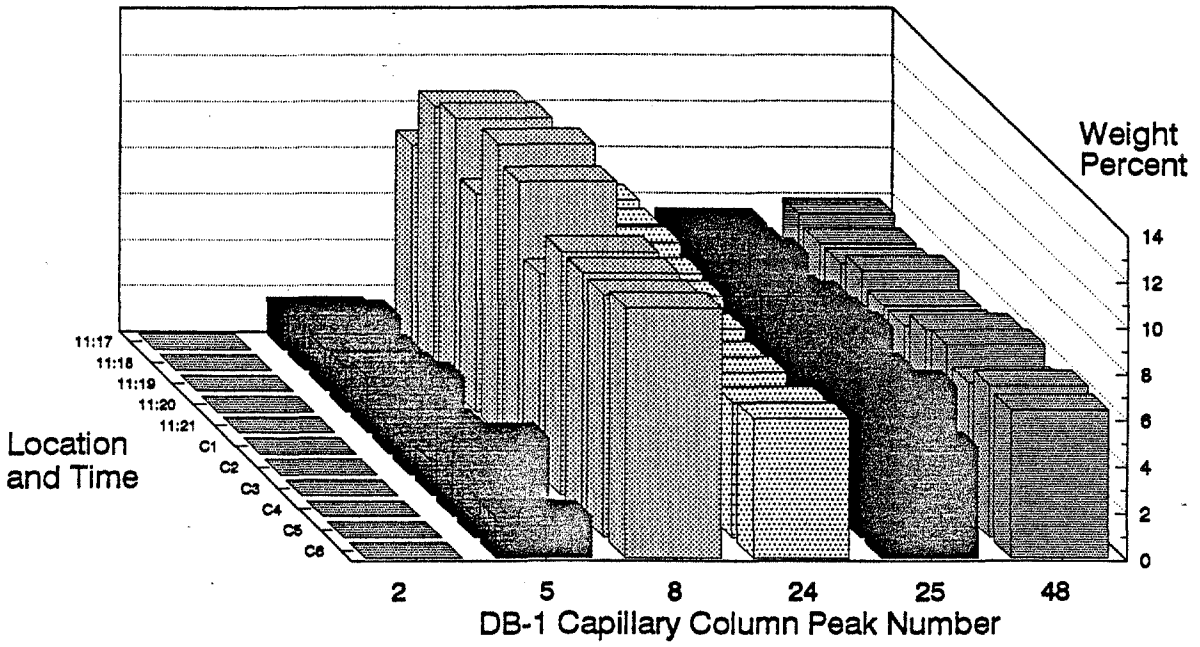


Figure 19

General Electric Company
Post-Construction Remnant Deposit Monitoring
Shore Sampling Congener Distribution

June 25, 1992



July 29, 1992

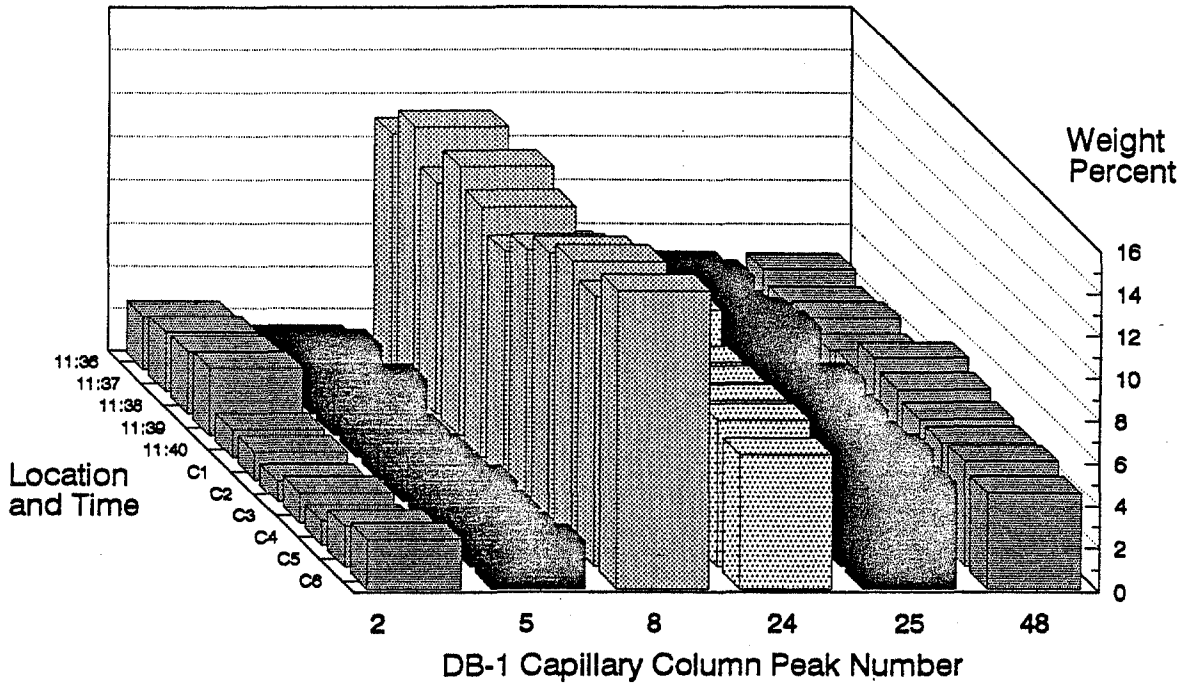
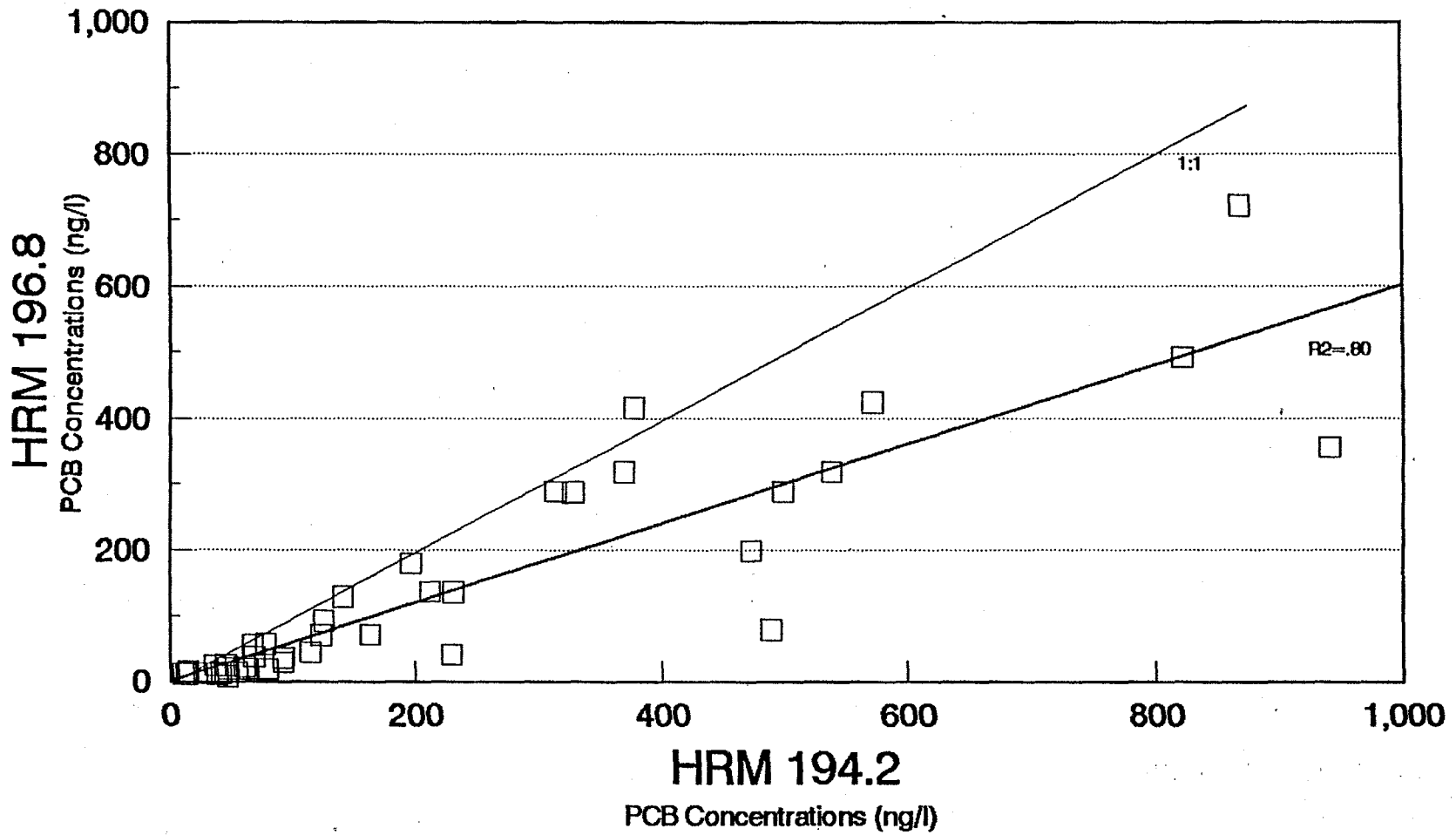


Figure 20

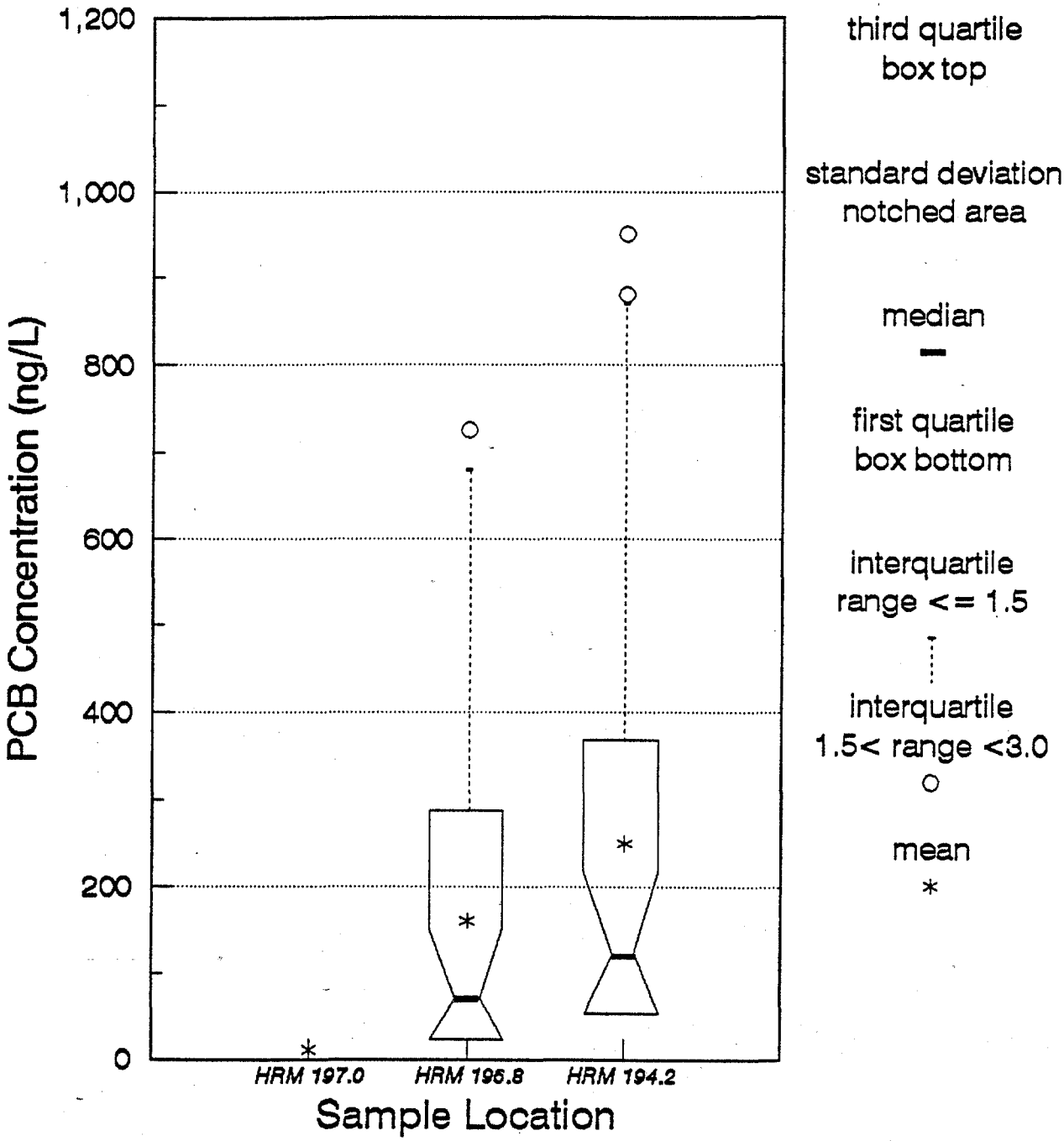
General Electric Company
Post-Construction Remnant Deposit Monitoring
Spatial Correlation in Total PCB Concentrations



Source: Weekly Water Column Monitoring Data

Figure 21

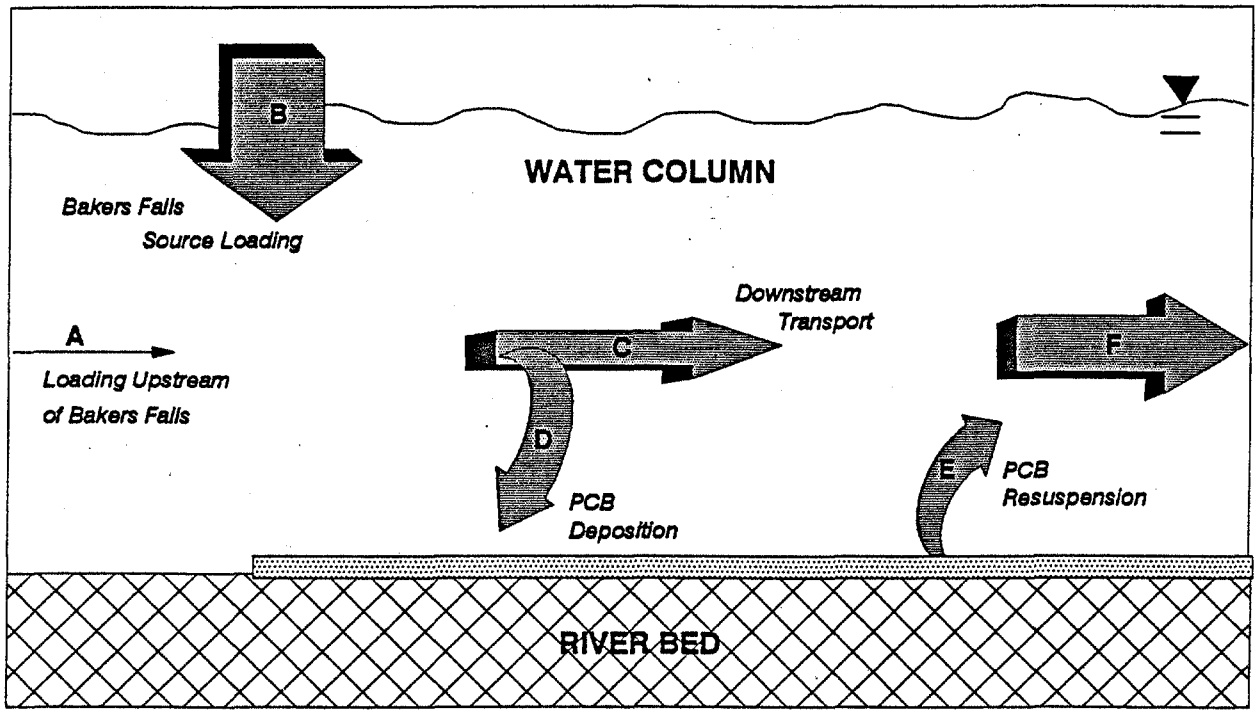
General Electric Company
Post-Construction Remnant Deposit Monitoring
Box Plot Analysis of Total PCB Data



HRM 197.0 Mean Total PCB Concentration
Below Method Detection Limit

Figure 22

Hypothesized PCB Dynamics in Remnant Deposit Pool



A. Upstream of Bakers Falls, water column PCB concentrations are generally less than the detection limit (<11 ng/L).

B. Recent investigations have identified a significant source of PCB loading to the Hudson River in the vicinity of Bakers Falls, upstream of the remnant deposits.

C. Downstream transport of PCBs from the Bakers Falls source area occurs.

D. PCB deposition to the river bed occurs under low flow and elevated Bakers Falls source loading conditions. A thin layer of PCB laden material accumulates in the river bed downstream of Bakers Falls.

E. Resuspension of PCB laden materials increases concentrations within the water column downstream of the Bakers Falls source loading area. This is particularly evident during the initial periods of elevated river flows. During periods of low PCB loading from the Bakers Falls source, the relative contribution from the river bed increases (ie. resuspension of water column PCBs from the Bakers Falls source).

F. Downstream transport of PCBs from the Bakers Falls source occurs below the remnant areas as a combination of the processes described above.

Reduction in PCB loading from the Bakers Falls source by implementation of source control measures should not only reduce A, but should also reduce E and F over time.

Appendices

APPENDIX A

FIELD LOGS

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	3/25/92	9:50	21.5'	2	8'	2° C	M	MS 5' EQBL
HRM 196.8		10:45		~	1-2'	2° C	F	BLIND DUPL.
HRM 194.2 (Rt. 197 Bridge)		10:15	22.5	2	7.0	3° C	M	0'0 5'4 SPLIT

Weather Data:
Temperature 40° F ±
Wind 5-10 MPH
Precipitation 0

Sampled by: Tony Tosko

315643

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	4/ 1/92	10:00	21	2	8.5'	3°C	M	BLIND DUPL.
HRM 196.8	11	11:00	—	—	—	3°C	F	O'B, E'G SPLIT
HRM 194.2 (Rt. 197 Bridge)	1	10:25	21.75	2	7.0	3°C	M	MS & EQBL

Weather Data:
Temperature 40° ± F
Wind NW 5-15 MPH
Precipitation SHOWERS - SNOW FLURRIES

Sampled by: Gary Todd
D.H.

315644

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	4/8/92	10:00	22.1	2	9.0	4° C	M	MS & EQBL
HRM 196.8		11:20	—	—	—	5° C	M	BLIND DUPL.
HRM 194.2 (Rt. 197 Bridge)		11:00	22.7	2	7.5	4° C	M	O'B & G SPLIT

Weather Data:
Temperature 55° F +-
Wind 5-10
Precipitation TRACE - RAIN

Sampled by: Gary Tacle

315645

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	4/15/92	10:00	20.7	3	90	4°C	M	OBS G SPLIT
HRM 196.8		11:00	—	—	—	4°C	M	BLIND DUP.
HRM 194.2 (Rt. 197 Bridge)		10:30	21.5	2	7.5	4°C	M	MS & EQBL

Weather Data:
Temperature 50°F ±
Wind 5-10
Precipitation CLEAR

Sampled by: Doug Tarte

3156646

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	4/22/92	10:00	19.9'	3	9.5'	4° C	M	BLIND DUPL.
HRM 196.8	〃	11:15	—	—	—	4°	M	0'B'E'G SPLIT
HRM 194.2 (Rt. 197 Bridge)	〃	10:45	20'	2	8.5'	4	M	MS & EQBL.

Weather Data:
Temperature 70° ± F
Wind 10 - 20 MPH
Precipitation SHOWERS

Sampled by: Tony Tarbell

315647

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	5/19/92	9.55	20.5	6	8.5	5°C	M	
HRM 196.8		11.00	—	1	—	4°C	M-F	BLIND DUPL.
HRM 194.2 (Rt. 197 Bridge)		10:35	21.0	7	7.0	5°C	M	MS & EQUIP BLANK

Weather Data:
Temperature 65° +-
Wind 0-10 MPH
Precipitation 0 - OVERCAST

Sampled by: Tony Tock

315648

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	5/6/92	9.50	20'	3	9.5'	9° C	M	O'B E' G SPLIT
HRM 196.8		10:40	~	~	~	10° C	F	
HRM 194.2 (Rt. 197 Bridge)		10:10	19.5	3	8.0'	10° C	M	BLIND DUP.

Weather Data:
Temperature 65° ± F
Wind 5-10 MPH.
Precipitation OVERCAST

Sampled by: Gary Tate

315649

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	5/13/92	9.55	20.3'	2	8.5	14°C	M	MS & EQBL
HRM 196.8		11:00	—		—	14.5°C	F	
EAST CHANNEL		10.20	—		14'	14.5°C	M	
HRM 194.2 (Rt. 197 Bridge)		10:35	20.5	2	7.0'	14°C	M	BLIND DUPL.

Weather Data:
Temperature 82° ± F
Wind 5-10 mph
Precipitation 0
CLEAR

Sampled by: Gary Toole

315650

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	5/21/92	9:45	20.5	3	9.0'	17°C	M	BLIND DUPL
HRM 196.8		10:50	—	GAAO	—	17°C	F	O'B & G SPLIT
HRM 194.2 (Rt. 197 Bridge)		10:25	21.5	3	7.5	17°C	M	MS & EQBL

Weather Data:
Temperature 85° F ±
Wind 0 - 10 MPH.
Precipitation CLEAR - NONE

Sampled by: Roy Love

315651

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	5/28/92	11:30	VERT. STRAT. COMP.	9.0'	17° C	BLIND DUP.
HRM 196.8		10:35	GRAB	1'		
HRM 196.8 - center		13:50		1'		FLOAT SURVEY SAMPLE
HRM 196.4		13:55		1'		
HRM 195.8		14:20		3'		
HRM 195.3		14:35		5'		
HRM 194.7		15:00		1'		
HRM 194.2 (Rt. 197 Bridge)		12:20	VERT. STRAT. COMP.	7'		MATRIX SPIKE, EQUIP. BLANK
HRM 194.2 (east channel)		14:30		9'		
Ft. Edward Staff Gage		12:00	—	—	—	21.56'

Weather Data:
Temperature 70° ± F
Wind 0-10
Precipitation NONE

Sampled by: GLL, TT, MDL

315652

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	6/4/92	09:25	20'	3	9.5	17°C	M	MS & EQBL.
HRM 196.8		10:55	—	—	—	17°C	F	
EAST CHANNEL HRM - 194.2		10:00	—	4	13		M	BLIND DUPL.
HRM 194.2 (Rt. 197 Bridge)		10:20	20.5	3	8.0	17°C	M	DUP & G SPLIT

Weather Data:
Temperature 80°F ±
Wind 5 MPH
Precipitation NONE

Sampled by: Gary Lade

315653

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG
6/10/92

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	6/10/92	11:30	20.5'	3	9.0'	18°C	M	MS 5' EQBL
HRM 196.8		10:45	—	—	—	17°C	F	
HRM 194.2 (Rt. 197 Bridge)		12:30	21.5	3	7.5	18°C	M	BLIND DUPL.
EAST CHANNEL HRM-194.2		12:00		5	15'		M	

Weather Data:
Temperature 80° ± F
Wind LIGHT - [illegible]
Precipitation NONE

Sampled by: Gary Todd

315654

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG 6/18/92

SITE	DATE	TIME	DEPTH TO WATER LINE	NUMBER OF 3 FT. INTERVALS	WATER DEPTH	WATER TEMP.(C)	WATER VELOCITY	COMMENTS/ OBSERVATIONS
HRM 197.0 (Bakers Falls Bridge)	6/18/92	09:30	21.5		8.0	21°C	M	BLIND DUPL.
* HRM 196.8		10:50	—		—	21°C	F	O'B & G SPLIT
EAST CHANNEL HRM 194.2 (Rt. 197 Bridge)		10:05	~		—		M	HRM - 194.2
		10:30	22'		7.0'	21°C	M	MS & EQBL

Weather Data:
Temperature 85°F +-
Wind 10 - 20 MPH
Precipitation 0

Sampled by: Greg Tode

315655

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	6/25/92	11:55	comp. w/ KEMMERER BOTTLE	8'	20°C	~~MS~~ MS NOT COLLECTED (MDL), EQBL, BLIND DUP.
HRM 196.8		11:16 – 11:21	GRAB	1'		6 GRAB SAMPLES COLLECTED CONCURRENTLY WITH CHANNEL V SAMPLES
HRM 196.8 - center		11:16 – 11:21		1-2'		6 GRAB SAMPLES (C1-C6) COLLECTED ALONG EAST/WEST TRANSECT AT HRM 196.8 MS @ C4, BLIND DUP. @ C6, FLOAT SURVEY SAMPLE
HRM 196.4		11:25		1-2		FLOAT SURVEY SAMPLE
HRM 195.8		11:45		4-5'		
HRM 195.3		12:10		3-4'		
HRM 194.7		12:25		1-2'		
HRM 194.2 (Rt. 197 Bridge)		12:50	comp. w/ KEMMERER BOTTLE	7'		
HRM 194.2 (east channel)		12:30		15'		
Ft. Edward Staff Gage		12:30	—	—	—	21.30' ≈ 3,200 CFS

Weather Data:
Temperature 68°F ±
Wind 10 mph N
Precipitation 0

Sampled by: GLL, TT, MDL

315656

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	7/1/92	8:55	COMP WITH KEMMERER	8.5	20°C	
* HRM 196.8	"	10:30	GRAB	12"	"	CHAIN & LOCK ACROSS DRIVE TO SIT
HRM 196.8 - center						
HRM 196.4						
HRM 195.8						
HRM 195.3						
HRM 194.7						
HRM 194.2 (Rt. 197 Bridge)	7/1	9:45	COMP WITH KEMMERER	7.0	20°	BLIND DUPL.
HRM 194.2 (east channel)	7/1	9:20	COMP WITH KEMMERER	15'	19°C	0'8 & 4 SPLIT
HRM 188.6 (Thompson Island Dam)	7/1	11:35	"	10	"	MS & EQBL.
Ft. Edward Staff Gage						
Lock 6 Staff Gage						

Weather Data:
Temperature 80° ± F
Wind 10 - 15 MPH
Precipitation 0

Sampled by: Tony Tarbell

315657

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	7/8/92	9:05	Comp Kimmerr	8.5	20°C	MS & EQBL
* HRM 196.8		10:50	GRAB	12"	20°C	
HRM 196.8 - center						NO SAMPLE
HRM 196.4						
HRM 195.8						
HRM 195.3						
HRM 194.7						
HRM 194.2 (Rt. 197 Bridge)		10:00	10:00	7.0	21°C	
HRM 194.2 (east channel)		9:35	9:35	15'	20°C	
HRM 188.6 (Thompson Island Dam)		11:25	11:25	10	20°C	BLIND DUPL. ~~COMP GRAB~~ ~~NO SAMPLE~~
Ft. Edward Staff Gage						NO READING
Lock 6 Staff Gage			NOON			19.95'

Weather Data:
Temperature 75° C
Wind 0-5 MPH
Precipitation 0

Sampled by: Mary Tate

315658

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

7/16/92 FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	7/16/92	10.05	Kimmerer Comp			
* HRM 196.8		11:25	GRAB			EQUIP BLANK FOR GE MS
HRM 196.8 - center						
HRM 196.4						
HRM 195.8						
HRM 195.3						
HRM 194.7						
HRM 194.2 (Rt. 197 Bridge)		10:40				
HRM 194.2 (east channel)		10:20	Kimmerer Comp			BLIND DUPL.
HRM 188.6 (Thompson Island Dam)		12:10	"			
Ft. Edward Staff Gage						
Lock 6 Staff Gage		20:45				20.45

Weather Data:
Temperature 80° F
Wind 5 - 10
Precipitation 0

Sampled by: Gary Tonle

315659

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

7/24/92

	SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
X	HRM 197.0 (Bakers Falls Bridge)	7/24/92	09:00	KEMMERER Comp	9.0	22 C	
X	HRM 196.8	"	10:35	GRAB	~		BLIND DUPL.
	HRM 196.8 - center						
	HRM 196.4						
	HRM 195.8						
	HRM 195.3						
	HRM 194.7						
X	HRM 194.2 (Rt. 197 Bridge)		10:00	KEMMERER ~~GRAB~~ COMP	7.0		MS - DUPL
X	HRM 194.2 (east channel)		9:35	"	~		
X	HRM 188.6 (Thompson Island Dam)		11:40	"	40	22 C	
	Ft. Edward Staff Gage						
X	Lock 6 Staff Gage		12:00		—		20.0'

Weather Data:
Temperature 75° F
Wind S 10
Precipitation 0

Sampled by: Gary Lake

315660

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

7/28/92

FIELD LOG

	SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
X	HRM 197.0 (Bakers Falls Bridge)	7/28/92	12:35	HEMMERER COMP	9.0'	21°C	
X	HRM 196.8		11:35 11:40	GRAB	1.0'		6 SAMPLES TAKEN - FLOAT SURVEY
	HRM 196.8 - center			"	1'		VERIFICATION SAMPLES - C1 - C6 . BLIND DUP. @ C6 FLOAT SURVEY
	HRM 196.4			"	2'		" "
	HRM 195.8			"	3'		" "
	HRM 195.3			"	4'		" " MATRIX SPIKE
	HRM 194.7			"	4'		FLOAT SURVEY
X	HRM 194.2 (Rt. 197 Bridge)		1:20	HEMMERER COMP.	7.0	22°C	
X	HRM 194.2 (east channel)		12:55	HEMMERER COMP	15'		MS 5' EQBL BLANK
X	HRM 188.6 (Thompson Island Dam)		1:45	"	4'		BLIND DUPL.
	Ft. Edward Staff Gage		13:30				21.08
	Lock 6 Staff Gage		14:00				20.20

Weather Data:
Temperature 80° F
Wind 5-10
Precipitation T-SHOWERS IN PM

Sampled by: Gary Tocle

3156661

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

8/6/92

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	8/6/92	8:45	Comp. Kimmerer		21°C	MS & EQBL
HRM 196.8						
HRM 196.8 - center						
HRM 196.4						
* HRM 195.8		10:20	GAAB			
HRM 195.3						
HRM 194.7						
HRM 194.2 (Rt. 197 Bridge)		9:40	Comp.			
HRM 194.2 (east channel)		9:10	Comp			BLIND DUPL.
HRM 188.6 (Thompson Island Dam)		11:10	Comp		21°C	
Ft. Edward Staff Gage						
Lock 6 Staff Gage		12:30				20.0'

Weather Data:
Temperature 80°F ±
Wind 10-15 MPH.
Precipitation 0

Sampled by: Gary Tosh

315662

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

	SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
*	HRM 197.0 (Bakers Falls Bridge)	8/13/92	9:20	Comp Kimmerer	7	21°C	
*	HRM 196.8		10:55	GRAB	1		
	HRM 196.8 - center						
	HRM 196.4						
	HRM 195.8						
	HRM 195.3						
	HRM 194.7						
*	HRM 194.2 (Rt. 197 Bridge)		10:10	COMP.	5		BLIND DUPL.
*	HRM 194.2 (east channel)		9:45	"	13		MS - DUPL.
*	HRM 188.6 (Thompson Island Dam)		11:35	"	4		
	Ft. Edward Staff Gage						
	Lock 6 Staff Gage		11:55				20.3

Weather Data:
Temperature 70° F
Wind 10-15
Precipitation 0

Sampled by: Dan Tod

315663

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

8/19/92

	SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
*	HRM 197.0 (Bakers Falls Bridge)	8/19/92	9:50	Comp. Hammerer	5'	20°C	
*	HRM 196.8		11:20	GRAB	1'	"	BLIND DUPL.
	HRM 196.8 - center						
	HRM 196.4						
	HRM 195.8						
	HRM 195.3						
	HRM 194.7						
*	HRM 194.2 (Rt. 197 Bridge)		10:45	Comp	7'	20°C	MS - EQBL
*	HRM 194.2 (east channel)		10:15	"	14'	"	
*	HRM 188.6 (Thompson Island Dam)		12:00	"	4'	"	
	Ft. Edward Staff Gage						
	Lock 6 Staff Gage		12:30				20.1'

Weather Data:
Temperature 68° F
Wind 5-10 MPH
Precipitation SHOWERS

Sampled by: Gary Tobe

315664

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	8/26/92	1:50	KIMMERER COMP	9'	22°C	
HRM 196.8 - shore			GRAB	1		MS - EQBC
HRM 196.8 - center		11:00	GRAB			FLOAT SURVEY SAMPLE
HRM 196.4 - center		11:10				
HRM 195.8 - center		11:30				
HRM 195.3 - center		11:55				
HRM 194.7 - center		12:30				
HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)			2:20 2:30	7-12'		
HRM 188.6 (Thompson Island Dam)			3:00	4'	21°C	BLIND DUPL.
Ft. Edward Staff Gage	8/26/92	13:20				21.20'
Lock 6 Staff Gage	"	3:30				20.30

Weather Data:
Temperature 85°
Wind CALM
Precipitation FAIR

Sampled by: GLL, MDL

O'Brien & Gere Engineers, Inc.

315665

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	9/3/92	9:30	KIMMEAER COMP	7'	19°C	BLIND DUPE
HRM 196.8 - shore		10:30	GRAB	1'		
HRM 196.8 - center						
HRM 196.4 - center						
HRM 195.8 - center						
HRM 195.3 - center						
HRM 194.7 - center						
HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		9:30	COMP	7-12'		OIL SHEEN ON EAST CHANNEL
HRM 188.6 (Thompson Island Dam)		12:00	COMP	4'		MS - EQBL
Ft. Edward Staff Gage						
Lock 6 Staff Gage		12:20				20.50

Weather Data:
Temperature 68° F ±
Wind 0-5 MPH
Precipitation RAIN IN AM

Sampled by: Gary Tasko

O'Brien & Gere Engineers, Inc.

315666

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG 9/9/92

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	9/9/92	9.30	Kimmerich Comp.	8.5'	19.5°C	MS - EQBL
HRM 196.8 - shore	"	11:10	GRAB	1		
HRM 196.8 - center						
HRM 196.4 - center						
HRM 195.8 - center						
HRM 195.3 - center						
HRM 194.7 - center						
HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)	"	10:00	COMP	7.0 - 15'		BLIND DUPL.
HRM 188.6 (Thompson Island Dam)	"	12:00	COMP	4.0'	20°C	
Ft. Edward Staff Gage						
Lock 6 Staff Gage		12:20				20.50

Weather Data:
Temperature 72° F ±
Wind 0 - 10 MPH
Precipitation 0

Sampled by: Adam Foote

O'Brien & Gere Engineers, Inc.

315667

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG 9/17/92

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	9/17/92	11:05	KIMMERER COMP	9'	19°C	
HRM 196.8 - shore		10:20	GRAB	1'		BLIND DUPL.
HRM 196.8 - center						
HRM 196.4 - center						
HRM 195.8 - center						
HRM 195.3 - center						
HRM 194.7 - center						
HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		11:45	KIMMERER COMP.	7 - 12'		MS ; EQBL
HRM 188.6 (Thompson Island Dam)		12:30	"	4'	19°C	
Ft. Edward Staff Gage						
Lock 6 Staff Gage		12:45				20.05

Weather Data:
Temperature 85° ± F
Wind 0 - 10
Precipitation 0
CLEAR

Sampled by: Gary Tasker

O'Brien & Gere Engineers, Inc.

315668

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

9/23/92

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	9/23/92	9.10	KIMMERER COMP	9'	18.5°C	
HRM 196.8 - shore		11:00 ~~11:00~~	GRAB	1		MS - EQBL
HRM 196.8 - center						
HRM 196.4 - center						
HRM 195.8 - center						
HRM 195.3 - center						
HRM 194.7 - center						
HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		10:00	KIMMERER COMP	8 - 12		
HRM 188.6 (Thompson Island Dam)		11:45	KIMMERER COMP	4.0	18.5°C	BLIND DUPL.
Ft. Edward Staff Gage						
Lock 6 Staff Gage		12:20				20.45

Weather Data:
Temperature 60° F
Wind 10 - 15
Precipitation 0
CLEAR

Sampled by: Doug Tuck
O'Brien & Gere Engineers, Inc.

315669

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	9/30/92	12:30	KIMMERER COMP	90	16.5°C	BLIND COOL.
HRM 196.8 - shore		11:10	GRAB	1		
HRM 196.8 - center		13:20		1		FLOAT SURVEY SAMPLE
HRM 196.4 - center		13:30		2		
HRM 195.8 - center		13:45		3		
HRM 195.3 - center		13:55		4		
HRM 194.7 - center		14:10		4		
HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		1:10	KIMMERER COMP	8 - 12	16°C	
HRM 188.6 (Thompson Island Dam)		130	"	4.5'		MS E FOOL
Ft. Edward Staff Gage						20.96
Lock 6 Staff Gage		1.55'				20.0'

Weather Data:
Temperature 50 - 60 °F
Wind 5 10 MPH
Precipitation LIGHT SHOWERS - AM

Sampled by: Gary Fade

O'Brien & Gere Engineers, Inc.

315670

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

10/8/92

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	10/8/92	9:00	KIMMERER COMP	9.0'	15.5°C	MS & EQBL
HRM 196.8 - shore		10:30	GRAB	1'		
HRM 196.8 - center						
HRM 196.4 - center						
HRM 195.8 - center						
HRM 195.3 - center						
HRM 194.7 - center						
HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		9:40	KIMMERER COMP	7 - 12'		BLIND DUPL.
HRM 188.6 (Thompson Island Dam)		11:10	"	4.5'	16°+-	
Ft. Edward Staff Gage						
Lock 6 Staff Gage		11:55				20.2'

Weather Data:
Temperature 65°F ±
Wind 0 - 10
Precipitation 0 CLEAR

Sampled by: Gary Lade
O'Brien & Gere Engineers, Inc.

10/15/92

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	10/15/92	10:40	Kimmeaer Comp	9.0'	13.5°C	
HRM 196.8 - shore		11:45	GAAB	1'		Blind Dupl.
HRM 196.8 - center						
HRM 196.4 - center						
HRM 195.8 - center						
HRM 195.3 - center						
HRM 194.7 - center				~~7-12~~'		
HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		10:00	Comp.	7-12		MS - EQDL
HRM 188.6 (Thompson Island Dam)		12:45	Comp	4.5	13°C	
Ft. Edward Staff Gage						
Lock 6 Staff Gage		13:00				20.32'

Weather Data:
Temperature 50°+
Wind 0-5 MPH
Precipitation OVERCAST

Sampled by: Gary Lash

O'Brien & Gere Engineers, Inc.

3156722

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

	SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
Y	HRM 197.0 (Bakers Falls Bridge)	10/22/92	11:05	KIMMERER ~~GRAB~~ COMP	9'	10.5C	
Y	* HRM 196.8 - shore		10:30	GRAB	1'		MS - EQBL
	HRM 196.8 - center		11:55				
	HRM 196.4 - center		12:00				
	HRM 195.8 - center		12:08				
	HRM 195.3 - center		12:25				
	HRM 194.7 - center		12:45				GAUGE 21.85
Y	HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		11:35	KIMMERER COMP	7-12		
Y	HRM 188.6 (Thompson Island Dam)		12:20	"	4.0'	10.5C	BLIND DUPL.
	Ft. Edward Staff Gage		12:50				21.85
Y	Lock 6 Staff Gage		12:00				20.65'

Weather Data:
Temperature 50° F
Wind 10 MPH
Precipitation OVERCAST

Sampled by: Gary Lee

O'Brien & Gere Engineers, Inc.

315673

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
1 HRM 197.0 (Bakers Falls Bridge)	10/28/92	9:05	Kimmerer ~~Grab~~ Comp.	7'		Blind Dupl.
2 HRM 196.8 - shore		10:00	Grab	1'		
HRM 196.8 - center						
HRM 196.4 - center						
HRM 195.8 - center						
HRM 195.3 - center						
HRM 194.7 - center						
3 HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		8:35	Kimmerer Comp	6 - 12'	9.5°C	
4 HRM 188.6 (Thompson Island Dam)		11:30	"	4.5'	9°C	MS - EQBL
Ft. Edward Staff Gage						
5 Lock 6 Staff Gage		11:55				20.5'

Weather Data:
Temperature 50° F ±
Wind 0-10 MPH
Precipitation Overcast

Sampled by: Ray Lobo

O'Brien & Gere Engineers, Inc.

315674

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

11/4/92

FIELD LOG

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	11/4/92	10:00	KIMMERER COMP	7'	9°C	MS ± EQAL
HRM 196.8 - shore		11:00	GRAB	1'		
HRM 196.8 - center						
HRM 196.4 - center						
HRM 195.8 - center						
HRM 195.3 - center						
HRM 194.7 - center						
HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		9:05	KIMMERER COMP	7-12'		BLIND DUPL.
HRM 188.6 (Thompson Island Dam)		12:00	"	4.5'	9°C	
Ft. Edward Staff Gage						
Lock 6 Staff Gage		12:15				20.90'

Weather Data:
Temperature 50°F ±
Wind 0-5 mph
Precipitation OVERCAST

FLOW IN RACEWAY AT BAKERS FALLS UP 10" ±

Sampled by: Gary Todd

O'Brien & Gere Engineers, Inc.

315675

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

11/11/92

	SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
✓	HRM 197.0 (Bakers Falls Bridge)	11/11/92	10:00	KIMMERER COMP	9.0'	6°C	
✓	HRM 196.8 - shore		10:30	GRAB	1.0'		
	HRM 196.8 - center						
	HRM 196.4 - center						
	HRM 195.8 - center						
	HRM 195.3 - center						
	HRM 194.7 - center						
✓	HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		9:30	KIMMERER COMP	7.5' - 12'		MS & EQBL
✓	HRM 188.6 (Thompson Island Dam)		11:40	"	4'	6°C	BLIND DUPL.
	Ft. Edward Staff Gage						
✓	Lock 6 Staff Gage		NOON				20.65'

FLOW IN RACEWAY UP 4" ±

Weather Data:
Temperature 50 F ±
Wind 0 - 10 MPH
Precipitation SHOWERS

Sampled by: Gary Lade
O'Brien & Gere Engineers, Inc.

315676

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG
11/19/92

SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
HRM 197.0 (Bakers Falls Bridge)	11/19/92	10:30	KIMMERER COMP	9.0'	4.5°C	
HRM 196.8 - shore		11:00	GRAB	1.0'		MS 5' EQBL
HRM 196.8 - center						
HRM 196.4 - center						
HRM 195.8 - center						
HRM 195.3 - center						
HRM 194.7 - center						
HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		10:00	KIMMERER COMP.	7.5' - 12'		
HRM 188.6 (Thompson Island Dam)		12:00	KIMMERER COMP	4.5'	4°C	BLIND DUPL.
Ft. Edward Staff Gage						
Lock 6 Staff Gage		9.10				21.35

WATER TEMP. 4.5° C

Weather Data:
Temperature 35°+
Wind 0-5 MPH
Precipitation 0

Sampled by: Gary Toole

O'Brien & Gere Engineers, Inc.

315677

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

11/24/92

	SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
Y	HRM 197.0 (Bakers Falls Bridge)	11/24/92	8:00	Kimmeyer Comp	9.0'	5°C	(SB-1) BLIND DUPL. ① TOT-TSS
Y	HRM 196.8 - shore			GRAB	1.0'		(SB-6) 8 HR Comp.
	HRM 196.8 - center						
	HRM 196.4 - center						
	HRM 195.8 - center						
	HRM 195.3 - center						
	HRM 194.7 - center						
Y	HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)			Kimmeyer Comp	7' - 12'	5°C	(SB-7) 8 HR Comp
Y	HRM 188.6 (Thompson Island Dam)			Comp	5'		MS-EQBL ① TOT-TSS
	Ft. Edward Staff Gage						
Y	Lock 6 Staff Gage	↓					21.75

BAKER FALLS INVEST (RACEWAY)

Weather Data:
Temperature 45° F
Wind 0-10 MPH
Precipitation OVERCAST - MIST.

Sampled by: Amy Sade

O'Brien & Gere Engineers, Inc.

315678

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
BAKERS FALLS INVESTIGATION

FIELD LOG

SITE	DATE	TIME	MATRIX	SAMPLE TYPE	COMMENTS
SB-1	11/24/92	8:00	WATER	VERT. STRAT. Comp.	BLIND DUP. 2
SB-2	"	8:00-16:00	WATER	30 MIN. Comp.	
SB-3	"	"	"	"	GRAB @ 12:35*
SB-4	"	"	"	"	BUCKETS 1+2 NOT INCLUDED IN COMP. DUE TO HIGH FLOW
SB-5	"	"	"	"	MS, BLIND DUP. | GRAB #1 TOT. + DIS. @ 7:30, GRAB #2 @ 11:30
	"	"	"	"	GRAB #3 @ 12:00* GRAB #4 @ 14:30
SB-6	"	"	"	"	(HRM 196.8)
SB-7	"	"	"	"	(HRM 194.2)
SB-8	"	"	"	GRAB	(THOMPSON ISLAND DAM GRAB)
SB5A	11/25/92	9:00	"	"	SURFACE FOAM COLLECTED IN SAMPLE
SB5B	"	9:10	"	"	MID-CHANNEL
					LOWER RACEWAY DIMENSIONS:
					20' Wide / 15' DEEP
					VELOCITY ≈ 2 FT/SEC
STAFF GAGE @ FT. EDWARD	11/25/92	10:30			22.94'
LOCK @ STAFF GAGE	11/24/92	12:00			21.75'
					* - SPLIT W/ DON-DEC

Weather Data:
Temperature 45° F ±
Wind CALM
Precipitation MIST

Sampled by: TT, PC, EH, GL, MDL

315679

GENERAL ELECTRIC COMPANY
FORT EDWARD DAM PCB REMNANT DEPOSIT CONTAINMENT
1992 POST-CONSTRUCTION MONITORING PROGRAM

FIELD LOG

	SITE	DATE	TIME	SAMPLE TYPE	APPROXIMATE WATER DEPTH	WATER TEMP.	COMMENTS
✓	HRM 197.0 (Bakers Falls Bridge)	12/3/92	10:35	Kimmerer Comp	9'		BLIND DUPL.
✓	HRM 196.8 - shore		11:15	GRAB	1'		
	HRM 196.8 - center						
	HRM 196.4 - center						
	HRM 195.8 - center						
	HRM 195.3 - center						
	HRM 194.7 - center						
✓	HRM 194.2 (Rt. 197 Bridge Comp. - East and Main Channel)		9:45	Kimmerer Comp	7' - 12'	5°C	
✓	HRM 188.6 (Thompson Island Dam)		9:15	"	5'	5°C	MS - EQBL
	Ft. Edward Staff Gage						
✓	Lock 6 Staff Gage		11:50				21.45' - GATE DOWN

Weather Data:
Temperature 35° ± F
Wind 0-5 MPH
Precipitation SHOWERS - ± WET SNOW

Sampled by: Dave Tode

O'Brien & Gere Engineers, Inc.

315680

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
BAKERS FALLS INVESTIGATION

FIELD LOG

WATER TEMP 1°C

12/9/92 LOCK # 6 STAFF GAUGE - 20.85

SITE	DATE	TIME	MATRIX	SAMPLE TYPE	COMMENTS
SB-1 -BFO-HRM 197.0	12/9/92	09:40	WATER	Comp	
B-6 HRM 196.8	"	10:15	"	GRAB	30 MIN COMP 10:15 - 10:45 - 5 MIN INTERV
B-8 TID -HRM 189.0	"	11:45	"	Comp	
B7 HRM 194.2	"	12:25	"	Comp	AT 197 E CHANNEL COMP

Weather Data:
Temperature 8°C
Wind 0-5
Precipitation 0

Sampled by: Tony Tucci

315681

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
BAKERS FALLS INVESTIGATION

FIELD LOG

SITE	DATE	TIME	MATRIX	SAMPLE TYPE	COMMENTS
SB2	12/9/92	9:25-9:55	WATER	30 min. Comp.	
SB3-1		" "			
SB3-2		14:05-14:35			
SB3A		10:15-10:45			
SB4		10:50-11:20			
SB5-1		12:15-12:45			
SB5-2		14:10-14:40		↓	
SB5-FOAM		14:15		GRAB	
SB5-MS		12:15-12:45		30 min. comp.	
BLIND DUP.		12:15-12:45		↓	COLLECTED @ SB5-1
EQUIPMENT BLANK		16:00		GRAB	
NW CORNER PUMPHOUSE	↓	8:25-8:55	↓	30 min. comp	SPLIT w/ DEC
STAFF GAGE @ FT. EDWARD	↓	16:30	↓		22.50

Weather Data:
Temperature 0° F ±
Wind CALM
Precipitation SUNNY

Sampled by: TT, MDL

315682

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
BAKERS FALLS INVESTIGATION

FIELD LOG

WATER TEMP 1°C
LOCK # 6 STAFF GAUGE = 20.80'

SITE	DATE	TIME	MATRIX	SAMPLE TYPE	COMMENTS
BFB - HRM 197.0 SB1	12/10	8:15	W	V.S. Composite	Vertically Stratified Composite
HRM 196.8 SB6	12/10	9:00	W	Composite	8:45 - 9:15 5 minute grabs
HAM - 194.2 SB7	12/10	9:50	"	"	AT 197 E' CHANNEL COMP.
TEO HAM 189.0 SB8	12/10	10:45	"	"	

Weather Data:
Temperature 15°F
Wind Light/None 0-5
Precipitation None

Sampled by: Gary Lade/Jim Rhea

315683

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
BAKERS FALLS INVESTIGATION

FIELD LOG

SITE	DATE	TIME	MATRIX	SAMPLE TYPE	COMMENTS
SB2	12/10/92	8:30-9:00	WATER	30 min. comp.	
SB3-1		"			
SB3-2		12:30-13:00			
SB3A		9:15-9:45			(MS + BLIND DUP.)
SB4		9:50-10:20			
SB5-1		10:55-11:25			
SB5-2		12:35-13:05		↓	
SB5-FOAM		11:00		GRAB	
SB3A-MS		9:15-9:45		30 min. comp.	
BLIND DUP.		"		↓	(COLLECTED @ SB3A)
EQUIP. BLANK		14:00		GRAB	
NW CORNER PUMPHOUSE	↓	11:50-12:20	↓	30 min. comp.	SPLIT W/DEC.
STAFF GAGE @ FT. EDWARD	↓	14:30	-	-	22.10'

Weather Data:
Temperature 10° F ±
Wind CALM
Precipitation NONE, OVERCAST

Sampled by: TT, MDL

315684

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
BAKERS FALLS INVESTIGATION

FIELD LOG
12/16/92

SITE	DATE	TIME	MATRIX	SAMPLE TYPE	COMMENTS
DFB - HAM - 197.0 SB-1	12/16	11:00	WATER	Comp Kimmerer	BLIND DUPL
HAM - 196.8 SB-6	"	12:00	"	GRAB	MS & EQBL
Comp. HAM - 194.2 SB-7	"	12:30	"	Comp Kimmerer	
TTO HAM - 189.0 SB-8	"				NO SAMPLE TAKEN

WATER TEMP @ AT 197 DAM 2°C

Weather Data:
Temperature 45° F
Wind 0-10 MPH
Precipitation SHOWERS

Sampled by: Doug Tedd

315685

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
BAKERS FALLS INVESTIGATION

FIELD LOG
12/22/92

SITE	DATE	TIME	MATRIX	SAMPLE TYPE	COMMENTS
BFB - HAM-197.0	12/22/92	10:40	WATER	COMP KUMMERER	
HAM - 196.8		11:15		GRAB.	BLIND DUPL
COMP. CHANNEL AT 197 HAM - 194.2		12:20		COMP.	MS & LCSD
THOMPSON ISLAND DAM HAM 189.0		12:45		COMP.	
LOCK 6 STAFF GAUGE		13:00			20.95

Weather Data:
Temperature 40 °F
Wind 0-5
Precipitation OVERCAST

WATER TEMP 2.5° C TIN

LOCKE # 6 STAFF GAUGE = 20.95

Sampled by: Amy Tuck

315686

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
BAKERS FALLS INVESTIGATION

FIELD LOG

SITE	DATE	TIME	MATRIX	SAMPLE TYPE	COMMENTS
HAM 197.0	12/30/92	10:55AM	WATER	COMP KIMMERER	
HAM 196.8	↓	11:20A	↓	GRAB	MS - EB/BL, DUPL.
HAM - 194.2 COMP.		11:50A		COMP	~~MS - EB/BL - LAB DUPL.~~ WATER TEMP = 2°C
THOMPSON ISLAND	↓	12:30P	↓	COMP	

Weather Data: OVERCAST 45°F
Temperature 45°F
Wind 0-5
Precipitation DRIZZLE

LOCK & STAFF GAUGE = 20.90' @ 12:30

Sampled by: GARY LADE

315687

The Following Appendices are Bound Separately

from this Report:

Appendix	Title	Volumes
Appendix B	Data Validation Technical Memorandum	1
Appendix C	Northeast Analytical PCB Data Summary Packages	10
Appendix D	OBG Laboratories TSS Data Summary Packages	1
Appendix E	OBG Laboratories PCB Data Summary Packages	4

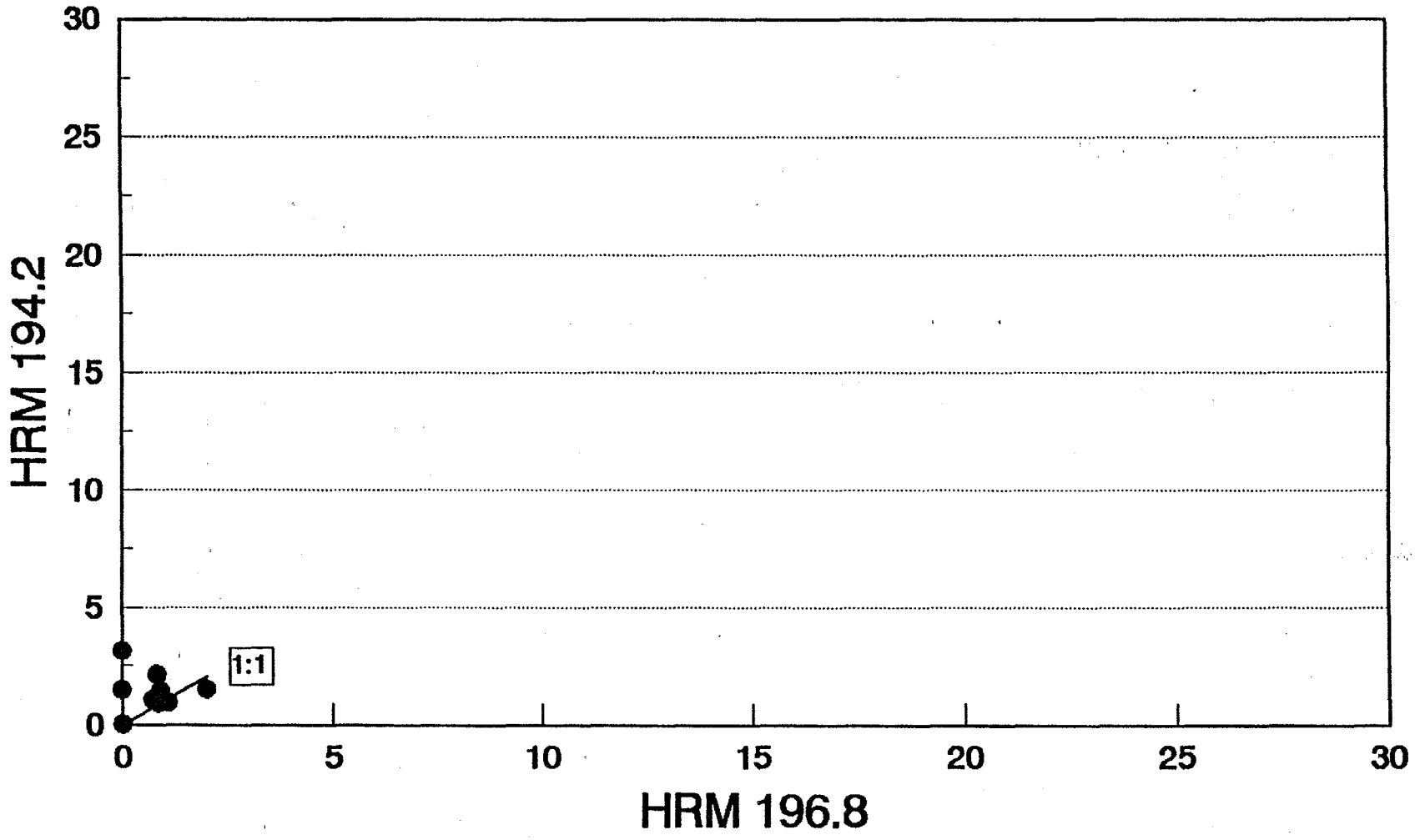
APPENDIX F

COMPARISON OF HRM 194.2 AND HRM 196.8 HOMOLOG DISTRIBUTIONS

General Electric Company

Hudson River Project

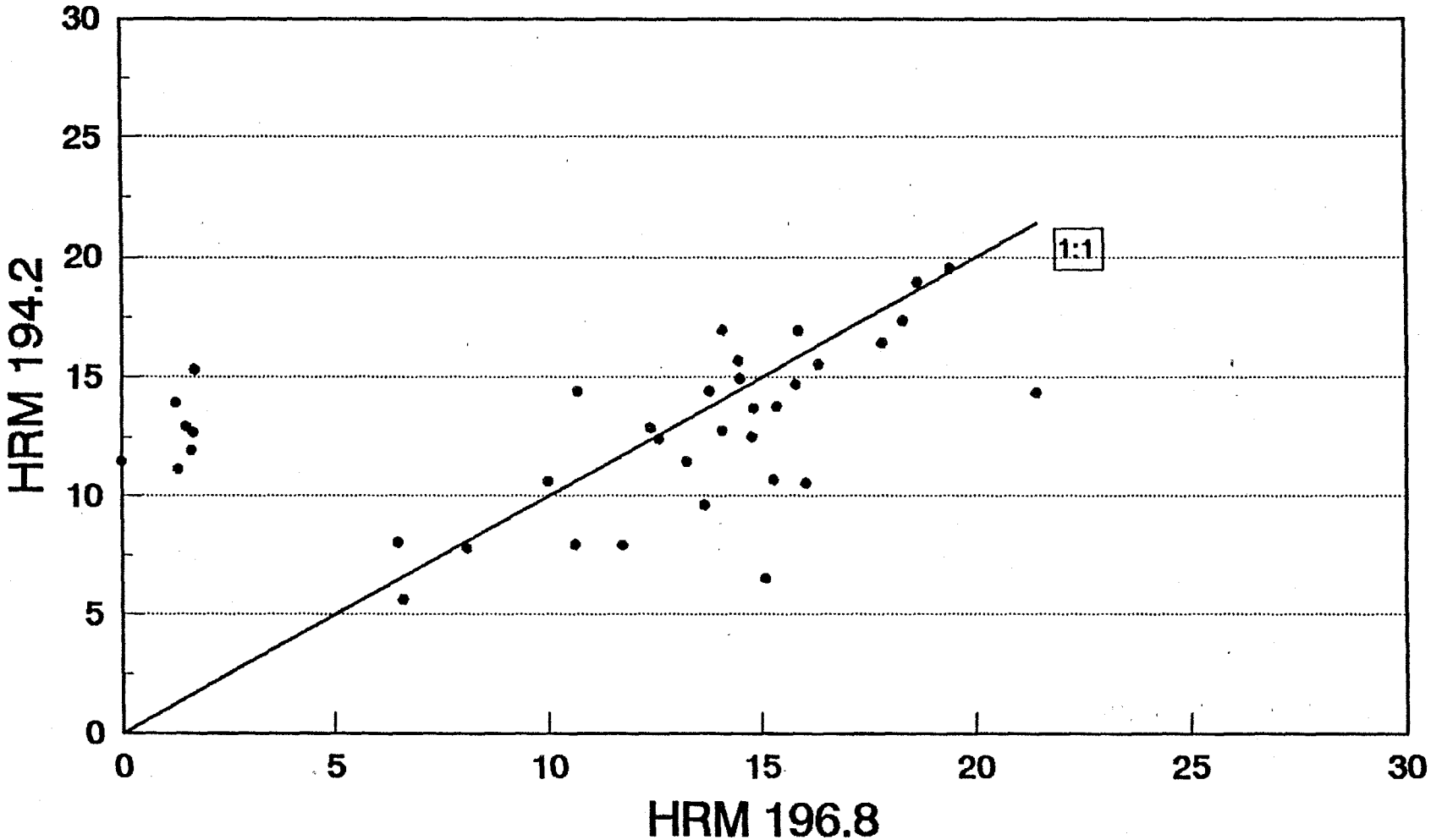
Weight Percent Mono-chlorinated Biphenyls



General Electric Company

Hudson River Project

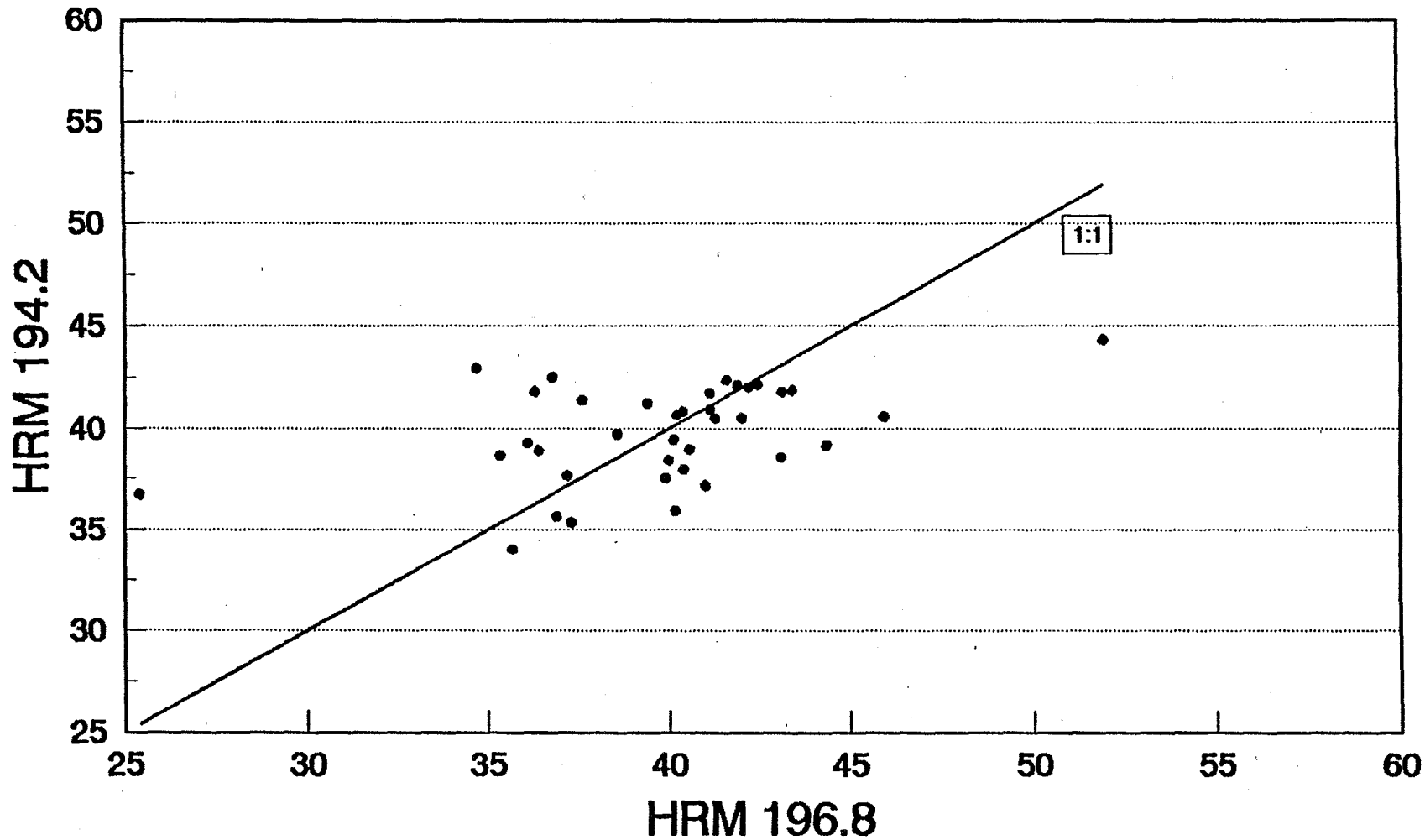
Weight Percent Di-chlorinated Biphenyls



General Electric Company

Hudson River Project

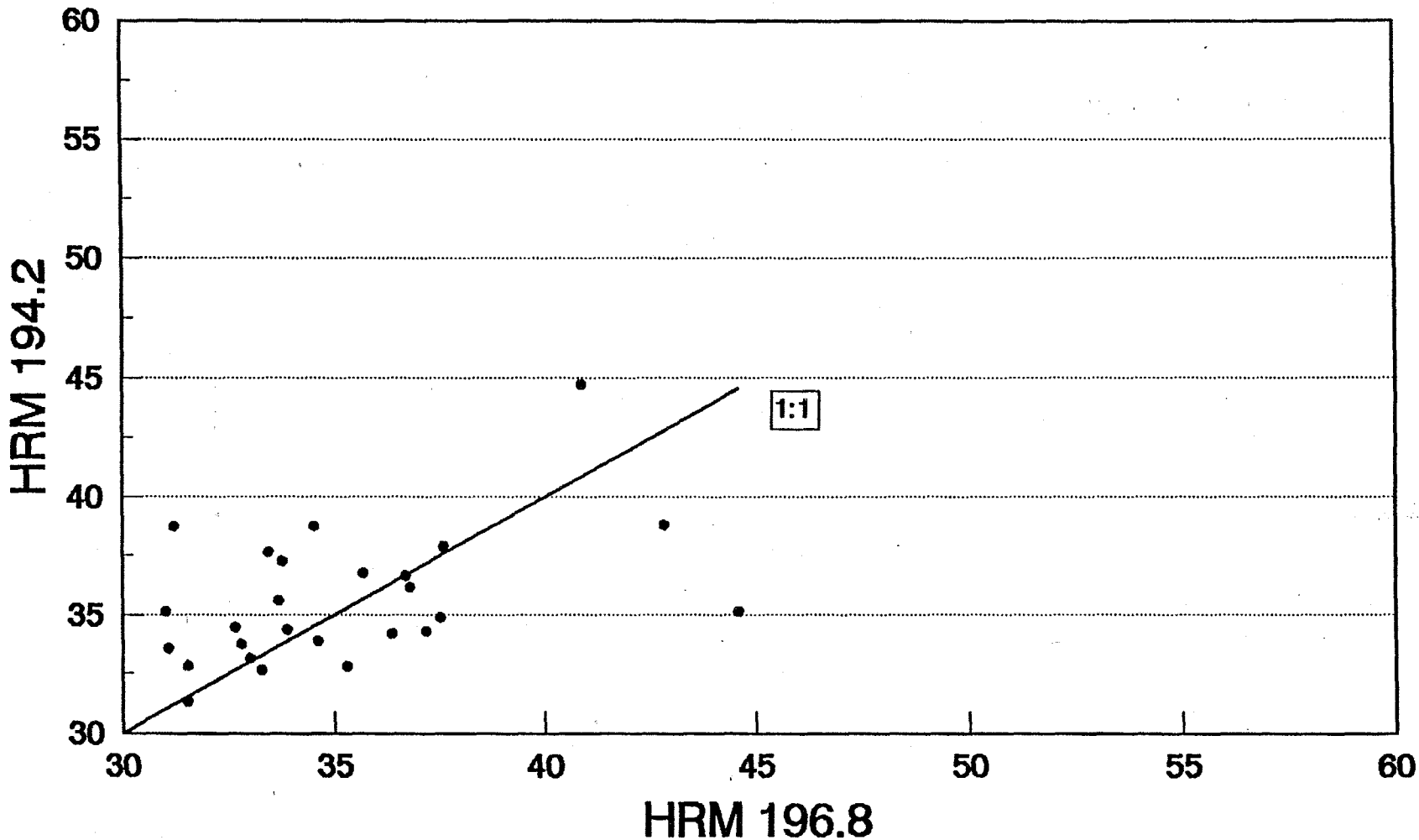
Weight Percent Tri-chlorinated Biphenyls



General Electric Company

Hudson River Project

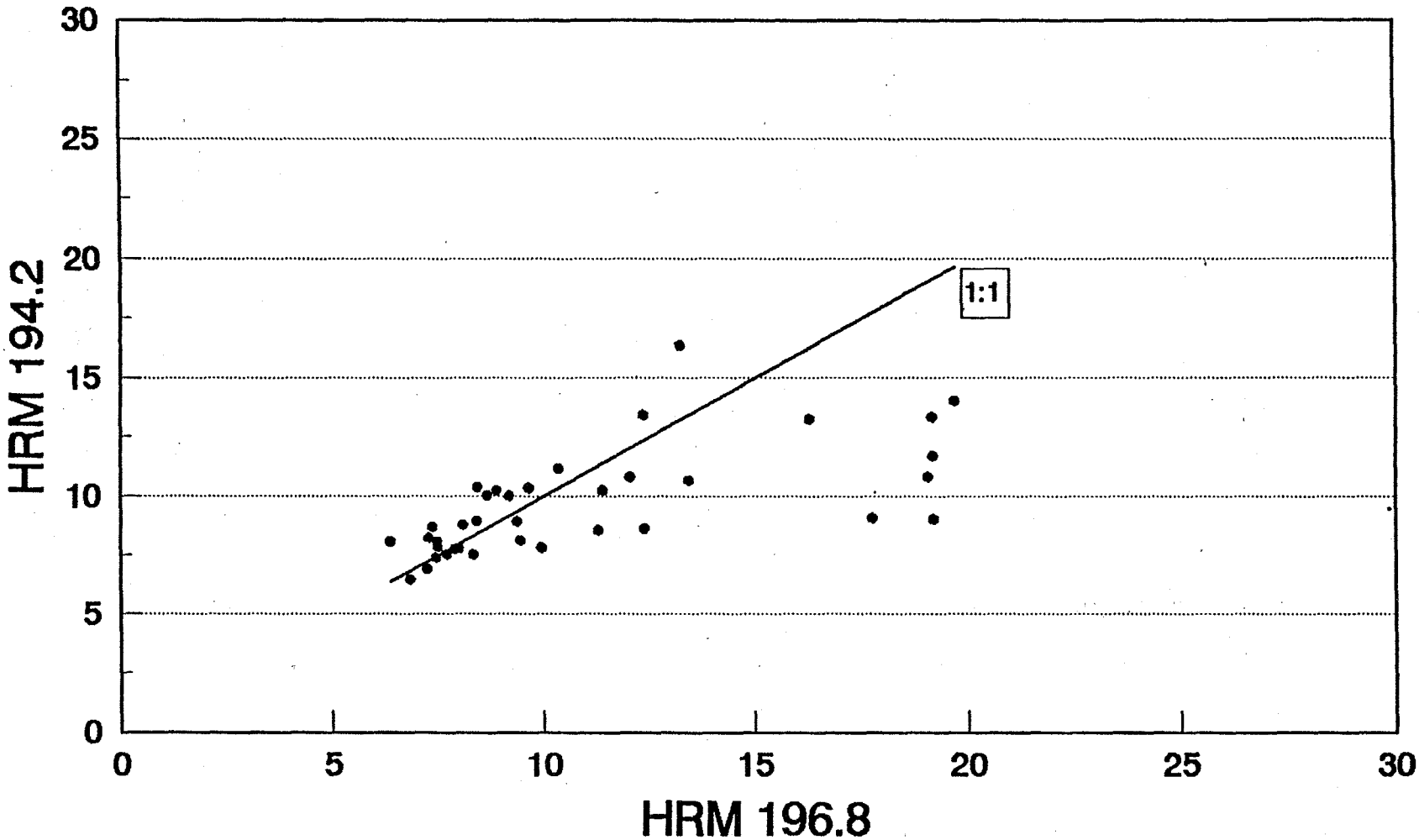
Weight Percent Tetra-chlorinated Biphenyls



General Electric Company

Hudson River Project

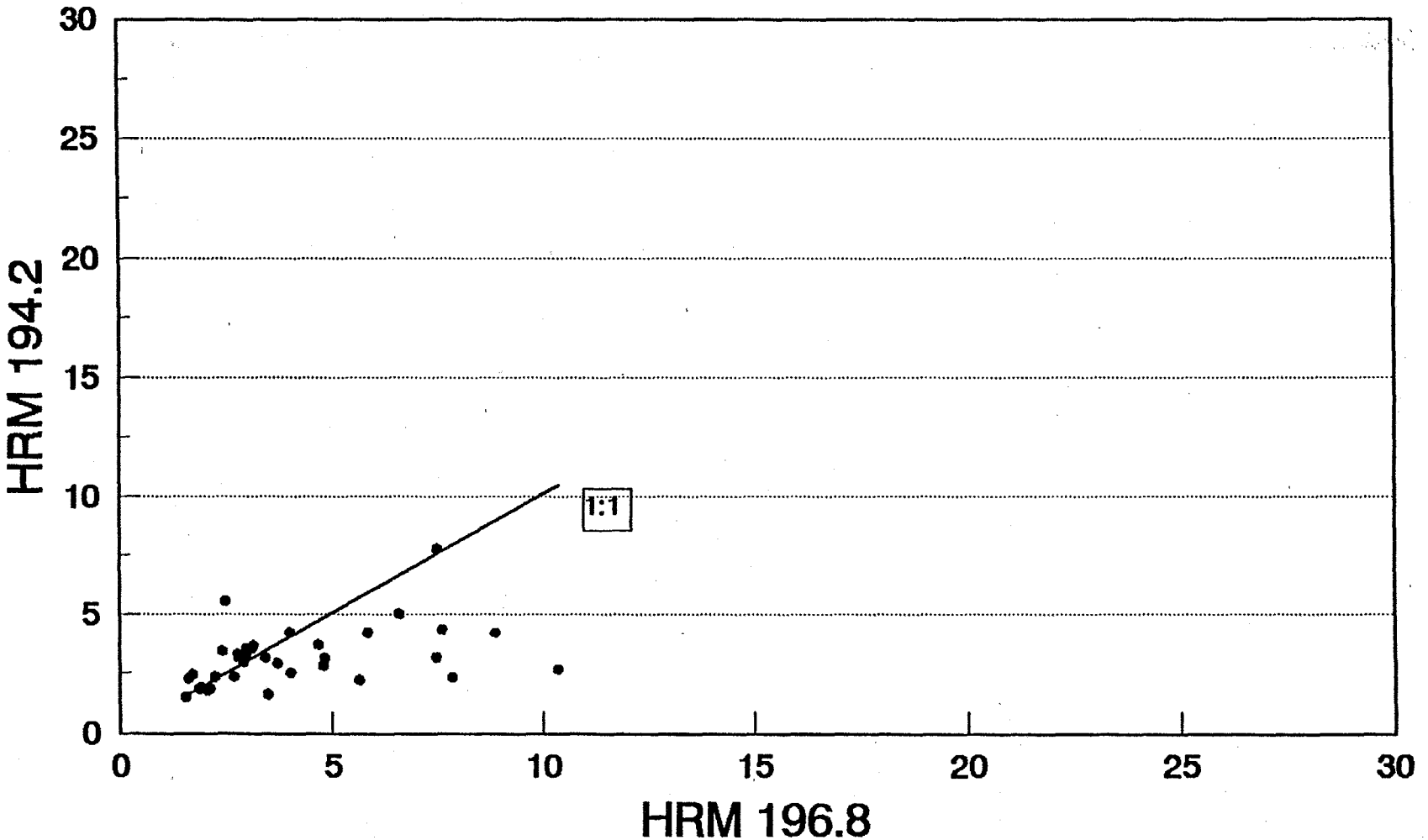
Weight Percent Penta-chlorinated Biphenyls



General Electric Company

Hudson River Project

Weight Percent Hexa-chlorinated Biphenyls



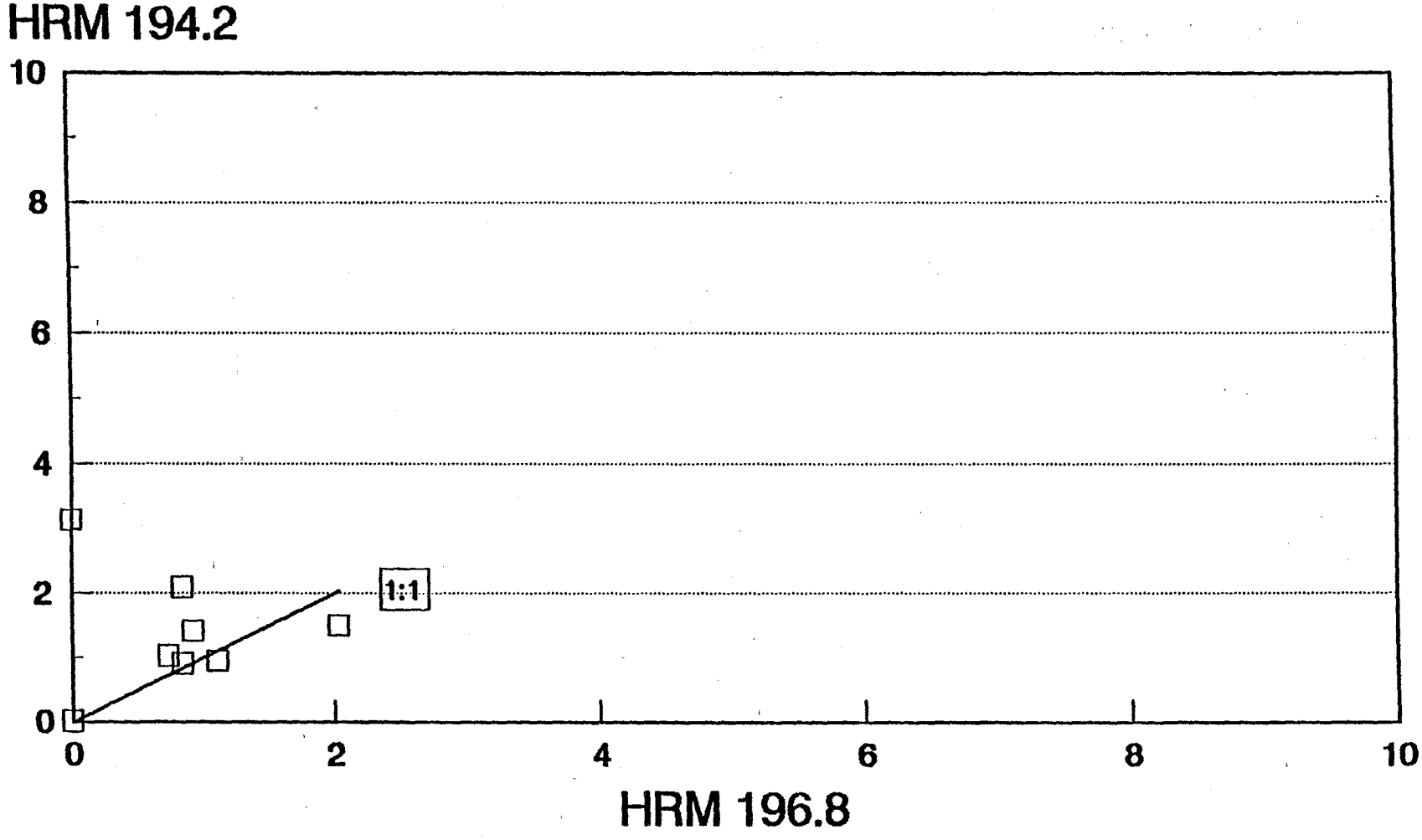
APPENDIX G

COMPARISON OF HRM 194.2 AND HRM 196.8 CONGENER DISTRIBUTIONS

General Electric Company

Hudson River Project

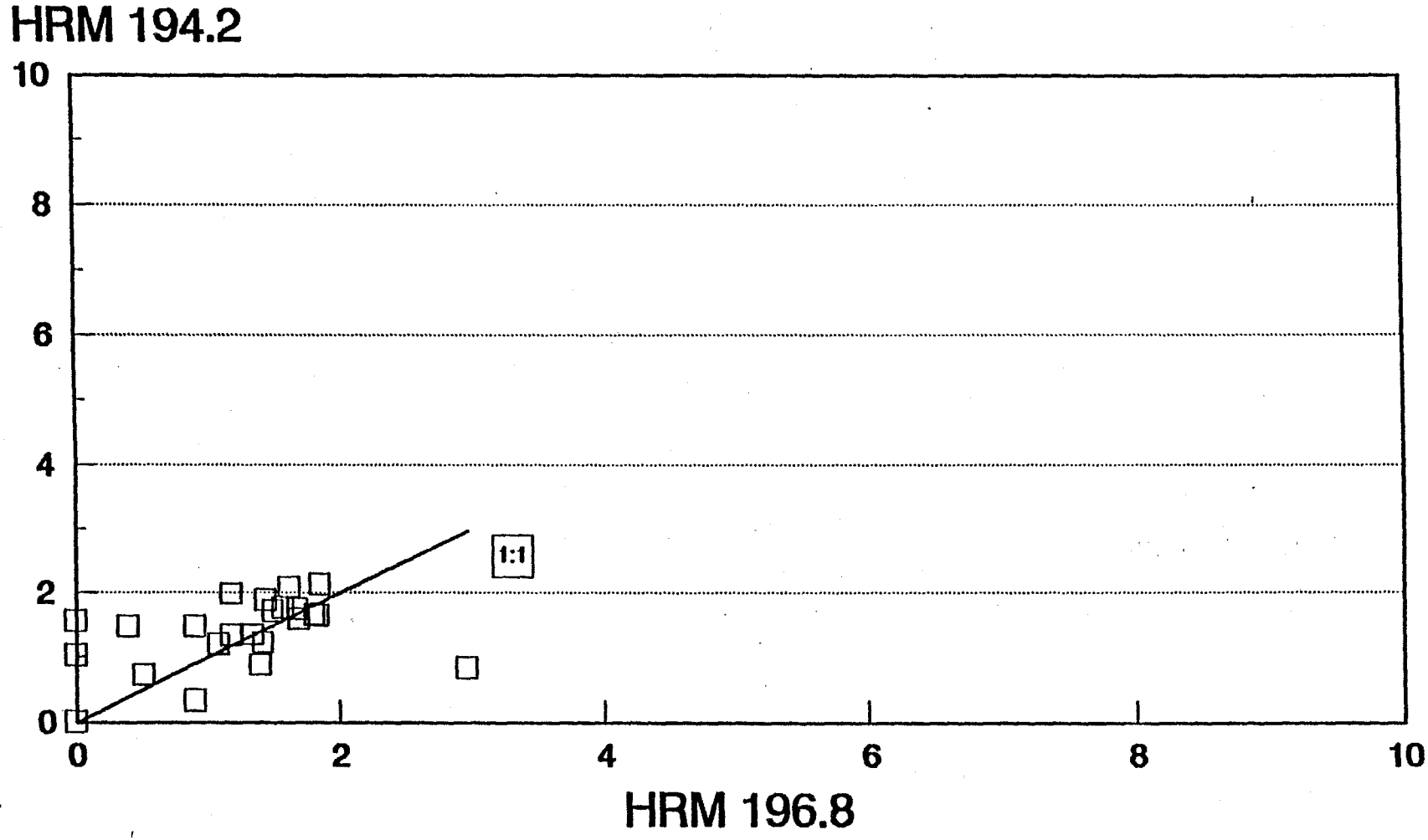
Weight Percent of Congener Peak 2



General Electric Company

Hudson River Project

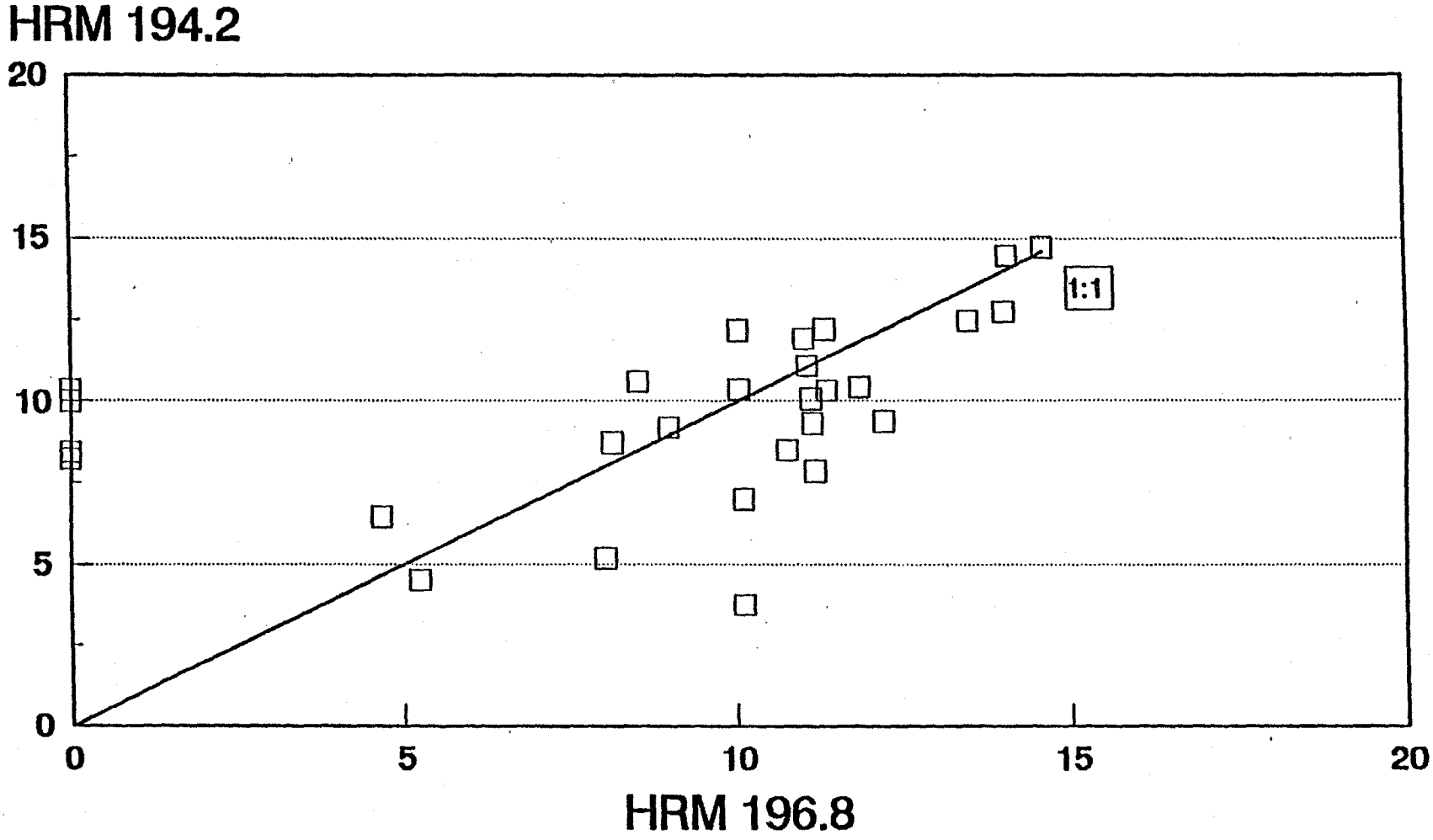
Weight Percent of Congener Peak 5



General Electric Company

Hudson River Project

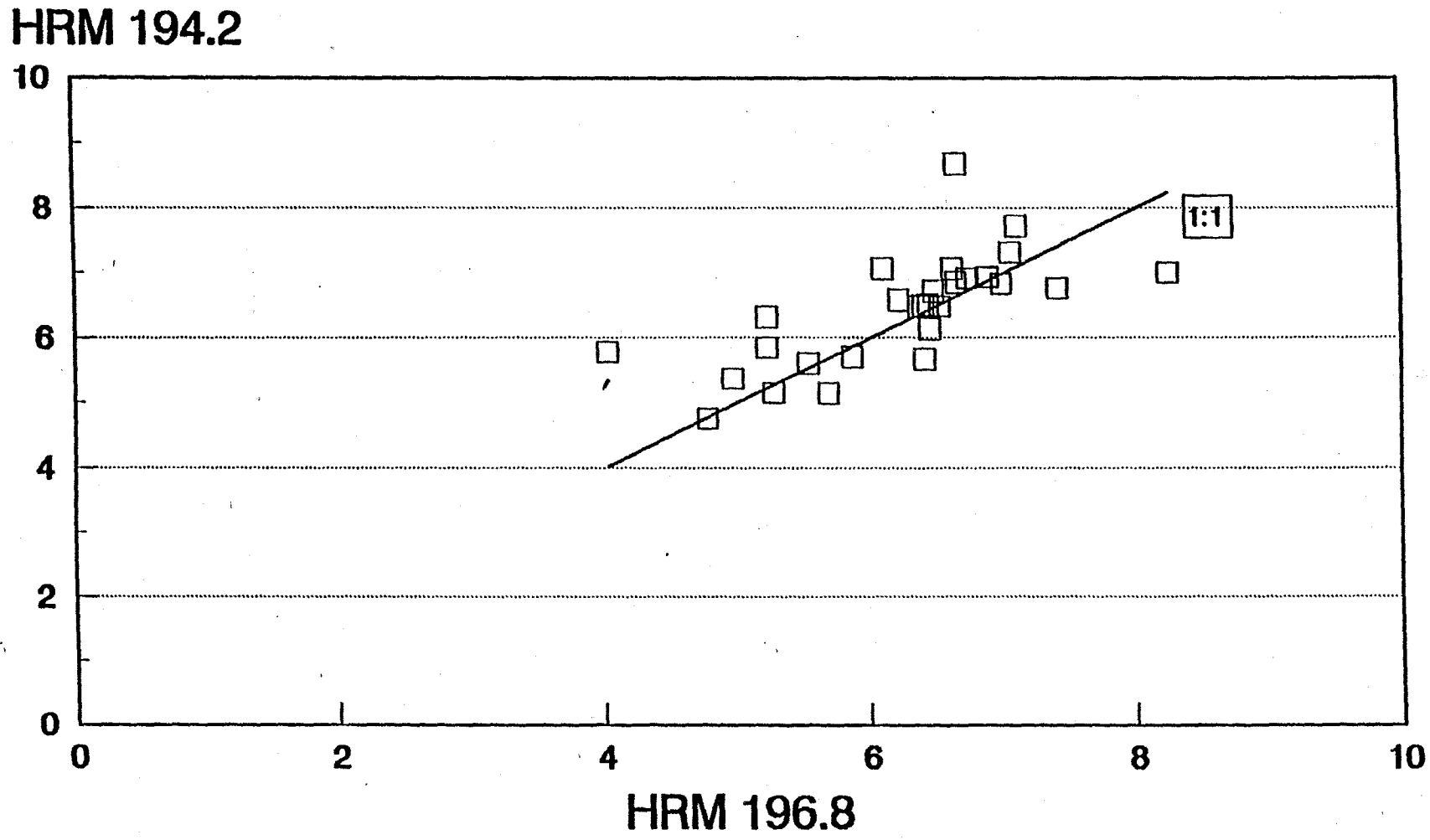
Weight Percent of Congener Peak 8



General Electric Company

Hudson River Project

Weight Percent of Congener Peak 24

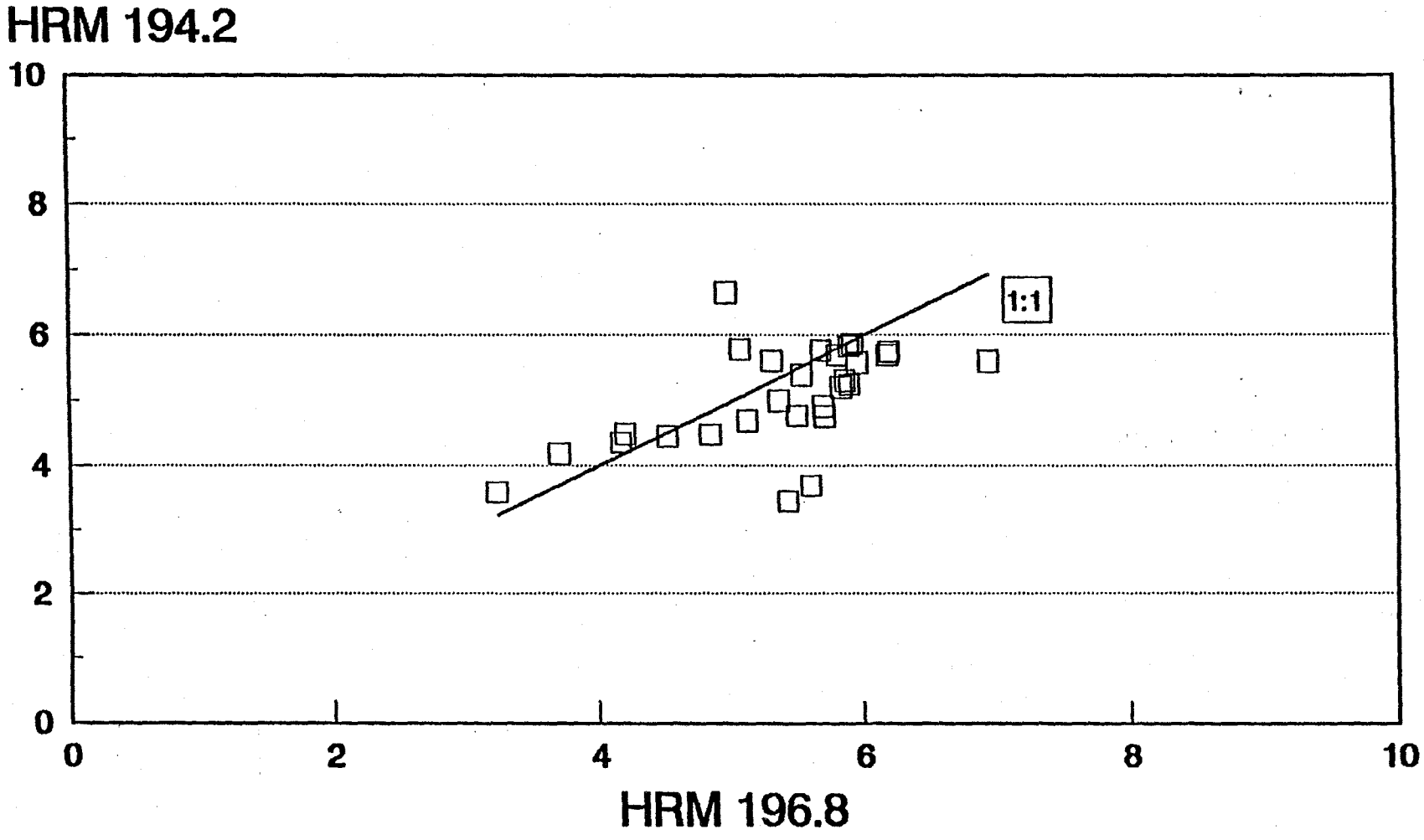


315700

General Electric Company

Hudson River Project

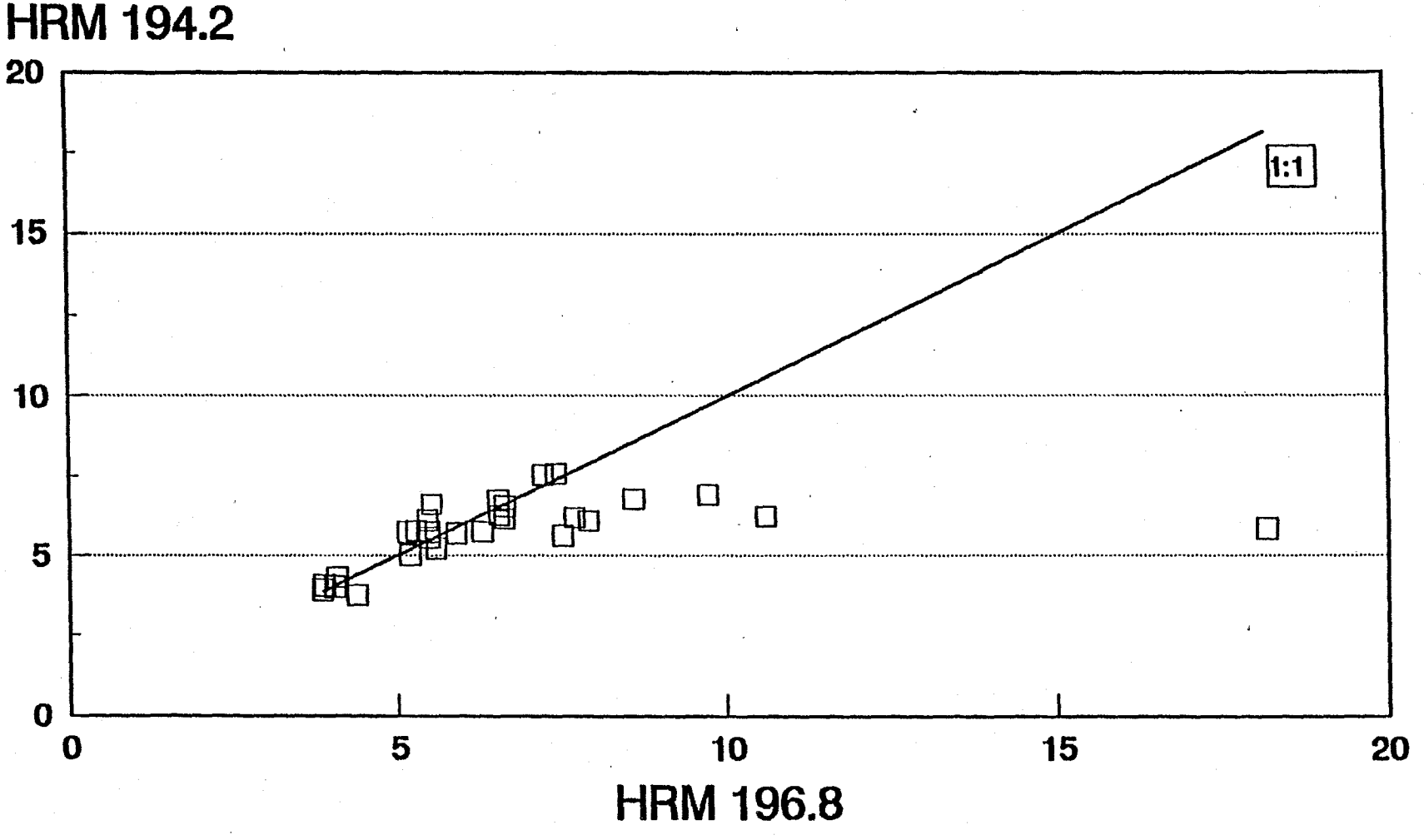
Weight Percent of Congener Peak 25



General Electric Company

Hudson River Project

Weight Percent of Congener Peak 48

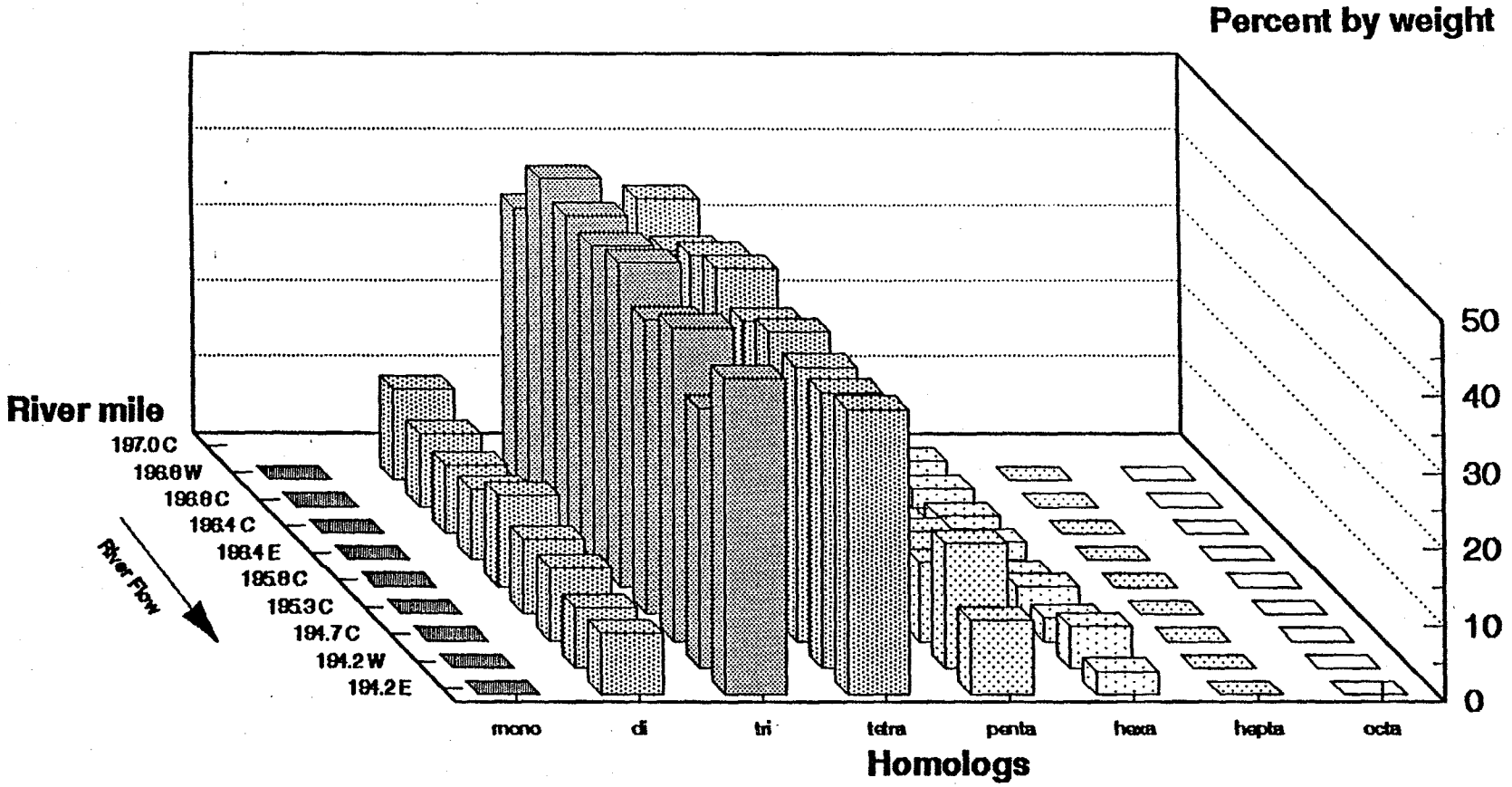


315702

APPENDIX H

FLOAT SURVEY PCB HOMOLOG DISTRIBUTIONS

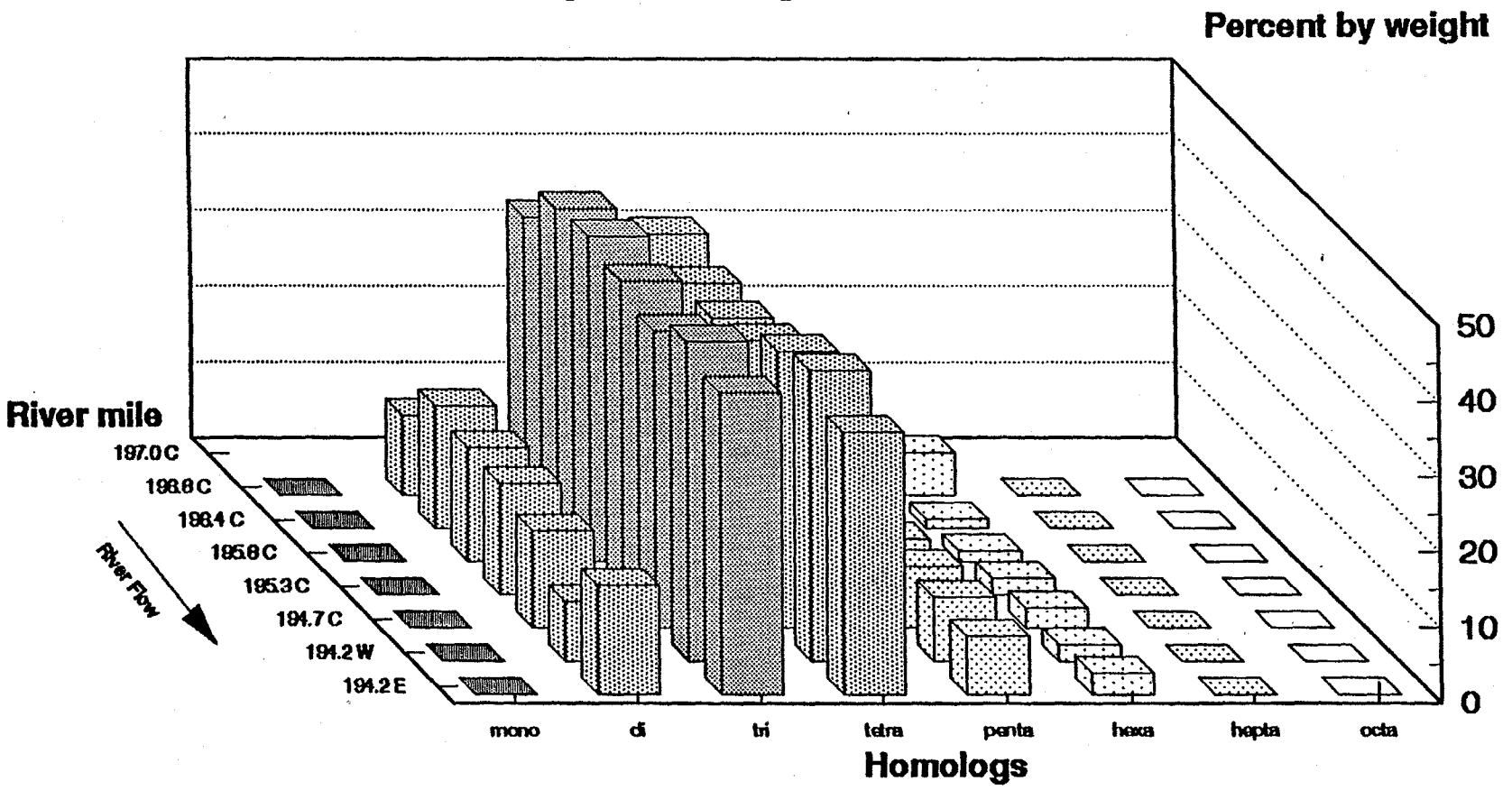
General Electric Company
Post Construction Remnant Deposit Monitoring
Float Survey Homologs - May 28, 1992



W, C, E indicate river channel location (West, Center, East)

RM 197 Below Method Detection Limit

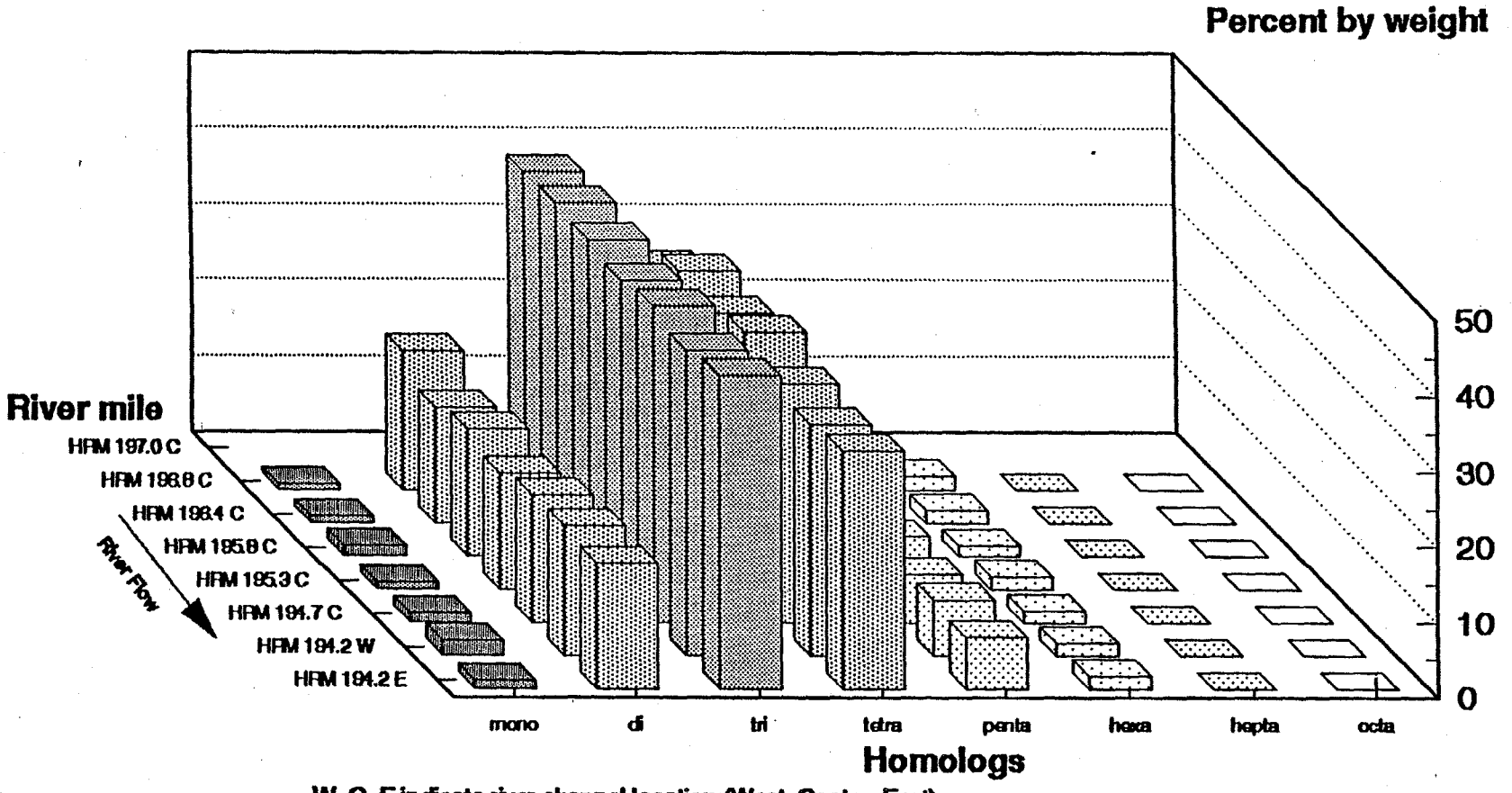
General Electric Company
Post Construction Remnant Deposit Monitoring
Float Survey Homologs - June 25, 1992



W, C, E indicate river channel location (West, Center, East)

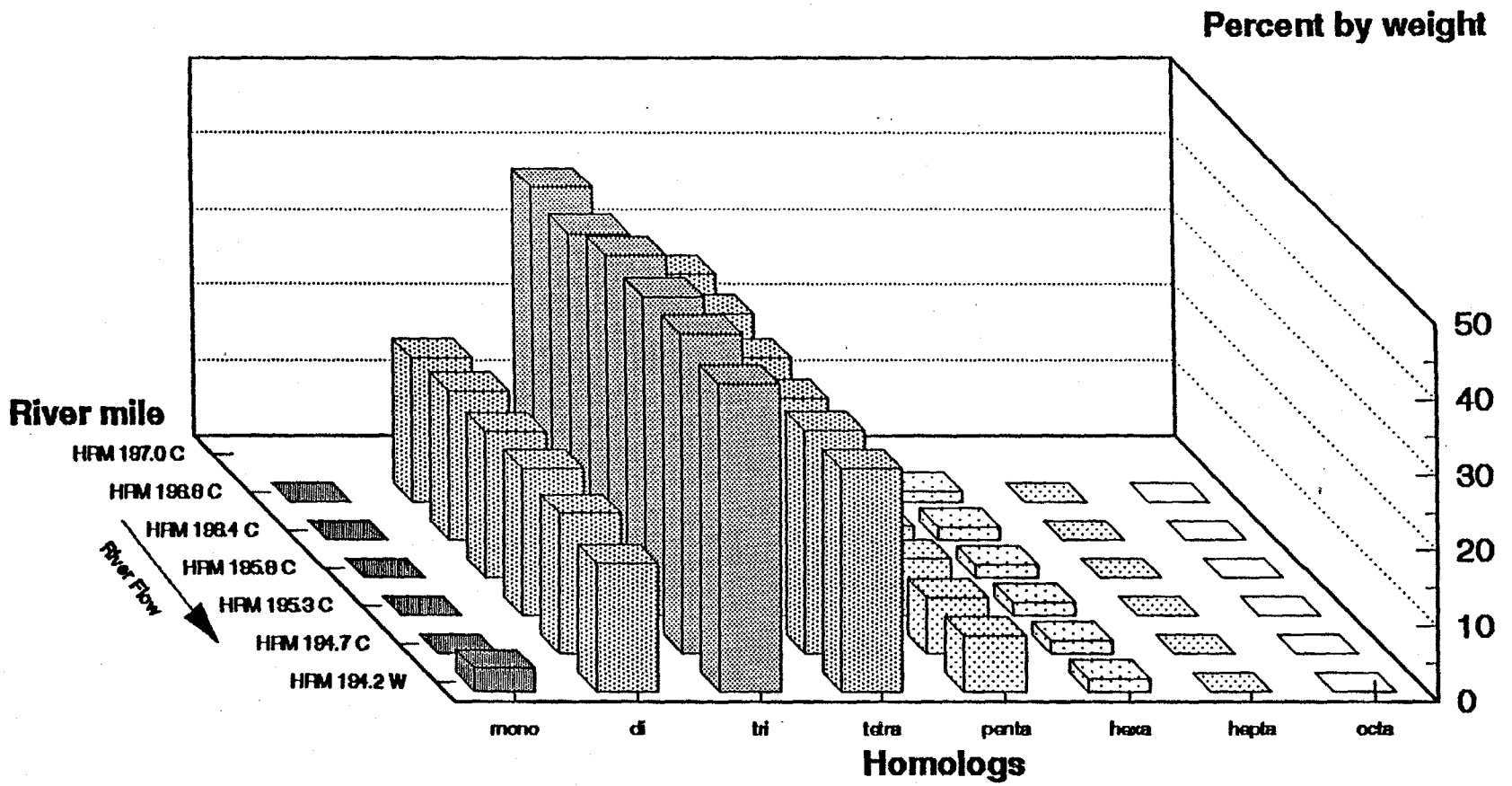
RM 197 Below Method Detection Limit

General Electric Company
Post Construction Remnant Deposit Monitoring
Float Survey Homologs - July 29, 1992



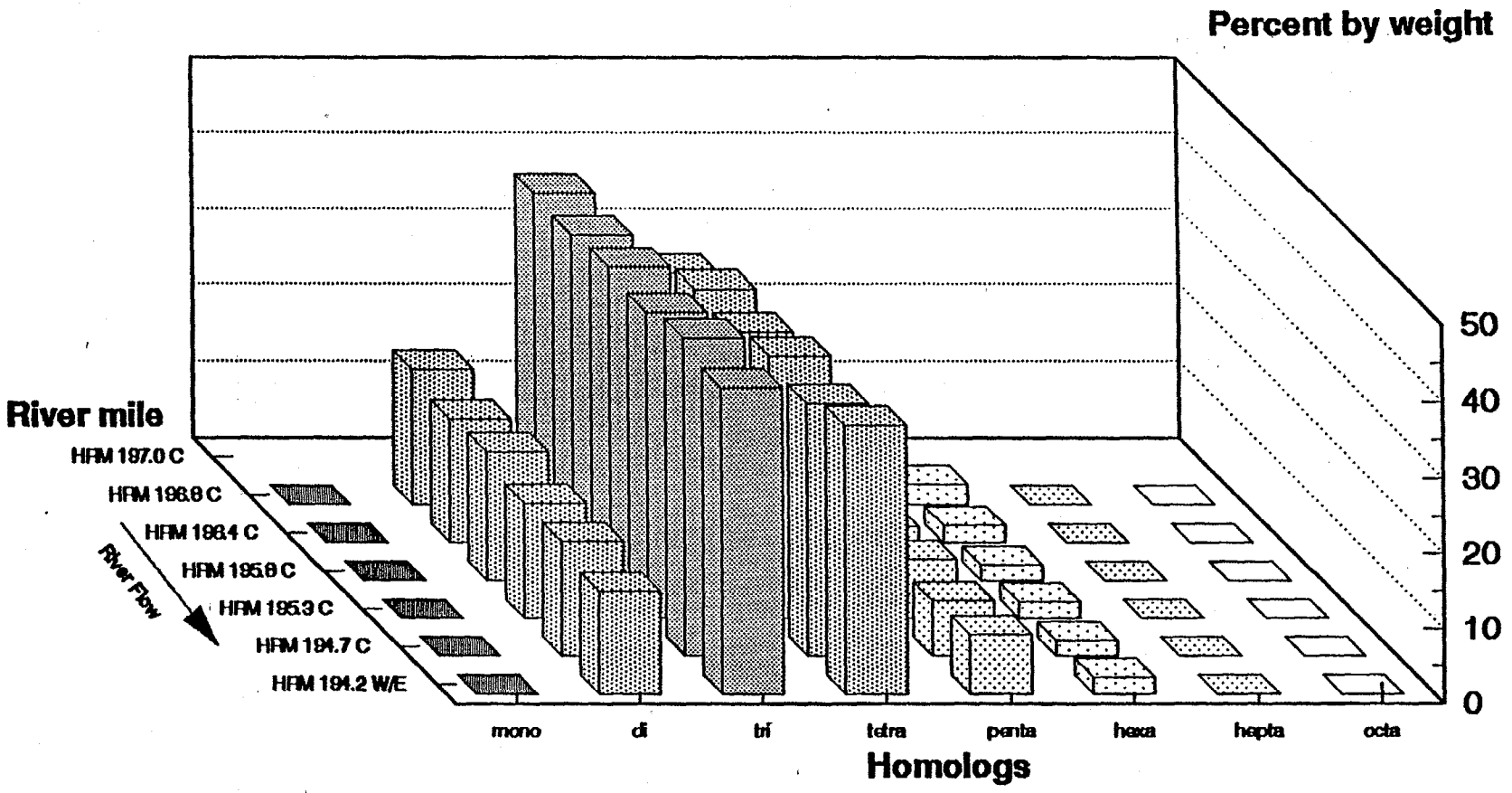
W, C, E indicate river channel location (West, Center, East)

General Electric Company
Post Construction Remnant Deposit Monitoring
Float Survey Homologs - August 27, 1992



W, C, E indicate river channel location (West, Center, East)

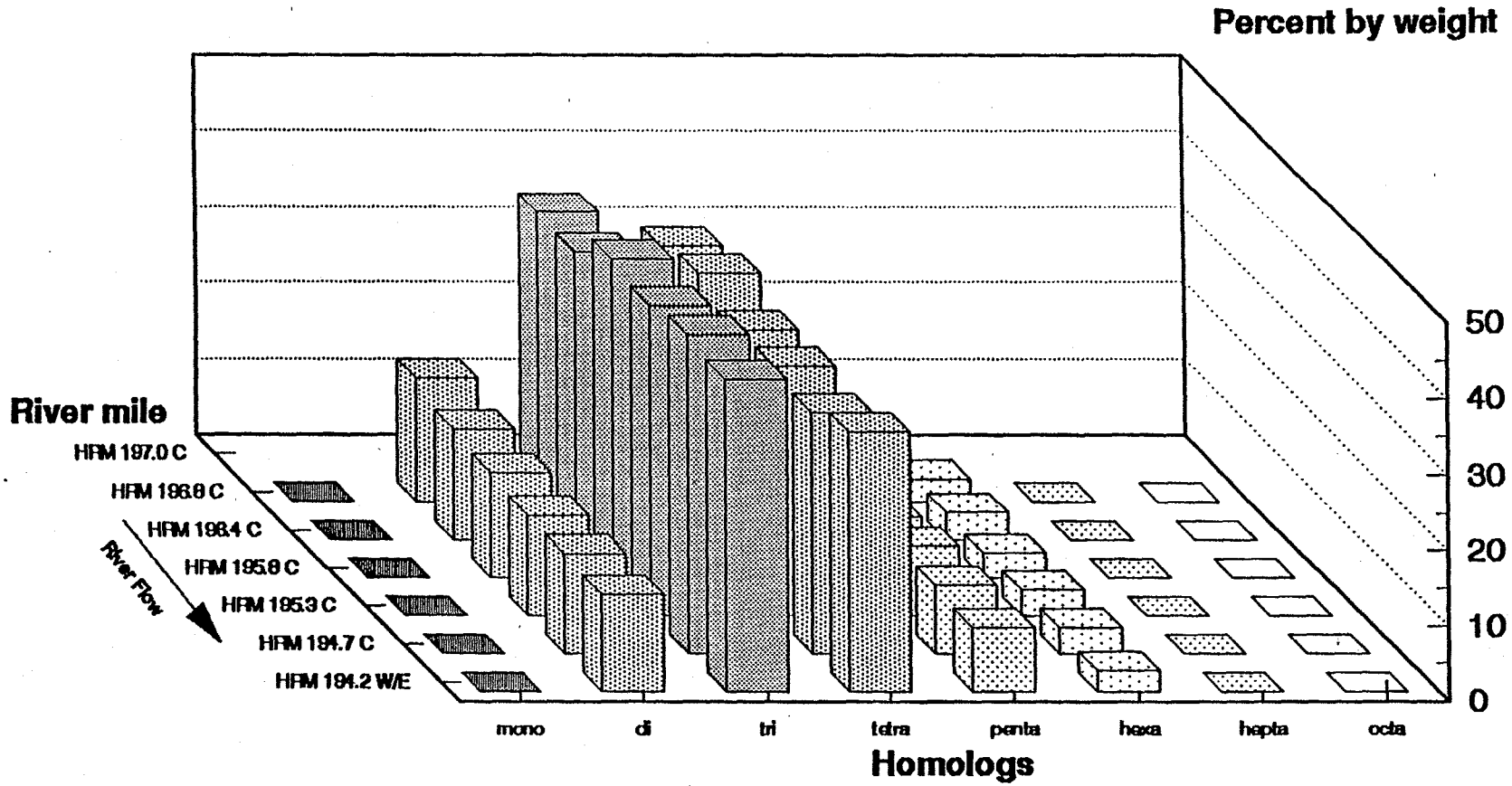
General Electric Company
Post Construction Remnant Deposit Monitoring
Float Survey Homologs - September 30, 1992



W, C, E indicate river channel location (West, Center, East)

W/E indicates composite sample

General Electric Company
Post Construction Remnant Deposit Monitoring
Float Survey Homologs - October 22, 1992



W, C, E indicate river channel location (West, Center, East)

W/E indicates composite sample

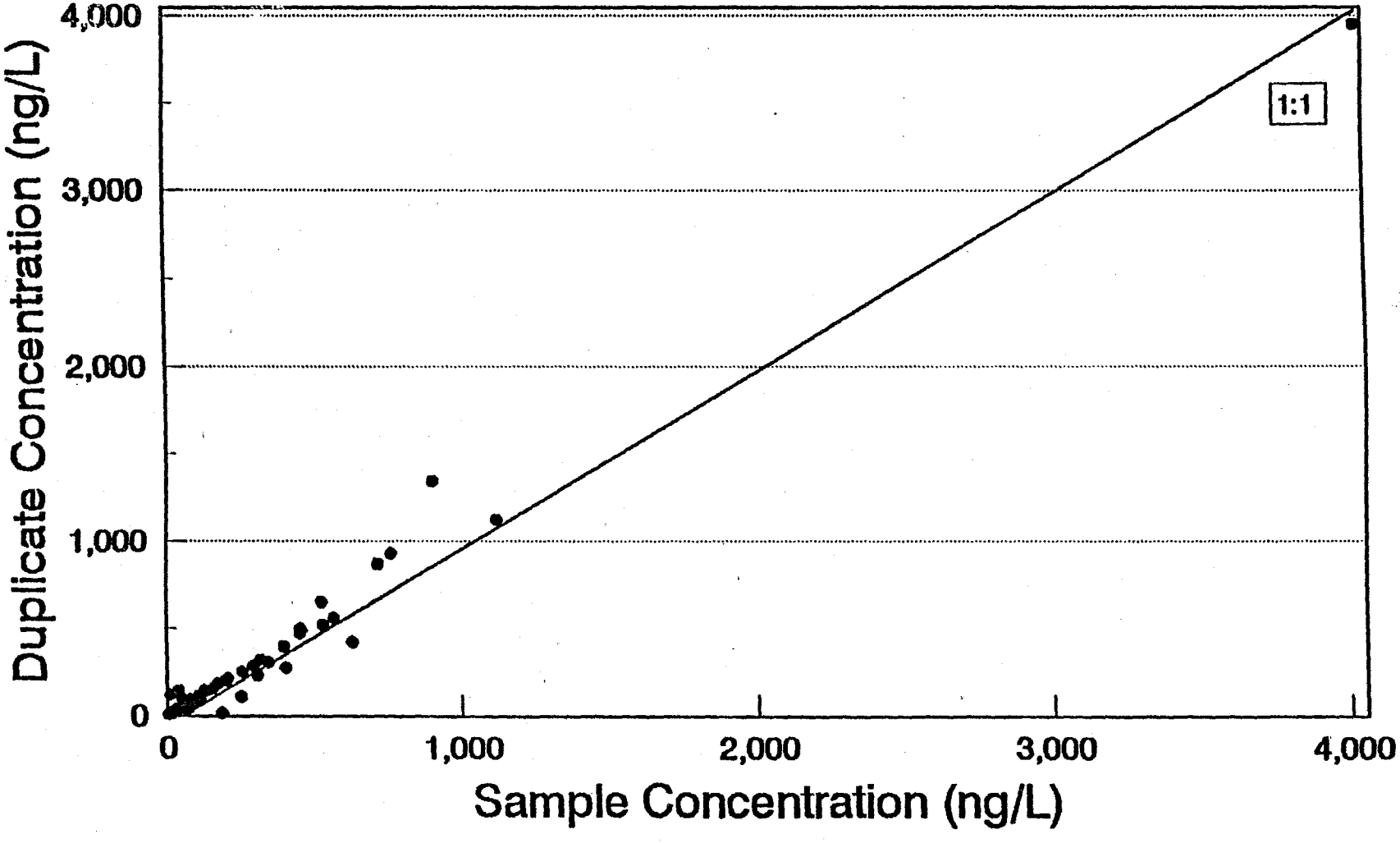
APPENDIX I

VARIABILITY OF PCB DUPLICATES

General Electric Company

Hudson River Project

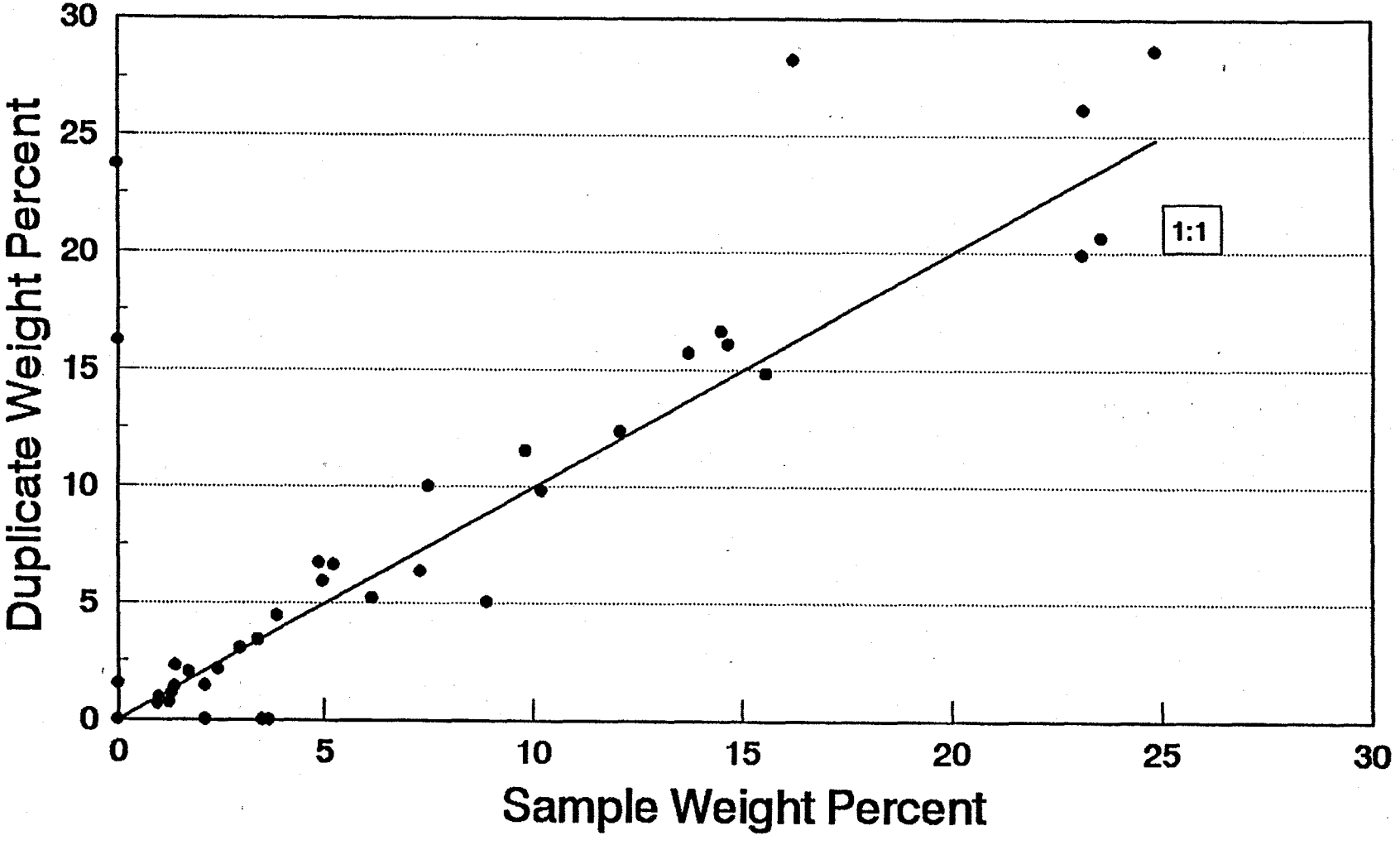
Variability of PCB Duplicate Analysis



General Electric Company

Hudson River Project

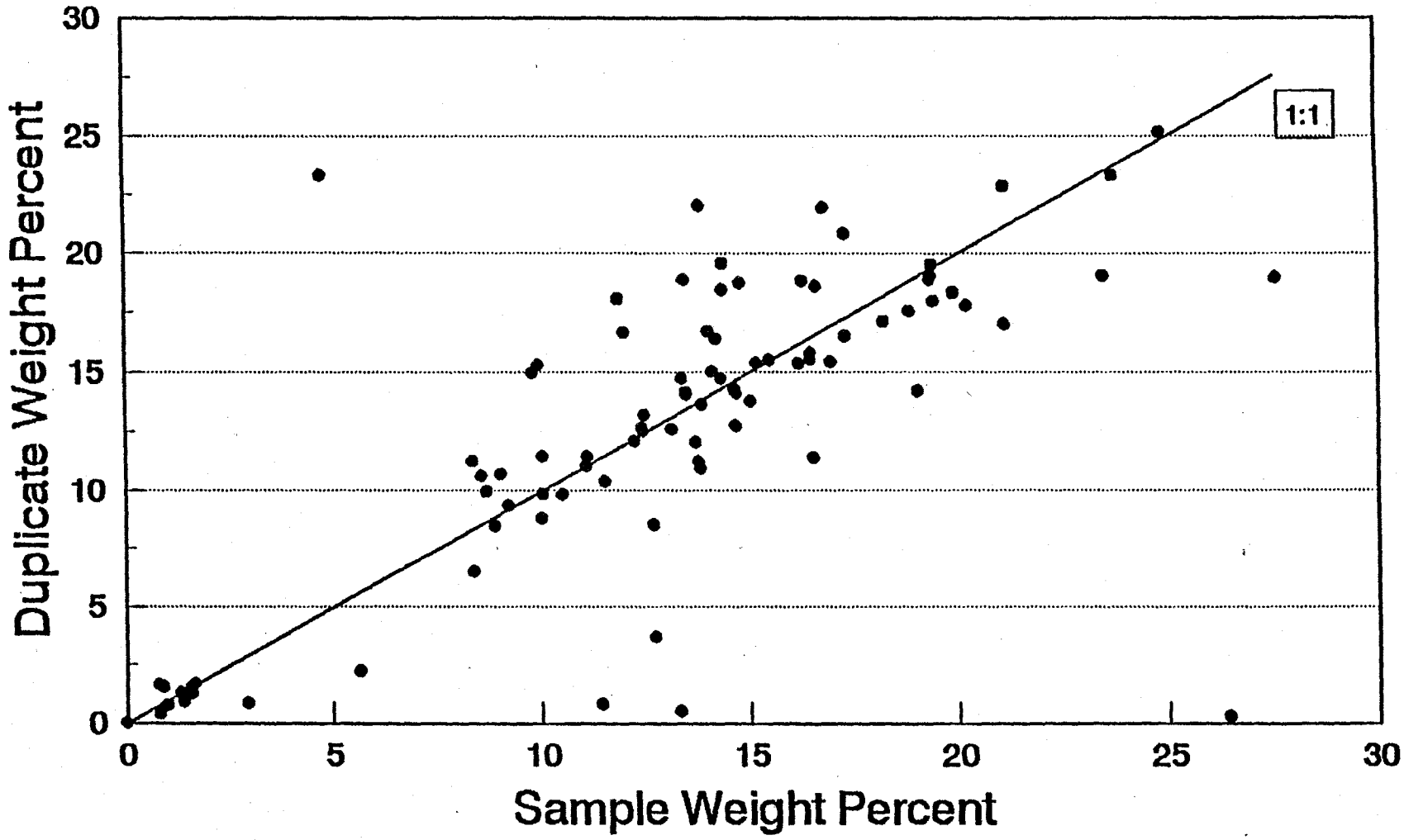
Variability of Mono-chlorinated PCB Duplicates



General Electric Company

Hudson River Project

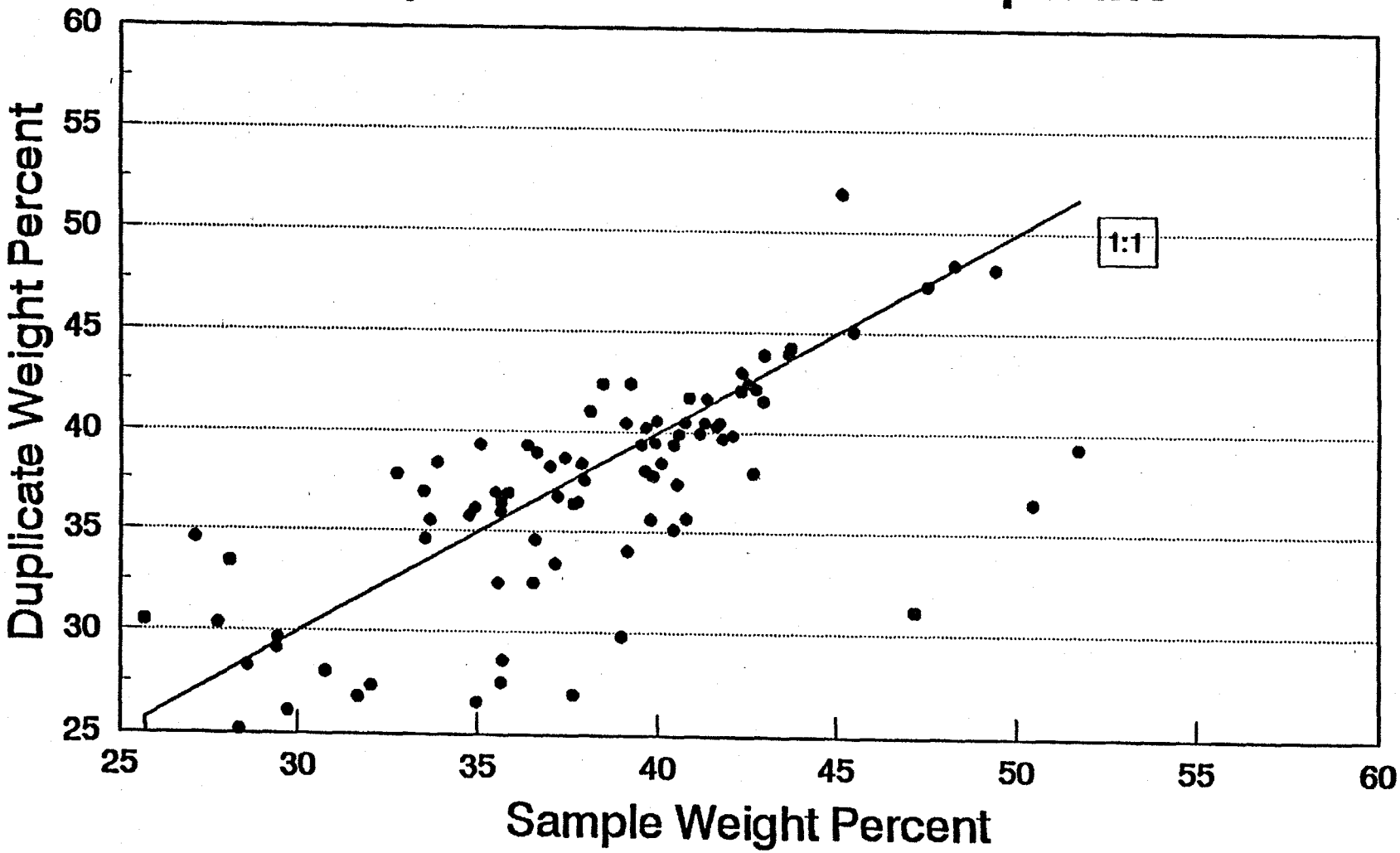
Variability of Di-chlorinated PCB Duplicates



General Electric Company

Hudson River Project

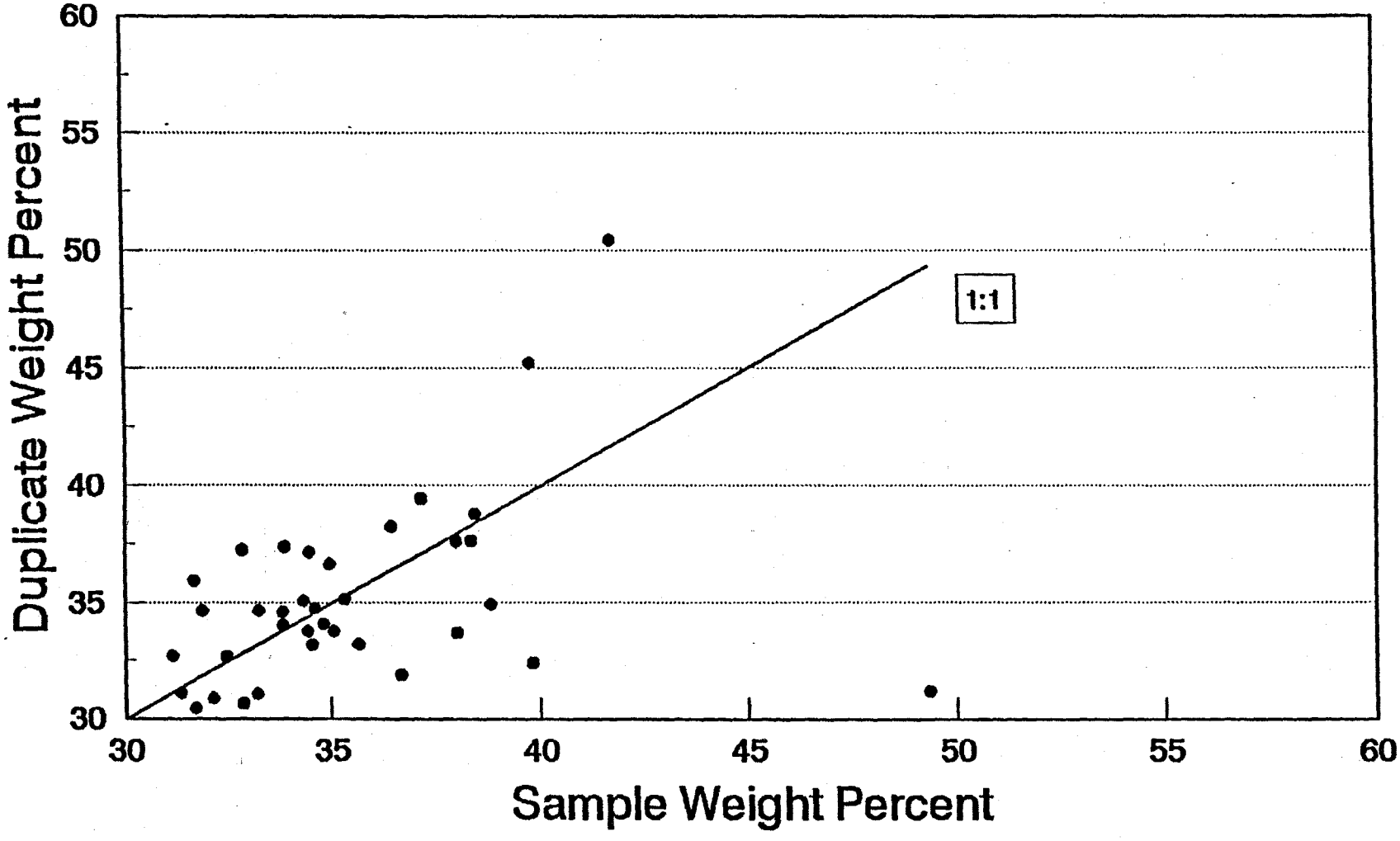
Variability of Tri-chlorinated PCB Duplicates



General Electric Company

Hudson River Project

Variability of Tetra-chlorinated PCB Duplicates

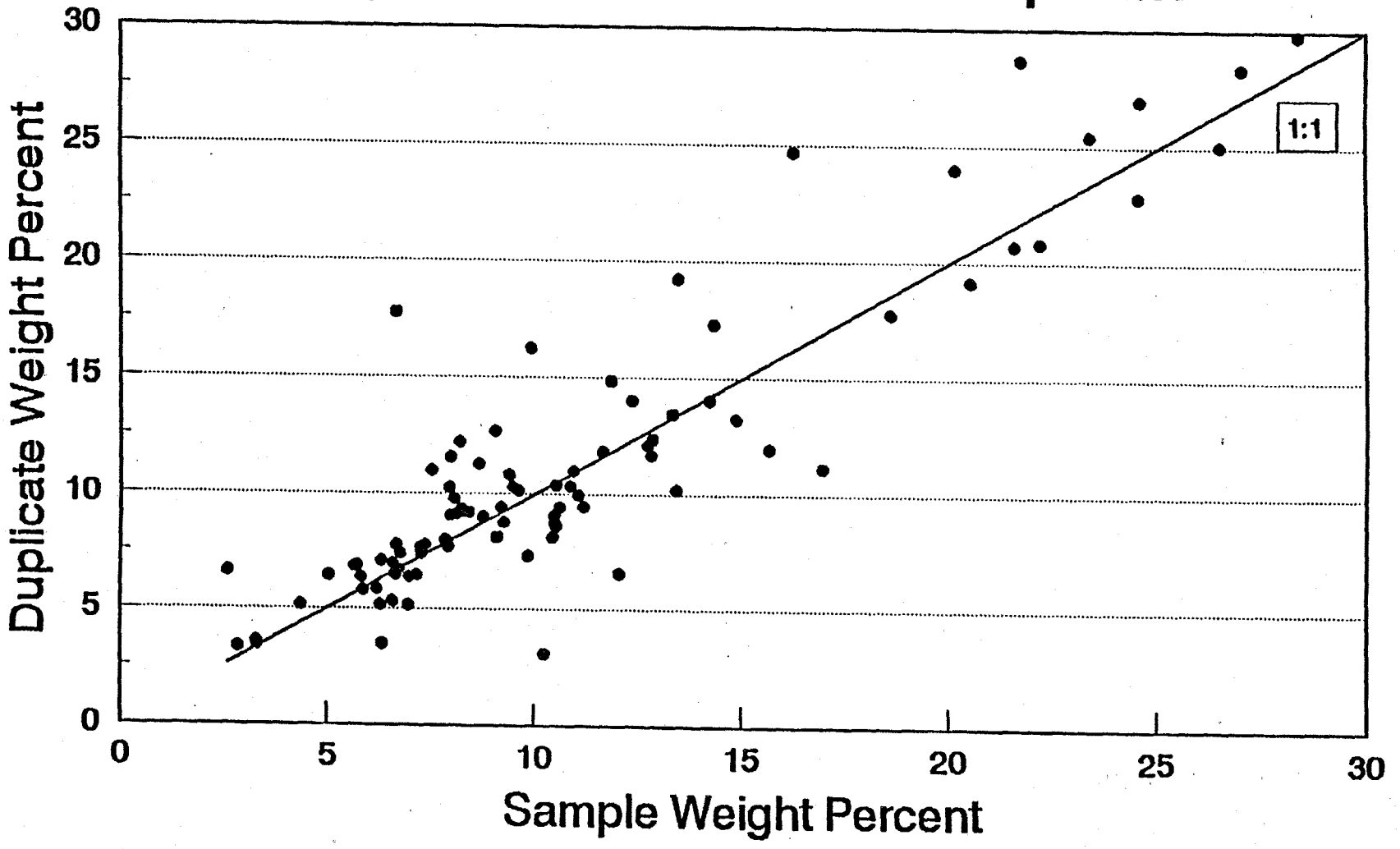


315715

General Electric Company

Hudson River Project

Variability of Penta-chlorinated PCB Duplicates

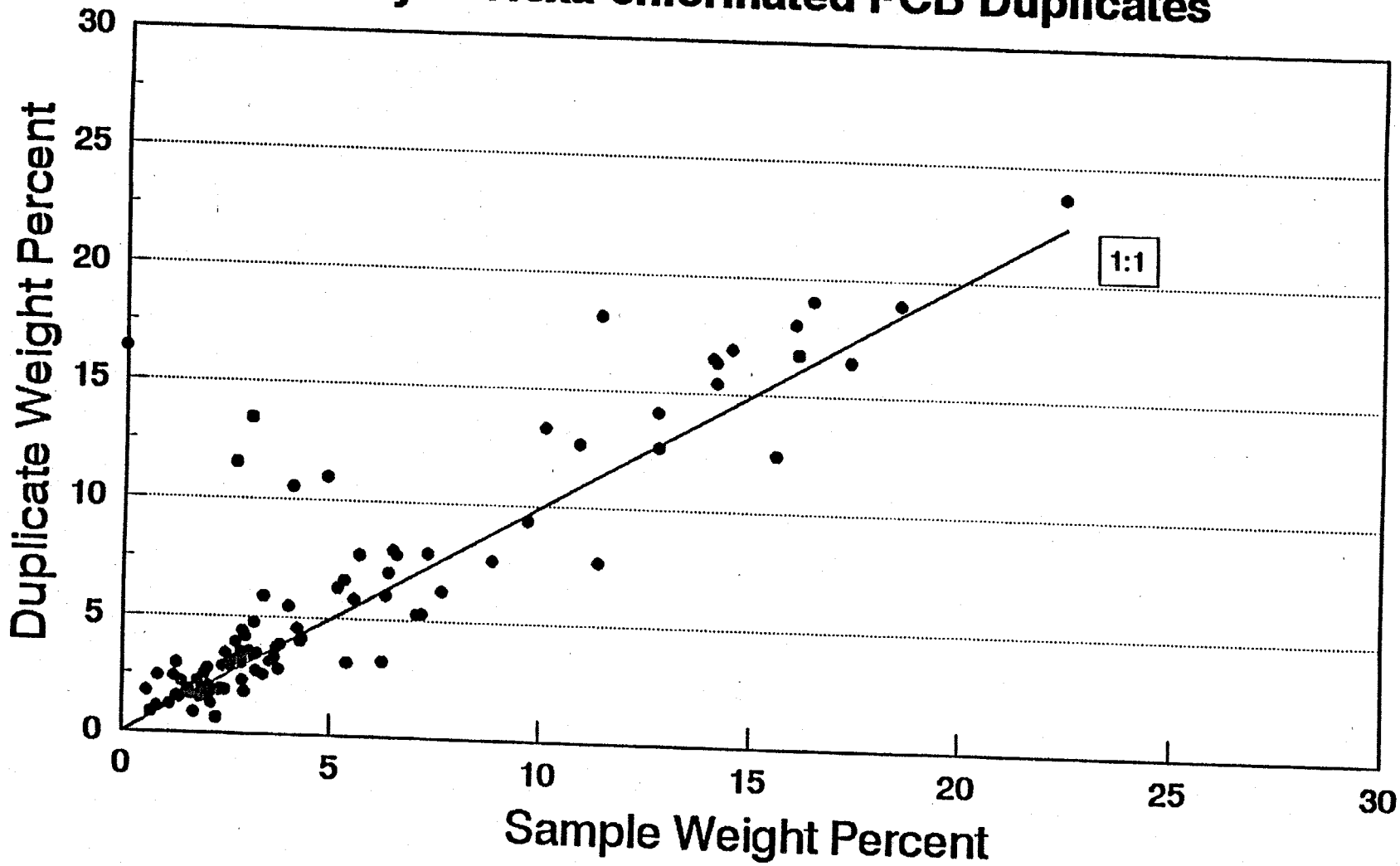


315716

General Electric Company

Hudson River Project

Variability of Hexa-chlorinated PCB Duplicates



General Electric Company

Hudson River Project

Variability of Hepta-chlorinated PCB Duplicates