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United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

October 4, 1999

Ms. Alison A. Hess
USEPA Region 2
290 Broadway - 19th Floor
New York, NY 10007-1866

Dear Ms. Hess:

The following comments pertain to the August 1999 "Baseline Ecological Risk Assessment," prepared as part of the Hudson River PCBs Reassessment Remedial Investigation/Feasibility. We understand that these comments are not submitted to you within your established public comment period, but hope that you will consider them in future remedial decisions. We are also transmitting to you some recently received data on PCBs in Hudson River fish, tree swallows, bald eagles, and eastern bluebirds.

We will focus our comments on the portion of the Ecological Risk assessment that addresses PCB-related risk to birds. We agree with your conclusions that PCB concentrations in the Hudson River are likely to be sufficient to adversely affect insectivorous birds, waterfowl, and piscivorous birds. However, we believe that these conclusions should be clarified to indicate that there is considerable variability among bird species in their response to PCBs. The avian receptors used for this assessment are useful predictors of PCB exposure of birds at similar trophic levels, but there are serious limitations to extrapolating the PCB effects assessments to other birds within that trophic level. For example, not all waterfowl species are likely to be adversely impacted by Hudson River PCBs, particularly in the less contaminated river sections. Further, some PCB-sensitive species may experience significant physiological and/or behavioral malfunctions in the more PCB-contaminated sections of the Hudson River. For example, if a species as PCB-sensitive as the Caspian tern were to nest within portions of the Thompson Island Pool, it would likely experience total reproductive failure (Secord and McCarty 1997). Although Caspian terns are not known to nest within the Thompson Island Pool, other similarly PCB-sensitive piscivorous species may be precluded from nesting there.

The U.S. Fish and Wildlife Service (Service) collected data on Hudson River tree swallows in 1994 and 1995, not 1993 and 1994, as stated on page 43. Although our 1995 tree swallow data are presented on page 96, they are not shown on Table 3-9. More waterfowl data were forwarded to you than are presented in the Data Sources on page 5, although we note that additional Service waterfowl data are mentioned in Section 3.4.3.5 on page 55. For the record, the Service provided you with data from one mallard egg composite from the Remnant 4 site, one mallard egg composite from the Saratoga National Historical Park site, and one wood duck egg composite from Griffin Island. We also provided you with data from one adult mallard sample collected near the Special Area 13 site and two separate wood duck adult samples from Griffin Island and Schuylerville.

We calculated a toxic equivalency quotient (TEQ) for the wood duck egg sample from Griffin Island. It contained an estimated 438 pg TEQ/g using the WHO avian toxicity toxic equivalency factors (TEFs) (Van den Berg et al. 1998). The calculated I-TEQ using International TEFs (Ahlborg et al. 1994) was 69 pg/g. This exceeded the threshold toxicity range of 20-50 pg/g I-TEQ at which reduced productivity was observed in wood ducks (White and Seginak 1994). This data supports your model-based conclusion that there is a likelihood of reproductive impairment among wood ducks nesting along certain stretches of the Hudson River.

We do not agree with your statement on page 14 that plants and animals utilizing the Hudson River shoreline are likely exposed to levels lower than aquatic-based exposures. In the absence of chemical data from floodplain soils, it is not possible to estimate the risk posed to species utilizing floodplain habitats. We are enclosing some soil data collected by the National Park Service at the Saratoga National Historical Park. They detected PCB concentrations as high as 8.4 ug/g at a location approximately 20 miles downstream of Fort Edward. The potential exists for higher PCB concentrations in floodplain soils closer to the PCB sources or in highly depositional areas along the river. There is also a potential for certain organisms (e.g., birds that consume earthworms) to be highly exposed and therefore at a high risk of being adversely impacted from PCBs in floodplain soils. We recommend that the U.S. Environmental Protection Agency (USEPA) give further consideration to assessing PCB-related risk within this component of the Hudson River ecosystem.

The enclosed dataset includes information on contaminants in Hudson River bald eagles, including a plasma sample (1,329 ng PCB/g) from a bald eagle nestling from the lower Hudson River near Catskill (1997) and a fat sample (85,770 ng PCB/g) from an immature bald eagle found dead in the river near Coxsackie (1997). The fish in this dataset were all collected in 1997 from either the Hudson River bald eagle nest near Catskill or the Hudson River in the vicinity of an abandoned Hudson River bald eagle nest north of Hudson. These fish, therefore, are representative of prey to be consumed by nesting bald eagles along the lower Hudson River.

We are also providing the only known Hudson River data for the eastern bluebird. Samples HUDBB1 (12,946 ng PCB/g) and HUDBB2 (78,224 ng PCB/g) were 2-nestling composites collected at the Remnant 4 site in 1995. The high PCB concentrations in these samples suggest the potential for considerable PCB exposure by a bird species that is in a different feeding guild than any of the avian receptors evaluated as part of the Ecological Risk Assessment. Eastern bluebirds feed on vegetable matter, as well as insects, and are less likely than tree swallows to eat insects that are reared in an aquatic environment.

Samples HUDBB3 and HUDBB4 were 2-nestling bluebird composites collected at the Saratoga National Historical Park site in 1995. HUDWD1 was a wood duck nestling collected at Griffin Island in 1995 that died during pipping. HUDWD2 was an unviable embryo from the same wood duck clutch.

The two tree swallow samples were adult males collected at the end of the breeding season in 1995. HUDTS1 was collected from the Lock 8 site, along the Champlain Canal. HUDTS2 was collected at the Special Area 13 site. The 190,000 ng PCB/g detected in the Special Area 13 tree swallow is further indication of this species' tolerance of extremely high concentrations of PCBs. Since the Champlain Canal contains very low concentrations of PCBs, the Lock 8 tree swallow accumulated its PCBs (82,982 ng PCB/g) elsewhere, most likely during its spring migration up the Hudson River. These data support our concern that the Hudson River may be serving as a source of PCBs for birds that nest elsewhere.

Thank you for the opportunity to comment on the Ecological Risk Assessment. If you have any questions regarding this letter or the enclosed data, please contact Anne L. Secord at (607) 753-9334.

Sincerely,

Anne d. Secord

for David A. Stilwell
Field Supervisor

Literature Cited

Ahlborg, U.G., G.C. Becking, L.S. Birnbaum, A. Brouwer, H.J.G.M. Derks, M. Feeley, G. Golor, A. Hanberg, J.C. Larsen, A.K.D. Liem, S.H. Safe, C. Schlatter, F. Waern, M. Younes, and E. Yrjanheikki. 1994. Toxic equivalency factors for dioxin-like PCBs. *Chemosphere* 28: 1049-1067.

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Van den Berg, M, L. Birnbaum, A.T.C. Bosveld, B. Brunstrom, P. Cook, M. Feely, J.P. Giesy, A. Hanberg, R. Hasegawa, S.W. Kennedy, T. Kubiak, J.C. Larsen, F.X. Rolaf van Leeuwen, A.K. Djien Liem, C. Nolt, R.E. Peterson, L. Poellinger, S. Safe, D. Schrenk, D. Tillitt, M. Tysklind, M. Younes, F. Waern, and T. Zacharewski. 1998. Toxic equivalency factors (TEFs) for PCBs, PCDDs, and PCDFs for humans and wildlife. *Environ. Health Perspect.* 106:775-792.

White, D.H. and J.T. Seginak. 1994. Dioxins and furans linked to reproductive impairment in wood ducks. *J. Wildl. Manage*. 58:100-106.

Enclosures

cc: General Electric Company, Albany, NY (J. Haggard)
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NYSDEC, Latham, NY (P. Nye)
NOAA, Silver Springs, MD (T. Brosnan)
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USEPA

USGS
science for a changing world

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Laboratory Report FY-99-31-01
by

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FWS NO: 14-48-0005-50181-97-J-088
CERC NO: 82070-1491CL62

FWS PROJECT TITLE

ORGANOCHLORINE CONTAMINANTS IN BIOTA FROM THE HUDSON RIVER, NEW YORK

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Note: This report does not include the dioxin and furan results. A complete report will be available October 1999.

Hudson River Samples Submitted in 1997

Sample Name	Field ID	Sample Type	Location	Collection Date
17138	HUDPL1	BE Nestlg Plasma	Catskill	5/1/97
17139	HUDFT1	BE Adult Fat	Coxsackie	1997
17140	HUDNST1	Am Eel/BE Nest	Catskill	5/1/97
17141	HUDNST2	Brn Bullhead/BE Nest	Catskill	5/1/97
17142	HUDRIV1	Am Eel	N of Hudson	5/28/97
17143	HUDRIV2	Am Eel	"	5/28/97
17144	HUDRIV3	Am Eel	"	5/28/97
17145	HUDRIV4	Brn Bullhead	"	5/28/97
17146	HUDRIV5	Wht Perch	"	5/28/97
17147	HUDRIV6	Wht Perch	"	5/28/97
17148	HUDRIV7	Wht Perch	"	5/28/97
17149	HUDRIV8	BB Herring/Nest	Catskill	5/1/97
17150	HUDTS1	Tree Swallow Ad Male	Lock 8	6/14/95
17151	HUDTS2	Tree Swallow Ad Male	SA13	6/18/95
17152	HUDBB1	Bluebird-2 nstlg	Remn 4	6/9/95
17153	HUDBB2	Bluebird-2 nstlg	Remn 4	5/31/95
17154	HUDBB3	Bluebird-2 nstlg	Sara NHP	5/25/95
17155	HUDBB4	Bluebird-2 nstlg	Sara NHP	6/22/95
17156	HUDWD1	Wood Duck Pip	Griffin Isld	6/1/95
17157	HUDWD2	Wood Duck Embryo	Griffin Isld	6/1/95
17158	HUDHP	Henslow Sparrow Egg	Sara NHP	1997
17159	HUDSP	Savannah Sparrow Egg	Sara NHP	1997

Project History:

The US Fish and Wildlife Service's New York Field Office is investigating chemical contamination and contaminant dynamics in biota from the Hudson River. A growing number of Bald eagles have been wintering along the Hudson River in New York in the 30 river miles between Danskammer Point and Croton Point over the last decade. Up to 40 eagles have wintered there in the last few years. Releases of young eagles in the 1980's have resulted in the establishment of two nesting pairs along the Hudson and more are expected. However, the two breeding pairs already established have been unsuccessful in producing offspring.

Bald eagle populations and factors influencing their productivity have been studied extensively at other locations but, since the breeding pairs now residing along the Hudson are the first to attempt to do so in approximately one hundred years, no such studies have been undertaken for the Hudson River birds. In the present study, a suite of organochlorine contaminants have been quantified in the serum and fat of an adult bald eagle and in a number of known eagle prey species from the area. A number of other migratory bird species have also been analyzed for the same contaminants. Organochlorine pesticides, congener-specific polychlorinated biphenyls (PCBs), polychlorinated dibenzo-dioxins (PCDDs), and -furans (PCDFs) are the targeted classes of compounds. In addition, p,p'-DDE, a breakdown product of DDT which has been demonstrated to significantly impair bald eagle productivity, has been quantified in all matrices. Together with information gained from studies on bald eagle productivity conducted in other areas, data from these analyses will be used to quantify the exposure of bald eagles living and nesting on the Hudson River to these contaminants within the food chain. The objective of the study is to estimate the effects of these contaminants on the adult birds and their productivity, and to obtain further information on sources and transport of these compounds within the Hudson River system.

Biota sampled by US F&WS were analyzed by the Organic Chemistry Section of the Columbia Environmental Research Center. The following analytes were targeted:

Total PCBs and selected PCB congeners,
Organochlorine pesticides
2,3,7,8-substituted polychlorinated dibenzo-*p*-dioxins and -dibenzofurans
Non-*ortho* PCB congeners.

A total of 22 samples were investigated:

10 whole fish,
10 migratory bird species
2 sparrow egg composites
1 bald eagle fat and 1 bald eagle plasma

Contents:

Tables:

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I. Summary of Analytical Methods for Sample Preparation

The 22 samples in this set consisted of 10 whole fish, 8 migratory bird species (adults, nestlings, embryos), 2 sparrow egg composites, one bald eagle fat and one bald eagle plasma. The CERC data-base numbers assigned to these samples were 17138-17159.

Quality Control: The following QC samples were analyzed with the samples:

4 procedural blanks
4 matrix blanks (control bluegill; chicken eggs)
4 matrix spikes (control bluegill; chicken eggs)
4 positive controls (Saginaw Carp)

Matrix QC samples (blanks and spikes) prepared from clean bluegill tissue and chicken eggs obtained from a local grocery were analyzed with each set of samples. Positive control samples were prepared from CERC's standard positive control matrix (common carp tissue from Saginaw Bay, MI). A total of four of each type of QC sample (procedural blank, matrix blank, matrix spike, and positive control) were analyzed with the samples. Additionally, one of each sample type was prepared, processed, and analyzed in duplicate or triplicate, where sample size was sufficient.

All samples, including QC samples were spiked with surrogate compounds before extraction to monitor recoveries through the cleanup procedures. Since the samples were processed through two separate analytical procedures, two different sets of internal standards were used. Where congener-specific PCBs, PCDDs, and PCDFs were targeted, the following compounds were used:

PCB 030 (2,4,6-trichlorobiphenyl)
PCB 204 (2,2',3,4,4',5,6,6'-octachlorobiphenyl)
^{13}C-labeled non-*ortho* PCB congeners (4)
^{13}C-labeled 2,3,7,8 substituted dioxin/furans (17)

In the analytical protocol targeting organochlorine pesticides, the following compounds were added:

PCB 030 (2,4,6-trichlorobiphenyl)
PCB 204 (2,2',3,4,4',5,6,6'-octachlorobiphenyl)
Dibutyl chlorandate
Tetrachloro-m-xylene

Matrix spikes also received, according to the analytical protocol to which they were subjected:

Organochlorine pesticides (23)
PCBs (mixed Aroclors 1242, 1248, 1254, 1260)
native (^{12}C) dioxin and furan congeners

Sample Preparation: Separate aliquants of each sample were processed through two analytical protocols. In each protocol, the samples were dehydrated by addition of anhydrous sodium sulfate and method recovery standards were added. Samples were extracted with methylene chloride, and a small portion of the extract (1%) was used to determine percent lipid (1). In the analytical protocol where congener-specific PCBs, PCDDs, and PCDFs were targeted, extracts were cleaned using acid- and base-treated silica gels and adsorbent chromatography on activated silica gel (2,3). All extracts were further purified by High Performance Gel Permeation Chromatography (HP GPC) (4) before fractionation on high performance Porous Graphitic Carbon (PGC) (5) into the following fractions:

PGC 1- *ortho*-chlorinated PCB congeners
- Analysis by gas chromatography (GC)/ electron-capture detection (ECD)

PGC 2- non-*ortho*-chlorinated PCBs
- Analysis by GC/ high resolution mass spectrometry (GC/HRMS)

PGC 3- polychlorinated dibenzo-p-dioxins and -furans (PCDD/PCDFs)
- Clean-up by alumina chromatography (6) before analysis by GC/HRMS

In the analytical protocol targeting organochlorine pesticides, extracts were first cleaned on gravity-driven gel permeation chromatography (7) followed by HP GPC (4). The extracts were then fractionated on a two-layered octadecyl silica/activated silica gel column into fractions containing PCBs and four of the targeted OCs (SODS-1), and a second fraction containing the remainder of the OCs (SODS-2) (8). Due to very small sample sizes, six samples (DB# 17138, 17139 and 17156-17159) were processed through a hybrid of the two protocols in which the entire sample was processed through the organochlorine pesticide method with SODS-1 undergoing further fractionation on PGC for analysis for PCBs, PCDDs, and PCDFs.

II. Congener-specific PCB Analysis and Results

The sample extracts were adjusted to a final volume of 10 mL, and 500 ng of the internal standard (octachloronaphthalene) was added. After vortex mixing, a portion of the solution was transferred to a labeled autosampler vial. Individual PCB congeners were measured in PGC1 (sample #'s 17140-17149, 17152-17155) or SODS1 (sample #'s 17138,17139,17150,17151,17156-17159) fractions by GC/ECD. Results of the PCB analysis are presented in Table 1.

Instrumentation: Analyses were performed as described in CERC SOP P.195 (9),

using Hewlett-Packard 5890 Series II GCs with cool on-column capillary injection systems and Hewlett-Packard model 7673 autosamplers. For all analyses, a 3-m section of 0.53 mm i.d. uncoated and deactivated (Restek Corp., Inc.) capillary retention gap was attached to the front of each analytical column by a "Press-Tight" (Restek Corp., Inc.) union. The analytical column was a 60-m x 0.25-mm DB-5 (0.25μm 5% phenyl-, 95% methylsilicone, J&W Scientific). The H_2-carrier gas was pressure regulated at 25 psi. The temperature program for the PCB analysis was as follows: initial temperature 60°C, immediately ramped to 150°C at 15°C/min, then ramped to 250°C at 1°C/min, and finally ramped to 320°C at 10°C/min, and held for 1 min. The temperature of the ECD was held at 330°C.

General Detection and Quantification Procedure: Capillary GC/ECD data were collected, archived in digital form, and processed using a PE-Nelson chromatography data system which included the model 970 interface and version 4.1 of Turbochrom™ chromatography software on a Pentium microcomputer. Six levels of PCB standards, a combination of Aroclors 1242, 1248, 1254, 1260 in 1:1:1:1 w/w/w/w ratio (designated A1111), were used for PCB congeners calibration, with total PCB concentrations ranging from 200 to 8000 ng/mL. An instrumental internal standard (IIS) method with octachloronaphthalene (OCN) was used to calculate the concentrations of the targeted compounds. Samples were processed and analyzed in three batches; PCB congener results are presented in Table 1, designated by their CERC database number and are cross-referenced to their field identification number. Concentrations are expressed as nanograms of analyte per gram of sample (wet weight).

Quality Control Procedures and Results: Recovery data for PCBs 030 and 204 are presented in Table 3. All concentrations are reported in nanograms per gram, except for procedural blank samples which are reported as a mass amount (ng). Quality control data for procedural and matrix blanks, spikes, replicates, and positive controls are presented in Table 2. The method detection limits (MDLs) for individual PCB congeners and for total PCBs are based on procedural blank (PB) results according to the method outlined by Keith *et al.* (10, 11). Briefly, an average and standard deviation are determined. The MDL (ng) is calculated using the following formula:

$$MDL = (PB\ Avg) + 3(PB\ SD).$$

The MDL is then expressed in units of concentration: mass of analyte per mass of sample. If sample masses are within 10% of each other, an average mass is calculated for the entire set. A set of eight smaller samples were processed separately and are noted in Table 1 with an asterisk. Therefore, there are two sets of MDLs calculated for these samples. The lowest MDL for this set of samples was 0.01 ng/g (12) for individual PCB congeners and 2.9 ng/g for total PCB

concentrations.

Triplicate analysis of biota sample 17141 (A, B, C) showed precision better than 20 % RSD for most of the PCB congeners present at concentrations 10-20 times the MDL. Nearer the limits of detection, variability increases (following measurement theory), and some PCBs in this low concentration range had higher %RSD's. Two other peaks reported as combined PCBs showed 25 and 37% RSD. Gas chromatographic analysis, peak measurement decisions, and quantification were monitored with triplicate injection of the same sample. Precision averaged 3.4% for all the sample sets.

Accuracy of the method is monitored through rigorous quality control: Analytical standards have been verified against certified standards. The extraction efficiency and method are monitored by analysis of positive control-Saginaw Bay carp. Recoveries of analytes are monitored by including the following items:

1) internal recovery standards in each sample
2) PCB-spiked control bluegill tissue and chicken egg

The spiked recovery compounds, PCBs 030 and 204, which elute in the PGC1 fraction, are presented in Table 3. PCB 030, a trichlorobiphenyl, is representative of more volatile early eluting PCBs (Cl_1 - Cl_3). PCB 204, an octachlorobiphenyl, is less volatile and representative of later eluting PCBs (Cl_4 - Cl_{10}). Recoveries averaged 77 ± 14% for PCB 030 and 83 ± 12% for PCB 204 in the biota analysis (Table 3). Recoveries were within the QC criteria (50 - 125%), with two exceptions, samples 17141-A and PB 060198 had recoveries below the 50% criteria limit, at 28% and 47%, respectively, for PCB 030; 29% for PCB 204 in the 17141-A sample and 66% in the PB sample. Recoveries of spiked total PCBs were 96% for the tissue spikes. Positive control fish samples (Saginaw Carp) compared to within 96% of the running average of all previous analyses of this matrix by this laboratory for total PCBs.

III. Organochlorine Pesticide Analysis and Results

Organochlorine pesticide fractions (SODS1 and SODS2) were adjusted to a final volume of 2, 5 or 10 mL and internal standard (octachloronaphthalene) was added at 100, 250 or 500 ng, respectively. After vortex mixing, a portion of the solution was transferred to a labeled autosampler vial. Individual organochlorine pesticides were measured in both fractions by GC/ECD. Results of the OC pesticide analysis are presented in Table 4.

Instrumentation: Analyses were performed as described in CERC SOP P.459 (13), using Hewlett-Packard 5890 Series II GCs with cool on-column capillary injection systems and Hewlett-Packard model 7673 autosamplers. For all analyses, a 3-m section of 0.53 mm i.d. uncoated and deactivated (Restek Corp., Inc.) capillary

retention gap was attached to the front of the analytical column by a "Press-Tight" (Restek Corp., Inc.) union. The analytical column for the SODS2 fraction was a 30-m x 0.25-mm DB-35ms (J&W Scientific). The H_2-carrier gas was pressure regulated at 11 psi. The temperature program for the analysis was as follows: initial temperature 90°C, immediately ramped to 165°C at 15°C/min, held 3 minutes, then ramped to 260°C at 2.5°C/min with a 5 minute hold, and finally ramped to 320°C at 10°C/min, and held for 1 min. The temperature of the ECD was held at 330°C.

General Detection and Quantification Procedure: Capillary GC/ECD data were collected, archived in digital form, and processed using a PE-Nelson chromatography data system which included the model 970 interface and version 4.1 of Turbochrom™ chromatography software on a Pentium microcomputer. Six levels of OC pesticide standards were used for calibration, with each pesticide as concentrations ranging from 1 to 80 ng/mL. An instrumental internal standard (IIS) method with octachloronaphthalene (OCN) was used to calculate the concentrations of the targeted compounds. Samples were analyzed and processed in three batches; Organochlorine pesticide results are presented in Table 4, designated by their CERC database number and are cross-referenced to their field identification number. Concentrations are expressed as nanograms of analyte per gram of sample (wet weight).

Quality Control Procedures and Results: Quality control data for procedural and matrix blanks, spikes, replicates, and positive controls are presented in Table 5. All concentrations are reported in nanograms per gram, except for procedural blank samples which are reported as a mass amount (ng). The method detection limits (MDLs) for individual compounds are calculated by the method already described in the previous section. The lowest MDL for this set of samples was 0.01 ng/g (12) for OC pesticides and the highest was 0.87 ng/g.

Triplicate analysis of biota sample 17141 (A, B, C) showed an average precision of 36 % RSD for the OC pesticides analyzed. Precision of these OC pesticides are affected by poor fractionation of the pesticides by silica gel of sample 17141-A. Gas chromatographic analysis, peak measurement decisions, and quantification were monitored with triplicate injection of the same sample: precision averaged 4% for this OC pesticide sample set.

As with congener-specific PCB analysis, accuracy of the method is monitored by analysis of positive control-Saginaw Bay carp. Recoveries of analytes are monitored by the use of internal recovery standards in each sample and by spiked control chicken egg and bluegill tissue.

The spiked recovery compounds, PCBs 030 and 204 both elute in in SODS-1 and are PCBs. Therefore, the OC pesticide results were not corrected for the recovery of these compounds. Recoveries of spiked OC pesticides in bluegill (MS 060198) and

chicken egg (MS 070698) ranged from 8 - 139% and 40 - 108%, respectively. Positive control fish samples (Saginaw Carp) were compared to the running average of previous analyses of this matrix by this laboratory for OC pesticides. The resulting recoveries were 56% to 150% of the previous analyses. A few of the higher recovered OC pesticides have known PCB interferences using this method of analysis.

IV. Non-*ortho*-PCB Congener Analysis and Results

The non-*ortho*-PCB fractions (PGC2) were transferred to conical autosampler vials, evaporated to less than 50 µL with nitrogen, and then spiked with 5 ng of internal standard (50 µL of 100 pg/µL ^{13}C-labeled 2,2',4,5,5'-PeCB (PCB #101) in nonane). The final volume was adjusted to about 50 µL with nitrogen blow-down. Non-*ortho*-PCBs were determined by gas chromatography/high resolution mass spectrometry (GC/HRMS), monitoring two sequential mass windows of selected ions during the chromatographic separation (14, 15).

Instrumentation: GC/HRMS analysis was performed with a HP 5890A capillary gas chromatograph interfaced to a VG 70-250S high resolution mass spectrometer. An HP 7673 autosampler was used to introduce 2 µL of the extract from a conical vial onto a 5 m x 320 µm deactivated fused silica retention gap via heated (285°C) direct on-column injection with a Restek spiral Uniliner. A 50 m x 200 µm x 0.11 µm Ultra-1 capillary column was used to resolve non-*ortho*-PCBs from most interferences. The GC oven was held at 120°C for 1 min, programmed to 240°C at 2.2°C/min, then ramped to 310°C at 5°C/min, and a final hold of 5 min. Helium carrier gas was maintained at 45 psig with an initial linear velocity of 27 cm/s. The analytical column was put into the MS interface, heated at 310°C. All column-to-column connections were made with fused silica press-tight connectors.

General Detection Procedure: The VG GC/HRMS system was tuned to 10,000 R.P. and calibrated using perfluorodecalin, and mass windows were established for two groups of non-*ortho*-PCBs. Group 1 from 23-47:00 min included ions for Cl_4-biphenyls #77 and 81 and Cl_5-biphenyl #126; Group 2 from 47:05-64 min included ions for Cl_6-biphenyl #169. Within each mass window, two most abundant ions were measured for positive identification and quantitation of each analyte. The ion responses were quantified and averaged, unless interferences occurred. Within each mass window, additional ions monitored the responses of higher chlorinated, potential interfering PCB congeners, Cl_{4-8} naphthalenes (PCNs), Cl_{3-5} terphenyls (PCTs), Br_5- and Cl_6-diphenyl ethers (residual carryover from PGC1), and Cl_4-PCDF (to ensure no breakthrough of PCDFs).

Quantitation of Analytes: With isotope dilution MS quantitation, the amount of each analyte detected is inherently corrected to account for losses through the whole analysis (isolation of analytes and instrumental analysis) because ^{13}C-isotopically

labeled internal standards added at the beginning are recovered or lost in the same percentage as the native target analytes. A calibration curve describing the response of each native congener to that of a labeled procedural internal standard congener was used directly in the calculations and its range of values were determined in the calibration procedure. Each calibration curve was specifically matched to the range of analyte responses in the sample set. Concentrations of the native PCB congeners in standards ranged from 0.25 to 2,500 pg/μL.

Chromatographic and Mass Spectral Resolution: PGC separates non-*ortho*-PCBs from other PCB congeners with nearly 99.9% efficiency. However, even this 0.1% carryover of major PCB congeners can interfere with gas chromatographic/mass spectral analysis: fragment ions are not fully resolved by high resolution MS and thus overwhelm the response of the lower level non-*o*-PCBs. Therefore, a 50-m Ultra 1 column is used (instead of the more commonly used DB-5 column) to chromatographically resolve most non-*o*-PCBs from major PCBs: non-*o*-Cl_4-PCB 81 elutes about 9 sec earlier than Cl_5-PCB 87, non-*o*-Cl_4-PCB 77 elutes about 10 sec later than Cl_6-PCB 136 and 10 sec earlier than Cl_5-PCB congener 110, and non-*o*-Cl_6-PCB 169 elutes when no other PCBs elute. For continuing QC checks on chromatography, molecular ion responses of these major PCB congeners are measured to ensure that their fragment ion responses do not contribute an interference ≥10% to the responses of the respective non-*ortho*-PCB. Column performance is verified by analyzing standards of individual congeners, labeled congeners, and congeners from Aroclor spiked mixtures.

Unfortunately, non-*o*-Cl_5-PCB 126 is only minimally resolved from Cl_6-PCB 129. PCB 129's molecular ion response is monitored to assure that its fragment ion response (3.5% abundance) did not contribute an interference ≥10% to the response of PCB 126. PCB 129's molecular ion response must not exceed three times that of PCB 126.

Adequate mass resolution is verified while monitoring ions for Cl_{4-8} PCNs throughout the sample set. The Cl_{5-7} PCNs ions monitored differ by about 0.1 Da from the ^{13}C-Cl_{4-6} PCB procedural internal standards, assuring a continual check on mass resolution. For each mass window, lock-mass and lock-mass-check ions were used to maintain and verify the accuracy of mass measurement.

Criteria for Confirmation: For the positive identification and quantitation of each congener, the following criteria were established and met in this study:

(1) Peak areas for the selected ion responses must be greater than three times background noise.

(2) Native ion peaks must occur at retention times from -1 to +3 sec that for the corresponding ^{13}C-labeled ion peaks, that elute about 1 sec earlier.

(3) The ion ratio for the two principal ion responses must be within the acceptable range (generally ±15%). These ion ratios were determined experimentally for the system during calibrations, compared with the theoretical values, and were tracked. For ion responses very near the noise levels, or analytes with interferences, the final confirmation is left to the judgment of the analyst.

Method efficiency by calculating percent recovery of ^{13}C-surrogates: To account for variations in GC/HRMS analysis, a known internal standard amount was spiked into the final extract and used to calculate the amounts of the surrogates recovered in the final extract. The efficiency of the extraction and cleanup procedure was measured by comparing the quantity of the surrogates detected in the *final* isolated extract (at GC/HRMS analysis) with the quantity spiked into the sample.

Quality Control Results: Total mass (pg) of native non-*o*-PCBs in the procedural blanks are normalized to sample size (in this case 15 g in Table 6) In the procedural blank of 6/8/98, values are at or below the lowest concentrations in the samples. Non-*o*-PCB concentrations are also low in the bluegill (matrix) blank, but are slightly higher in the chicken egg (matrix) blank (Table 6), especially for PCBs 81 and 77.

Another procedural blank sample served as an effective check on sample carryover from a previous highly contaminated sample during sequential cleanup of various sample extracts. From sample 17153, about 1 to 2% of the non-*o*-PCBs in that sample carried into the carryover check sample. In response to the carryover measured, further improvements have since been incorporated into the method that will reduce carryover including an additional automated wash of each HPLC injector and an additional blank to be run on HPLC between each sample extract. Also, several sample concentrations in three samples (Table 6) were reduced by 1% of the previous sample extract run on either HP-GPC and HP-PGC.

In the Aroclor-spiked bluegill and chicken egg samples, the most abundant PCB 77 is within 20% of the historic mean determined for our mixed Aroclor spiking standard. Less abundant PCBs 81 and 126 in the Aroclor-spiked samples are also within 20% of the respective mean. PCB 169 is too low for meaningful comparisons.

Average non-*ortho* PCB concentrations (Table 6) in the positive control Saginaw Bay carp (N=2) sample #6806 are also all within 20% of their respective historic mean based on 52 previous QC samples.

Percent recoveries of the ^{13}C-labeled surrogates (Table 7) range from 8 to127%, but only three samples (17141-A, 17156, and 17157) have low recoveries outside of the QC range (25-125%). In replicate A of sample 17141, significant sample extract loss must have occurred at or before HP-PGC, because other PCB congeners were also affected according to 20% recoveries of surrogates for Congener PCB analyses

(see above). For 17156 and 17157, selective loss of the ^{13}C-non-*o*-Cl_4-PCBs, especially congener 81, indicates that HP-PGC chromatography likely shifted these surrogates into the PGC #1 fraction because of an overload of total PCBs. With isotope dilution quantitation, however, the corresponding native PCB 81 and 77 concentrations are still accurate because their values are self-corrected by the technique.

Ion ratios of the primary ions for all detected analytes in both samples and calibration standards generally varied within the QC range (±15%) of theoretical, except where noted by LQ (< method quantitation limit due to inaccurate ion ratio). Thus most concentrations associated with LQ are less precise and more approximate values just above the detection limit.

V. 2,3,7,8-Cl Substituted Dioxin and Furan Analysis

PCDD/PCDF fractions from HPLC-PGC (PGC 3) were eluted through basic alumina according to CERC SOP P.193 (7) for removal of potential co-contaminants such as chlorinated diphenyl ethers and residual PCNs and PCBs. A total of 1 ng of the internal standard, ^{13}C-labeled 1,2,3,4-PCDD, was added to each semiconical autosampler vial prior to transferring the PCDDs/PCDFs. The final extract was concentrated to a volume of ~25 µL under a stream of nitrogen. PCDFs and PCDDs were determined by GC/HRMS by monitoring five sequential mass windows of selected ions during the chromatographic separation according to SOP P.482 (16).

Instrumentation: GC/HRMS analysis was performed using a HP 5890A capillary gas chromatograph interfaced to a VG 70-250S high resolution mass spectrometer. An HP 7673 autosampler was used to introduce 2 of 25 µL of the extract from a conical vial through a spiral uniliner onto a 5 m x 320 µm deactivated fused silica retention gap via a heated (285°C) direct inlet. The analytes of interest were separated on a 50 m x 200 µm x 0.11 µm Ultra-2 (Hewlett Packard) capillary column with an initial hold of 1 min at 120°C followed by a ramp to 200°C at 20°C/min, another ramp to 300°C at 2.3°C/min, and a final hold of 5 min. The He carrier gas was maintained at 44 psig with an initial linear velocity of 25 cm/s. All column-to-column connections were made using fused silica press-tight connectors.

General Detection Procedure: The VG GC/HRMS system was tuned to 10,000 R.P. and calibrated using perfluorotetradecahydrophenanthrene, and mass windows were established for five ion groups to measure Cl_{4-8} PCDFs and PCDDs. These windows were monitored sequentially during the temperature program.

Within each mass window, two most abundant ions were measured for positive identification and quantitation of each analyte. The ion responses were quantified and averaged, unless interferences occurred. Within each mass window, additional ions monitored any responses from potentially interfering Cl_{5-9}-PCDEs and Cl_{5-7}-

PCTs, and dioxin-like Cl_{6-7}-PCNs, Cl_{3-8} dibenzothiophenes (PCDTs), and Cl_{3-8} phenanthrene/anthracenes.

Quantitation of Analytes using the Method of Isotope Dilution: As discussed in the previous section, a calibration curve describing the response of each native congener to that of a labeled procedural internal standard congener was used directly in the calculations and its range of values were determined in the calibration procedure. Each calibration curve was specifically matched to the range of analyte responses in the sample set.

Quality Assurance Procedures:

Chromatographic and Mass Spectral Resolution: Window switching times were established using a window-defining PCDF/PCDD standard mixture and the data acquisition windows set. Chromatographic columns were selected and temperature programmed on the basis that they must resolve 2,3,7,8-TCDD from 1,2,3,7/1,2,3,8-TCDD (and from 1,2,3,4-TCDD) by a resolution factor of at least 0.5. Column performance was verified by analyzing standards of individual components, and observing the chromatographic resolution of the TCDDs, HxCDDs, and HxCDFs. Similarly, relative retention times for all other congeners of interest were evaluated with respect to labeled analogs. It should be noted that isomer-specific confirmation of all analytes cannot be attained on a DB-5 or Ultra-2 column; the greatest concern is co-elution of one or more TCDFs with 2,3,7,8-TCDF, and one or more PeCDFs with 2,3,4,7,8-PeCDF. A lesser concern is the potential co-elution of 1,2,3,6,8,9-HxCDD with 2,3,4,6,7,8-HxCDD.

Adequate mass resolution was verified while monitoring ions for Cl_{6-7} PCNs vs. ion responses of ^{13}C-TCDDs and of native TCDD vs. ^{13}C-TCDF throughout the sample set. The latter two ions, both at nominal m/z 320, differ by 0.04 Da, requiring a Resolving Power of at least 8000 for complete resolution. Monitoring these ion ratios thereby assures a continual check on mass resolution. For each mass window, lock-mass and lock-mass-check ions were used to maintain and verify the accuracy of mass measurement.

Criteria for Confirmation: For the positive identification and quantitation of a particular congener, the following additional criteria had to be met:

(1) The peak areas for the selected ion responses must be greater than three times the background noise (S/N > 3);

(2a) For congeners with isotopically-labeled analogs, the ion peaks for the native must occur at retention times from -1 to +3 sec that for the corresponding ^{13}C-labeled ion peaks, which elute about 1 sec earlier than the native ion peaks;

(2b) For OCDF (without an isotopically-labeled analog), ion responses in sample analyses must occur at RRTs from -0.2 to 0.5% of ^{13}C-labeled OCDD, analogous to the window above;

(3) For the two principal ion responses, the ion ratio must be within the acceptable range (generally ±15%). These ion ratios were determined experimentally for the system during calibrations, compared with the theoretical values, and were tracked for quality assurance.

For ion responses very near the noise levels, or analytes with interferences, the final confirmation is left to the judgment of the analyst.

Calculation of method efficiency (recovery of ^{13}C-surrogates): To account for variations in GC/MS analysis, a known amount of internal standard was spiked into the final extract and used to calculate the amounts of the surrogate recovered in the final extract before any dilution was made. The efficiency of the extraction and cleanup procedures was measured by comparing the quantity of the surrogates detected in the final isolated extract (at GC/HRMS analysis) with the quantity spiked into the sample at the beginning of the extraction step.

Quality Control Results: *Dioxin and furan results will be available in late October, 1999. Our GC/MS system is being upgraded August - September.*

VI. Summary

The fish, birds, eggs, bald eagle fat and plasma were analyzed for organochlorine pesticides, PCB congeners, non-*ortho* PCBs, and polychlorinated dioxins/furans (data not included in this report). Quality assurance procedures and results for the different classes of analyses are described in detail in their various sections. In general, QC performance fell well within prescribed limits; exceptions are noted and discussed in previous sections of this report.

Total PCB concentrations in the fish samples ranged from 487 ng/g to 5174 ng/g. Total PCB concentrations in bird samples ranged from 97 ng/g in the Savannah sparrow egg and the HUDDBB4 bluebird nestling to 190 μg/g in one adult tree swallow sample. The adult tree swallows (HUDTS-1 and 2), one bluebird sample (HUDBB2), and the eagle fat sample had the highest concentrations of total PCBs, 83, 190, 78, and 86 μg/g, respectively.

Mono-*ortho* PCB congener concentrations in these samples followed the same trends as for the total PCBs. Concentrations of the most prominent mono-*ortho* PCB congeners (PCB congeners 118 and 105) were 10 to 1500 times higher in the four samples discussed above than in the lowest two samples (HUDSP and HUDBB4).

Mono-*ortho* PCBs in these biota samples ranged in concentration from 10 ng/g to 16600 ng/g.

Organochlorine pesticides were found in these biota samples from the Hudson River, however, many of the pesticides analyzed had low concentrations or were below method detection limits for those compounds. The most prevalent OC pesticide was p,p-DDE in all of the samples. Concentrations ranged from 32 ng/g to 3564 ng/g. Other DDTs were much lower in concentration, but p,p-DDD had higher concentrations in fish and the eagle samples (5 - 414 ng/g), than in the other bird samples (all <1 ng/g). Hexachlorobenzene, alpha-BHC, *trans*-nonachlor, oxychlordane, dieldrin, heptachlor expoxide were also found in all samples. The eagle fat sample had the highest concentrations of all the pesticides found. Methoxychlor was not found in any of the samples.

Concentrations of non-o-PCBs range almost 6 orders of magnitude from low pg/g to nearly 1 µg/g (1 million pg/g). Concentrations directly correlate to the samples' rank in the food chain. Adult tree swallows, two bluebird samples, and the bald eagle fat sample had the highest concentrations, up to 200 times higher than the fish and eel samples.

In most samples, the most abundant non-*o*-PCB 77 is highest. However, in two out of four eel samples, PCB 126 is significantly higher than any other non-*o*-PCBs, and PCBs 77 and 81 are relatively high in only one of the four eels. It is possible that American eel apparently metabolizes the Cl_4-PCBs 77 and 81.

Samples were screened for polychlorinated naphthalenes (PCNs), polybrominated diphenyl ethers (PBDEs, Br_5 primarily) and will be for dibenzothiophenes (PCDTs). PCNs, primarily as Cl_4- and Cl_5-PCNs, range from about 5 pg/g to near 1000 pg/g. Estimated levels of PCNs in the samples are not always directly proportional to the PCB concentrations. PCNs are very low in the eel samples and low in both adult tree swallow samples and wood duck embryo samples, but PCNs are much higher in the bullhead and perch samples and highest in the HUD BB 2 bluebird nestling. The highest PCN levels in these samples are about the same levels as in our positive control carp sample from Saginaw Bay, MI. PCNs are dioxin-like compounds and contribute to the overall dioxin toxic equivalents, however, complete studies of their toxic equivalence have not been performed.

PBDEs, which are flame retardant compounds, are typically present in the PGC1 fraction with most PCBs, but small residual amounts in the PGC2 fraction detectable by GC/HRMS can pinpoint samples with higher PBDEs. The brown bullhead HUD NST 2 samples had the highest PBDEs, perhaps as much as 100 ng/g based on about 1 ng/g in the PGC2 fraction. The adult tree swallow samples were slightly lower, followed by the other fish and eel samples and then the rest of the samples including the bald eagle fat.

Also based on residual amounts in the PGC2 fraction, polychlorinated terphenyls and Cl_6-diphenyl ethers were very low in all samples.

- Samples will be analyzed in October for the seventeen 2,3,7,8- substituted PCDFs and PCDDs.

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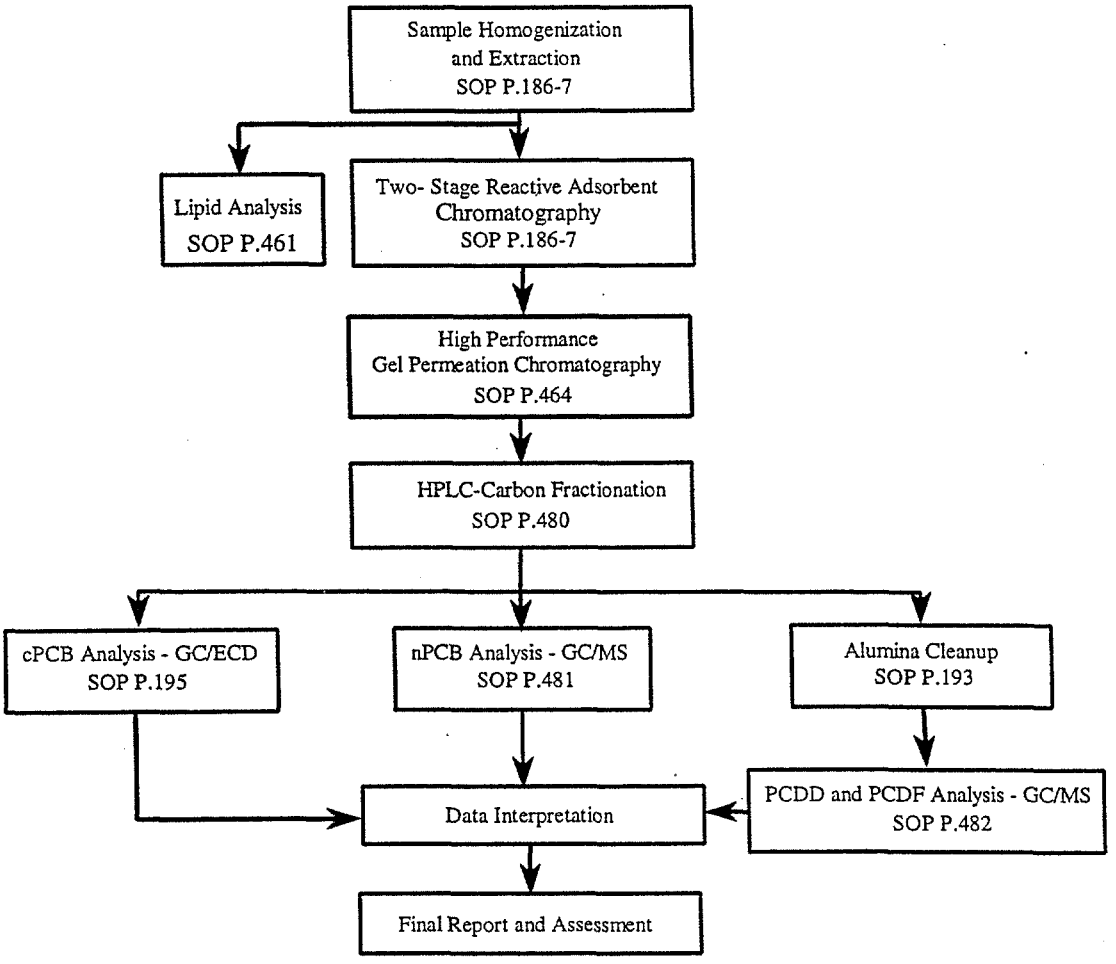

Figure 1: Analytical flow scheme for determination of PCB congeners, non-*ortho* PCBs, 2378-PCDDs and 2378-PCDFs in sediments and biota from the Hudson River Ecosystem.

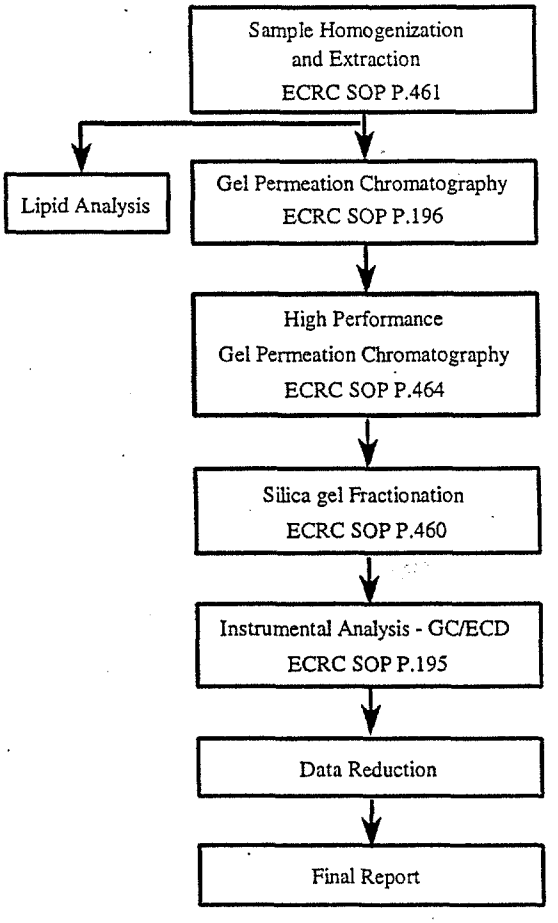

Figure 2: Analytical flow scheme for determination of organochlorine pesticides and total PCBs in biota from the Hudson River ecosystem.

Table 1. Hudson River Samples--Concentrations of PCB Congeners (ng/g)

Sample Name	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	004,010	007,009	006	005,008	019	018	017,015	024,027	016,032	029	026
17138[a]	HUDPL1	eagle plasma	1.47	0.74	NQ	<0.11	0.34	0.94	2.81	5.93	6.41	1.85	7.53	0.26	15.0
17139[a]	HUDFT1	eagle fat	0.54	74.5	NQ	6.31	19.9	53.9	154	875	691	338	913	21	872
17140	HUDNST1	American Eel	14.72	13.3	17.2	<1.80	0.36	<2.42	12.8	5.53	2.43	1.76	12.5	<0.01	40.3
17141-A	HUDNST2	Brown Bullhead	14.73	5.09	20.6	<1.80	0.72	2.83	12.0	11.8	8.25	2.97	14.3	0.10	40.5
17141-B	HUDNST2	Brown Bullhead	14.73	5.02	23.6	<1.80	0.69	2.75	12.1	12.0	8.88	1.83	15.3	0.12	39.8
17141-C	HUDNST2	Brown Bullhead	14.82	5.09	10.7	<1.80	0.52	<2.42	9.92	11.5	8.50	1.97	15.5	0.11	43.4
17142[b]	HUDRIV1	American Eel	14.68	8.28	8.00	<1.80	0.21	<2.42	10.1	14.9	5.84	1.64	56.2	0.01	56.7
17143	HUDRIV2	American Eel	14.92	4.04	3.07	<1.80	<0.17	<2.42	1.37	0.94	0.60	0.47	1.48	<0.01	4.38
17144	HUDRIV3	American Eel	15.01	1.99	2.21	<1.80	<0.17	<2.42	1.23	0.84	0.62	0.38	1.36	<0.01	3.64
17145	HUDRIV4	Brown Bullhead	14.73	2.13	3.53	<1.80	0.48	<2.42	1.77	13.9	4.79	2.23	11.7	0.11	18.1
17146	HUDRIV5	WhitePerch	14.78	1.56	25.1	<1.80	1.02	<2.42	11.3	23.5	22.8	5.04	25.4	0.18	17.9
17147	HUDRIV6	WhitePerch	14.73	3.49	60.3	<1.80	1.92	4.23	23.7	41.9	44.9	10.27	49.8	0.27	32.5
17148	HUDRIV7	WhitePerch	14.69	2.2	54.5	<1.80	1.63	3.50	23.3	36.7	40.8	10.71	48.4	0.23	32.6
17149[b]	HUDRIV8	Blueback Herring	14.90	10.4	20.1	<1.80	2.27	2.72	4.58	4.23	3.00	1.23	3.33	0.08	1.40
17150[a]	HUDTS-1	Tree Swallow	3.16	4.35	0.69	<1.80	0.41	<2.42	0.76	1.89	7.91	1.42	3.51	0.55	4.33
17151[a]	HUDTS-2	Tree Swallow	4.98	8.27	16.6	<1.80	0.55	3.59	25.4	15.3	47.8	13.49	35.2	1.53	32.5
17152[b]	HUDBB1	Bluebird nestling	14.87	3.72	<0.01	<1.80	0.25	<2.42	0.02	7.01	6.46	0.21	3.80	1.23	67.5
17153	HUDBB2	Bluebird nestling	14.98	4.68	0.32	<1.80	0.44	2.97	2.14	53.4	25.0	1.75	28.6	5.43	788
17154	HUDBB3	Bluebird nestling	15.00	3.07	<0.01	<1.80	<0.17	<2.42	<0.01	<0.14	<0.25	0.07	0.23	<0.01	1.28
17155	HUDBB4	Bluebird nestling	15.23	3.73	<0.01	<1.80	<0.17	<2.42	<0.01	<0.14	<0.25	<0.03	<0.08	<0.01	0.14
17156[a]	HUDWD1	wood duck embryo	3.63	11.9	NQ	<0.11	<0.01	2.37	<0.03	0.15	108	0.38	0.47	0.42	46.9
17157[a]	HUDWD2	wood duck embryo	8.68	15.8	NQ	<0.11	0.14	1.94	<0.03	<0.03	6.62	<0.01	0.12	0.52	0.49
17158[a,b]	HUDHP	Henslow sparrow egg	0.36	7.36	NQ	0.20	0.45	0.97	0.26	1.51	2.33	0.39	1.03	0.11	1.64
17159[a]	HUDSP	Savannah sparrow egg	1.62	8.32	NQ	<0.11	0.03	<0.23	0.30	0.21	0.20	0.04	0.07	<0.01	0.17

[a]smaller samples had different MDL values (Table 2).

[b]sample was corrected for 1% carryover on PGC.

NQ -- Not quantifiable. Due to interference.

10.4115

Table 1. Hudson River Samples--Concentrations of PCB Congeners (ng/g)

Sample Name	Field ID	Sample Type	025	031	028	020,033	053	051	022	045	046	052	043	049	047	048
17138[a]	HUDPL1	eagle plasma	1.50	11.0	23.7	0.94	2.52	1.94	2.07	2.94	0.55	74.1	2.28	69.8	77.0	4.81
17139[a]	HUDFT1	eagle fat	140	948	1513	72.6	369	226	146	189	24.9	5837	128.2	6242	5847	483
17140	HUDNST1	American Eel	1.13	34.0	87.7	0.27	7.34	3.63	3.66	4.71	0.16	566	2.70	173	765	4.29
17141-A	HUDNST2	Brown Bullhead	2.53	31.0	91.7	1.99	12.8	1.65	14.91	18.0	2.86	255	9.66	262	260	20.08
17141-B	HUDNST2	Brown Bullhead	2.55	33.1	99.2	2.10	14.5	1.82	15.47	20.2	3.20	308	7.18	300	279	19.58
17141-C	HUDNST2	Brown Bullhead	2.93	35.7	104	2.32	13.2	1.67	17.20	18.5	2.96	283	8.59	277	257	21.82
17142[b]	HUDRIV1	American Eel	3.00	55.6	64.7	0.37	11.1	6.07	2.03	3.08	1.87	626	1.95	167	655	5.85
17143	HUDRIV2	American Eel	< 0.95	4.34	6.87	0.06	1.06	0.48	0.29	0.61	0.13	56.5	0.36	9.10	56.58	0.93
17144	HUDRIV3	American Eel	< 0.95	3.75	6.69	0.07	0.58	0.34	0.42	0.51	0.07	81.5	<0.01	14.60	108	0.23
17145	HUDRIV4	Brown Bullhead	1.77	15.6	58.5	1.68	1.65	0.74	4.87	6.03	2.30	52.1	4.17	93.54	156	6.11
17146	HUDRIV5	WhitePerch	5.83	20.5	33.5	3.18	21.8	12.5	5.24	10.7	4.22	156	6.40	172	113	17.00
17147	HUDRIV6	WhitePerch	11.0	39.3	58.6	5.24	39.1	21.1	9.19	19.2	7.67	239	8.63	273	209	26.23
17148	HUDRIV7	WhitePerch	11.1	39.0	54.0	4.16	41.9	23.1	7.69	19.3	7.76	276	9.87	291	200	30.90
17149[b]	HUDRIV8	Blueback Herring	< 0.95	1.71	1.91	0.40	1.45	0.38	0.46	0.69	0.42	8.9	0.30	8.98	9.69	0.53
17150[a]	HUDTS-1	Tree Swallow	7.53	1737	7172	3.93	38.8	5.92	2.95	0.31	0.46	6599	NQ	5485	5158	19.20
17151[a]	HUDTS-2	Tree Swallow	50.2	4998	19136	5.12	153	31.1	16.0	3.02	<0.01	14712	NQ	13406	11002	667
17152[b]	HUDBB1	Bluebird nestling	16.6	695	1484	11.76	1.25	1.29	4.85	0.20	<0.01	741	NQ	942	768	11.9
17153	HUDBB2	Bluebird nestling	224	5115	9708	8.54	43.0	10.4	7.70	1.68	<0.01	6035	NQ	6139	4354	57.0
17154	HUDBB3	Bluebird nestling	< 0.95	5.32	37.6	<0.01	0.17	0.08	0.05	<0.01	<0.01	7.16	0.55	20.2	149	1.72
17155	HUDBB4	Bluebird nestling	< 0.95	0.91	2.47	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	1.92	0.15	5.04	10.9	0.06
17156[a]	HUDWD1	wood duck embryo	3.67	311	1577	<0.02	<0.01	0.22	0.12	0.14	<0.01	363	<0.01	446	2356	<0.01
17157[a]	HUDWD2	wood duck embryo	0.08	4.70	239	0.18	<0.01	0.38	<0.02	<0.01	1.15	4.92	0.03	5.70	151	<0.01
17158[a,b]	HUDHP	Henslow sparrow egg	0.61	5.29	17.45	0.57	0.33	0.20	0.41	0.28	0.02	9.68	<0.01	9.16	14.92	<0.01
17159[a]	HUDSP	Savannah sparrow egg	0.03	0.81	3.50	0.11	0.03	0.02	0.05	0.01	<0.01	1.53	<0.01	1.29	3.75	<0.01

[a] smaller samples had different MDL values (Table 2).

[b] sample was corrected for 1% carryover on PGC.

NQ -- Not quantifiable. Due to interference.

10.4116

Table 1. Hudson River Samples--Concentrations of PCB Congeners (ng/g)

Sample Name	Field ID	Sample Type	044	042	041	064	040	067	063	074	070,076	066	095	091	056,060	092
17138[a]	HUDPL1	eagle plasma	26.4	17.2	7.46	17.5	0.45	3.12	6.83	28.8	11.5	47.5	28.8	14.4	6.20	21.8
17139[a]	HUDFT1	eagle fat	1880	1847	1060	1369	20.0	197	477	2250	778	3359	1958	1173	466	1302
17140	HUDNST1	American Eel	127.63	133.8	4.84	169	22.5	18.3	30.9	150	9.44	238	93.4	62.9	28.9	95.7
17141-A	HUDNST2	Brown Bullhead	78.70	60.6	17.5	65.2	6.34	8.12	22.1	94.8	21.6	141	79.6	43.8	25.5	45.6
17141-B	HUDNST2	Brown Bullhead	90.39	70.4	20.2	80.0	6.94	8.58	24.9	97.5	25.6	147	112	48.4	27.9	50.0
17141-C	HUDNST2	Brown Bullhead	84.01	67.6	19.1	71.3	6.95	7.95	20.5	95.0	22.5	136	102	45.6	26.6	48.8
17142[b]	HUDRIV1	American Eel	74.20	82.8	7.34	130	16.5	14.6	33.3	129	5.48	179	80.9	59.9	22.3	81.6
17143	HUDRIV2	American Eel	5.84	4.62	0.47	12.8	1.65	1.50	2.55	9.30	1.43	14.6	6.81	3.57	2.23	7.44
17144	HUDRIV3	American Eel	7.69	7.23	0.88	19.9	1.61	4.51	3.83	18.2	2.24	25.0	10.1	7.67	3.28	22.2
17145	HUDRIV4	Brown Bullhead	36.91	12.7	19.0	24.6	7.40	3.89	13.5	53.8	8.89	73.2	39.6	16.7	10.2	34.4
17146	HUDRIV5	WhitePerch	49.11	41.5	56.4	31.6	12.2	7.48	12.6	45.8	41.6	65.7	60.7	32.5	14.4	34.3
17147	HUDRIV6	WhitePerch	78.35	82.0	84.9	55.7	20.6	11.8	18.9	69.3	67.3	75.4	93.7	46.1	23.9	48.1
17148	HUDRIV7	WhitePerch	92.01	83.2	93.9	60.2	22.9	12.6	18.8	69.8	55.6	90.2	109	50.3	25.5	53.2
17149[b]	HUDRIV8	Blueback Herring	3.40	2.31	1.57	1.95	0.79	1.26	0.77	3.55	4.54	7.22	10.6	4.10	1.27	7.88
17150[a]	HUDTS-1	Tree Swallow	19.37	26.6	40.2	758	32.4	43.2	951	6436	3580	13040	805	641	2127	808
17151[a]	HUDTS-2	Tree Swallow	344	2178	282	3326	40.2	368	1959	14778	9224	25696	1641	1185	4916	1465
17152[b]	HUDBB1	Bluebird nestling	34	11.8	15.5	29.5	7.46	9.2	141	1376	804	2098	82.11	30.1	352	61.3
17153	HUDBB2	Bluebird nestling	436	362	131	990	23.7	73.4	600	6031	6261	10817	375	355	1785	376
17154	HUDBB3	Bluebird nestling	<0.23	0.11	0.17	0.99	0.63	2.78	31.5	171	4.19	163	1.43	4.64	17.3	1.04
17155	HUDBB4	Bluebird nestling	<0.23	<0.08	<0.08	0.27	0.05	0.12	2.58	11.5	1.10	4.63	0.15	0.55	0.63	<0.94
17156[a]	HUDWD1	wood duck embryo	11.5	62.6	2.55	28.0	1.48	23.7	172	972	115	1047	130	26.6	125	229
17157[a]	HUDWD2	wood duck embryo	0.33	8.07	16.5	0.32	0.06	1.56	34.5	190	3.30	166	12.5	0.63	25.6	20.1
17158[a,b]	HUDHP	Henslow sparrow egg	2.42	2.39	0.99	2.06	0.11	0.63	2.37	14.52	7.83	26.77	4.01	1.78	3.42	2.32
17159[a]	HUDSP	Savannah sparrow egg	0.24	0.12	0.10	0.28	<0.01	0.11	0.73	2.88	1.46	4.90	0.75	0.30	0.60	0.60

[a]smaller samples had different MDL values (Table 2).

[b]sample was corrected for 1% carryover on PGC.

NQ -- Not quantifiable. Due to interference.

10.4117

Table 1. Hudson River Samples--Concentrations of PCB Congeners (ng/g)

Sample Name	Field ID	Sample Type	084	101	099	119	083	097	087	136	110	082	151	135,144,124	147
17138[a]	HUDPL1	eagle plasma	5.54	60.1	58.7	4.92	5.12	12.5	19.9	3.76	39.5	1.65	13.7	9.11	3.47
17139[a]	HUDFT1	eagle fat	417	4711	4012	290	369	1195	1438	268	2623	150	737	464	172
17140	HUDNST1	American Eel	39.7	210	307	20.8	32.5	51.5	46.7	11.3	231	16.0	18.0	19.8	24.2
17141-A	HUDNST2	Brown Bullhead	19.4	156	124	10.1	10.4	36.6	52.9	9.29	96.8	6.96	23.8	19.1	8.44
17141-B	HUDNST2	Brown Bullhead	20.7	178	135	11.0	12.1	43.0	63.5	10.8	125	7.97	27.9	22.2	7.08
17141-C	HUDNST2	Brown Bullhead	19.5	182	141	10.4	11.4	40.5	60.7	9.98	116	7.58	26.0	20.7	7.16
17142[b]	HUDRIV1	American Eel	34.5	160	261	19.8	25.5	49.1	47.9	9.57	212	7.94	18.8	15.2	20.8
17143	HUDRIV2	American Eel	3.97	12.7	24.2	1.20	1.80	1.54	3.33	0.78	15.5	0.55	1.47	1.63	3.31
17144	HUDRIV3	American Eel	5.80	30.8	75.9	5.09	5.23	5.10	7.56	1.56	37.7	1.25	3.65	3.40	7.91
17145	HUDRIV4	Brown Bullhead	20.8	40.7	48.0	7.61	10.1	17.5	20.6	7.02	46.4	5.46	21.8	11.1	5.87
17146	HUDRIV5	WhitePerch	23.3	90.6	81.5	7.75	9.34	24.9	26.1	8.70	53.9	5.53	22.0	13.4	5.03
17147	HUDRIV6	WhitePerch	34.6	138	117	10.5	14.0	37.8	40.7	12.4	84.9	11.2	30.0	18.6	6.93
17148	HUDRIV7	WhitePerch	38.2	150	122	10.8	14.8	40.3	45.1	14.9	100	11.5	33.6	21.3	6.92
17149[b]	HUDRIV8	Blueback Herring	3.28	26.8	24.7	2.10	2.17	4.53	6.23	3.02	14.6	2.21	8.52	6.44	3.38
17150[a]	HUDTS-1	Tree Swallow	5.93	3975	3642	90.4	6.27	36.5	1156	23.9	759	4.62	101	333	52.2
17151[a]	HUDTS-2	Tree Swallow	29.5	8152	7086	334	30.1	598	2959	31.9	4000	24.2	347	514	59.7
17152[b]	HUDBB1	Bluebird nestling	4.51	603	519	16.8	1.83	28.9	168	0.46	88	4.30	0.98	24.9	5.09
17153	HUDBB2	Bluebird nestling	33.2	2784	2217	95.3	14.0	479	1316	8.08	1415	32.3	40.7	143	25.3
17154	HUDBB3	Bluebird nestling	<0.15	74.7	154	6.42	0.96	1.66	8.01	<0.02	3.02	<0.34	<0.84	1.42	4.83
17155	HUDBB4	Bluebird nestling	<0.15	6.87	9.62	0.64	<0.03	<0.83	<1.40	<0.02	<1.46	<0.34	<0.84	<0.24	0.48
17156[a]	HUDWD1	wood duck embryo	4.81	209	624	31.5	0.48	4.1	52.4	2.76	39.2	0.43	60.5	35.6	22.3
17157[a]	HUDWD2	wood duck embryo	<0.08	16.6	102	2.57	<0.01	<0.05	5.79	0.47	1.14	<0.02	4.60	3.56	3.22
17158[a,b]	HUDHP	Henslow sparrow egg	1.36	10.93	11.46	0.69	0.61	2.31	4.46	2.72	6.56	1.16	1.15	1.30	0.76
17159[a]	HUDSP	Savannah sparrow egg	0.19	2.62	4.32	0.24	0.07	0.35	0.85	0.11	1.27	0.16	0.22	0.27	0.23

[a] smaller samples had different MDL values (Table 2).

[b] sample was corrected for 1% carryover on PGC.

NQ -- Not quantifiable. Due to interference.

10.4118

Table 1. Hudson River Samples--Concentrations of PCB Congeners (ng/g)

Sample Name	Field ID	Sample Type	107	123,149	118	134	114	131,122	146	153	132	105	141	179	137	176
17138[a]	HUDPL1	eagle plasma	6.45	39.2	47.1	2.51	1.95	0.52	20.5	54.7	21.8	17.2	10.5	3.80	4.76	0.95
17139[a]	HUDFT1	eagle fat	416	2166	2853	156	115	46.6	955	2464	1539	804	476	213	267	56.4
17140	HUDNST1	American Eel	7.22	145	209	16.8	7.00	1.60	84.6	223	51.9	106	38.2	11.6	18.0	2.09
17141-A	HUDNST2	Brown Bullhead	12.6	77.7	86.2	4.41	4.35	2.27	29.7	78.0	27.9	48.0	17.2	8.59	10.0	2.64
17141-B	HUDNST2	Brown Bullhead	15.8	99.2	113	4.91	3.72	2.60	34.0	98.8	39.7	55.1	19.5	9.99	10.4	2.51
17141-C	HUDNST2	Brown Bullhead	14.5	91.0	99.0	4.58	4.26	2.43	31.8	91.7	39.4	50.5	18.3	9.19	9.83	2.37
17142[b]	HUDRIV1	American Eel	7.50	118	188	16.0	7.83	0.70	58.1	146	58.8	102	29.6	9.02	13.8	1.08
17143	HUDRIV2	American Eel	0.55	10.8	16.7	1.09	0.46	0.12	9.04	20.7	5.25	8.19	2.40	0.76	1.70	0.16
17144	HUDRIV3	American Eel	1.17	22.1	54.0	3.41	1.71	0.03	26.9	68.0	6.31	24.1	8.02	1.46	5.98	0.78
17145	HUDRIV4	Brown Bullhead	9.68	34.0	47.9	5.33	1.92	1.28	21.0	18.2	15.9	29.1	9.31	6.97	5.11	1.20
17146	HUDRIV5	WhitePerch	10.2	48.2	49.3	4.78	1.71	1.49	21.7	49.9	21.9	20.8	8.86	5.82	4.91	1.57
17147	HUDRIV6	WhitePerch	13.1	63.5	68.2	6.94	2.49	2.50	26.7	66.0	25.8	32.5	11.8	7.92	6.38	2.55
17148	HUDRIV7	WhitePerch	13.6	66.5	67.6	7.66	2.70	2.61	28.6	72.7	34.1	35.0	13.7	9.60	7.03	2.15
17149[b]	HUDRIV8	Blueback Herring	2.33	78.1	76.1	1.58	0.41	3.12	9.22	23.9	12.3	6.92	3.91	4.24	2.15	1.98
17150[a]	HUDTS-1	Tree Swallow	505	1149	4027	0.35	235	2.41	480	1063	543	3155	284	15.4	110	NQ
17151[a]	HUDTS-2	Tree Swallow	986	1604	8765	1.43	634	11.5	740	2078	743	6079	462	17.0	445	NQ
17152[b]	HUDBB1	Bluebird nestling	61.3	90	537	0.26	43.0	0.85	35.5	118	17.6	193	37.5	0.53	21.4	1.84
17153	HUDBB2	Bluebird nestling	256	471	2389	1.35	145	9.32	115	381	164	1857	153	2.40	108	9.05
17154	HUDBB3	Bluebird nestling	16.5	31.74	116	<0.19	5.31	0.08	19.0	49.9	5.07	50.8	5.57	<0.26	7.58	0.59
17155	HUDBB4	Bluebird nestling	1.26	<2.31	6.96	<0.19	0.53	<0.01	2.12	5.11	<1.20	1.92	0.64	<0.26	0.68	<0.16
17156[a]	HUDWD1	wood duck embryo	58.0	108	484	<0.01	26.5	<0.01	82.3	169	<0.09	214	13.1	2.51	21.4	<0.01
17157[a]	HUDWD2	wood duck embryo	9.51	8.63	105	<0.01	6.83	0.13	16.9	40.3	14.0	35.5	1.08	0.45	4.24	<0.01
17158[a,b]	HUDHP	Henslow sparrow egg	1.57	4.91	14.69	0.29	0.79	0.06	3.21	10.11	4.89	4.88	1.38	0.47	1.02	<0.01
17159[a]	HUDSP	Savannah sparrow egg	0.93	1.23	5.71	0.04	0.28	0.07	2.57	8.11	1.21	1.76	0.26	0.06	0.58	<0.01

[a]smaller samples had different MDL values (Table 2).

[b]sample was corrected for 1% carryover on PGC.

NQ – Not quantifiable. Due to interference.

10.4119

Table 1. Hudson River Samples--Concentrations of PCB Congeners (ng/g)

Sample Name	Field ID	Sample Type	130	138	158	129	178	182,187	183	128	167	185	174	177	171,202	156
17138[a]	HUDPL1	eagle plasma	6.00	77.7	6.59	2.16	5.96	36.8	12.8	17.1	3.30	1.13	9.13	8.71	5.92	6.86
17139[a]	HUDFT1	eagle fat	325	3615	320	147	227	1447	470	854	142	45.3	347	367	202	331
17140	HUDNST1	American Eel	24.7	308	24.3	8.06	25.1	141	61.3	81.2	10.5	2.45	21.5	37.5	24.2	21.9
17141-A	HUDNST2	Brown Bullhead	11.3	108	10.9	5.80	6.89	40.6	19.3	28.8	4.95	2.29	15.1	11.4	6.83	11.7
17141-B	HUDNST2	Brown Bullhead	11.7	130	11.5	6.14	7.99	48.6	19.4	30.3	5.12	2.43	17.2	13.2	7.79	12.7
17141-C	HUDNST2	Brown Bullhead	11.0	120	10.9	5.80	7.48	46.2	18.5	29.0	4.93	2.30	16.2	12.5	7.45	12.2
17142[b]	HUDRIV1	American Eel	20.3	215	18.8	6.20	16.1	96.9	30.4	51.7	7.74	1.59	18.9	26.5	14.4	18.1
17143	HUDRIV2	American Eel	2.92	30.1	2.46	0.35	2.45	19.0	4.25	7.68	1.32	0.11	1.61	3.46	1.96	2.38
17144	HUDRIV3	American Eel	8.18	81.9	7.85	1.69	7.69	40.5	14.5	21.9	3.44	0.32	3.97	10.6	6.52	7.39
17145	HUDRIV4	Brown Bullhead	7.56	63.1	5.57	2.98	5.50	33.4	7.80	16.8	2.79	1.54	9.44	9.50	4.84	6.30
17146	HUDRIV5	WhitePerch	5.88	66.6	6.01	2.64	5.67	33.5	12.1	12.3	2.69	1.35	6.73	4.68	5.75	6.26
17147	HUDRIV6	WhitePerch	7.46	89.9	7.64	3.74	6.65	37.8	13.6	21.8	3.29	1.64	8.52	6.67	6.81	7.42
17148	HUDRIV7	WhitePerch	8.28	64.6	8.36	4.18	7.70	42.7	15.6	21.2	3.60	1.95	10.5	6.96	7.99	8.70
17149[b]	HUDRIV8	Blueback Herring	3.79	31.1	2.97	1.27	2.86	15.3	6.08	7.85	2.24	0.70	3.83	4.06	3.15	2.58
17150[a]	HUDTS-1	Tree Swallow	91.9	2231	311	9.70	51.5	446	100	463	55.3	7.09	75.9	79.0	25.9	456
17151[a]	HUDTS-2	Tree Swallow	401	3884	508	44.5	58.4	630	411	1423	262	10.6	182	214	92.1	831
17152[b]	HUDBB1	Bluebird nestling	17.1	163	19.5	5.29	6.05	29.5	14.0	32.9	10.8	2.13	7.96	5.53	1.62	43.0
17153	HUDBB2	Bluebird nestling	84.6	769	112	41.0	16.1	107	74.4	317	33.6	7.36	54.1	34.5	14.1	167
17154	HUDBB3	Bluebird nestling	8.36	90.2	6.35	0.38	3.77	21.7	4.95	22.1	3.30	0.33	2.95	5.77	2.25	10.4
17155	HUDBB4	Bluebird nestling	0.77	7.53	0.64	<0.13	0.61	<3.99	<0.79	1.94	0.40	0.03	<0.54	<0.55	<0.31	1.19
17156[a]	HUDWD1	wood duck embryo	27.2	283	23.1	0.60	21.0	81.9	22.4	80.4	13.7	1.38	10.3	21.5	9.10	36.2
17157[a]	HUDWD2	wood duck embryo	3.41	58.1	5.20	<0.01	4.47	19.1	5.96	12.9	3.40	0.11	1.39	4.29	2.09	9.93
17158[a,b]	HUDHP	Henslow sparrow egg	1.03	11.01	1.23	0.35	1.13	6.27	1.98	2.02	1.15	0.08	0.74	1.05	0.96	1.86
17159[a]	HUDSP	Savannah sparrow egg	0.54	8.30	0.78	0.07	0.74	5.41	1.48	1.05	0.82	0.02	0.25	0.65	0.37	1.39

[a] smaller samples had different MDL values (Table 2).

[b] sample was corrected for 1% carryover on PGC.

NQ -- Not quantifiable. Due to interference.

10.4120

Table 1. Hudson River Samples--Concentrations of PCB Congeners (ng/g)

Sample Name	Field ID	Sample Type	173	201	157	172	197	180	193	191	200	170,190	198	199	196,203	189
17138[a]	HUDPL1	eagle plasma	0.22	3.44	2.81	2.57	0.34	33.3	2.79	1.37	0.54	14.2	0.75	10.5	9.14	0.61
17139[a]	HUDFT1	eagle fat	11.2	140	108	92.7	6.4	1172	82.0	43.0	17.1	515	21.9	324	267	15.1
17140	HUDNST1	American Eel	0.71	11.1	11.7	8.38	1.10	163	8.71	4.67	0.67	116	2.90	34.2	38.0	1.79
17141-A	HUDNST2	Brown Bullhead	0.30	4.65	3.90	3.35	0.39	58.2	2.69	1.25	1.27	15.2	1.09	12.4	11.6	0.81
17141-B	HUDNST2	Brown Bullhead	0.34	5.55	4.60	3.45	0.44	75.6	3.20	1.37	1.41	18.8	1.21	14.2	13.2	0.86
17141-C	HUDNST2	Brown Bullhead	<0.01	5.43	4.37	3.29	0.42	70.7	3.26	1.82	1.33	18.1	1.16	13.4	12.5	0.83
17142[b]	HUDRIV1	American Eel	0.43	9.61	6.56	5.37	0.64	90.0	5.78	2.93	0.85	82.5	1.73	22.3	18.9	1.17
17143	HUDRIV2	American Eel	0.02	1.19	0.58	0.86	0.07	10.6	1.28	0.31	0.03	3.44	0.24	4.14	2.41	0.19
17144	HUDRIV3	American Eel	0.06	3.59	2.28	2.61	0.29	46.1	2.74	1.34	0.10	13.3	0.73	10.4	8.35	0.53
17145	HUDRIV4	Brown Bullhead	0.27	2.51	2.52	2.16	0.19	29.9	2.04	0.92	0.95	11.2	0.83	9.26	7.61	0.48
17146	HUDRIV5	WhitePerch	0.22	2.53	2.66	2.14	0.29	46.2	2.39	1.11	0.35	10.6	0.61	8.91	8.82	0.56
17147	HUDRIV6	WhitePerch	0.26	3.49	2.67	2.30	0.27	53.9	2.53	1.18	0.46	12.4	0.60	8.29	7.93	0.59
17148	HUDRIV7	WhitePerch	0.26	3.75	3.63	2.71	0.35	69.7	2.79	1.29	0.51	14.9	0.74	11.0	11.0	0.71
17149[b]	HUDRIV8	Blueback Herring	<0.01	1.45	1.59	0.82	0.14	16.0	0.76	0.47	0.30	3.17	0.23	2.69	2.32	0.12
17150[a]	HUDTS-1	Tree Swallow	2.06	92.7	12.2	20.7	1.60	723	19.0	12.8	4.35	137	5.51	62.2	59.4	6.80
17151[a]	HUDTS-2	Tree Swallow	3.03	150	19.2	31.0	2.23	1108	28.9	20.4	4.55	534	7.54	207	206	9.73
17152[b]	HUDBB1	Bluebird nestling	0.37	20.7	2.55	3.97	0.24	62.3	3.08	1.78	0.47	17.8	1.00	8.7	8.3	1.25
17153	HUDBB2	Bluebird nestling	1.45	63.4	9.72	9.55	0.71	172	8.08	6.70	2.68	126	2.24	26.5	27.0	3.03
17154	HUDBB3	Bluebird nestling	0.13	5.22	0.88	1.43	0.08	13.5	1.53	0.50	0.14	6.37	0.35	5.19	2.96	0.37
17155	HUDBB4	Bluebird nestling	<0.01	0.45	0.07	0.28	<0.01	<2.38	0.28	<0.01	<0.01	<1.10	0.06	0.93	0.48	0.06
17156[a]	HUDWD1	wood duck embryo	0.04	16.4	5.20	5.05	0.42	56.9	5.10	2.62	1.14	31.7	1.16	17.3	14.4	1.52
17157[a]	HUDWD2	wood duck embryo	<0.01	4.44	1.96	1.63	0.19	17.4	1.50	1.10	0.09	11.1	0.55	5.71	5.05	0.60
17158[a,b]	HUDHP	Henslow sparrow egg	0.03	0.93	0.25	0.52	<0.01	5.55	0.64	0.48	0.08	2.77	0.38	3.55	2.00	0.46
17159[a]	HUDSP	Savannah sparrow egg	<0.01	0.60	0.26	0.51	0.02	5.51	0.55	0.18	0.02	1.77	0.14	1.61	1.29	0.20

[a] smaller samples had different MDL values (Table 2).

[b] sample was corrected for 1% carryover on PGC.

NQ -- Not quantifiable. Due to interference.

10.4121

Table 1. Hudson River Samples--Concentrations of PCB Congeners (ng/g)

Sample Name	Field ID	Sample Type	208,195	207	194	205	206	209	Total PCBs
17138[a]	HUDPL1	eagle plasma	3.89	0.84	6.07	0.62	7.12	3.61	1329
17139[a]	HUDFT1	eagle fat	94.2	15.8	160	16.3	187	19.8	85770
17140	HUDNST1	American Eel	13.5	2.52	21.3	2.12	17.8	6.74	6140
17141-A	HUDNST2	Brown Bullhead	4.83	1.06	8.61	0.88	8.38	3.32	3222
17141-B	HUDNST2	Brown Bullhead	5.34	1.16	8.48	0.98	8.38	3.78	3702
17141-C	HUDNST2	Brown Bullhead	5.07	1.10	8.30	0.94	7.90	3.60	3491
17142[b]	HUDRIV1	American Eel	7.97	1.45	11.4	1.40	9.35	2.93	5139
17143	HUDRIV2	American Eel	1.37	0.21	1.98	0.05	2.49	1.43	487
17144	HUDRIV3	American Eel	3.47	0.67	5.62	0.61	4.78	1.64	1102
17145	HUDRIV4	Brown Bullhead	3.44	0.67	5.41	0.59	5.71	2.26	1553
17146	HUDRIV5	WhitePerch	3.29	0.85	5.97	0.67	6.38	2.55	2123
17147	HUDRIV6	WhitePerch	2.99	0.64	5.03	0.59	5.00	1.90	3240
17148	HUDRIV7	WhitePerch	3.90	0.92	6.82	0.73	6.86	2.62	3435
17149[b]	HUDRIV8	Blueback Herring	0.40	0.24	1.62	0.28	1.50	0.76	587
17150[a]	HUDTS-1	Tree Swallow	21.0	3.72	43.7	6.37	24.2	6.58	82982
17151[a]	HUDTS-2	Tree Swallow	32.0	5.70	204	6.10	36.9	9.51	190083
17152[b]	HUDBB1	Bluebird nestling	2.67	0.48	7.56	0.54	4.27	0.56	12946
17153	HUDBB2	Bluebird nestling	8.84	1.29	19.9	1.34	8.67	1.11	78224
17154	HUDBB3	Bluebird nestling	1.35	0.18	2.56	0.02	2.25	0.52	1415
17155	HUDBB4	Bluebird nestling	0.20	<0.01	0.64	<0.10	<0.61	0.20	97
17156[a]	HUDWD1	wood duck embryo	5.64	1.31	10.6	0.92	16.4	1.31	11255
17157[a]	HUDWD2	wood duck embryo	1.91	0.56	3.80	0.31	10.9	0.80	1479
17158[a,b]	HUDHP	Henslow sparrow egg	0.90	0.16	1.47	0.19	4.89	1.82	291
17159[a]	HUDSP	Savannah sparrow egg	0.37	0.11	1.08	0.08	1.25	0.58	97

[a]smaller samples had different MDL values (Table 2).

[b]sample was corrected for 1% carryover on PGC.

NQ -- Not quantifiable. Due to interference.

10.4122

Table 2. Quality Control Data for Hudson River Biota--PCB congeners (ng/g)

(Method Detection Limits, Matrix Spike Recovery, Procedure and Matrix Blanks, Positive Control, Statistics)

Sample Name	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	004,010	007,009	006	005,008	019	018	017,015	024,027	016,032	029	026	025	031	028
17141-A[a]	HUDNST2	Brown Bullhead	14.73	5.09	20.6	<1.80	0.72	2.83	12.0	11.8	8.25	2.97	14.3	0.10	40.5	2.53	31.0	91.7
17141-B[a]	HUDNST2	Brown Bullhead	14.73	5.02	23.6	<1.80	0.69	2.75	12.1	12.0	8.88	1.83	15.3	0.12	39.8	2.55	33.1	99.2
17141-C[a]	HUDNST2	Brown Bullhead	14.82	5.09	10.7	<1.80	0.52	<2.42	9.9	11.5	8.50	1.97	15.5	0.11	43.4	2.93	35.7	103.8
17141 Average					18.3		0.64		11.4	11.7	8.54	2.26	15.0	0.11	41.2	2.67	33.3	98.3
SD(n-1)					6.7		0.11		1.2	0.2	0.32	0.62	0.6	0.01	1.9	0.23	2.4	6.1
% RSD					36.8		16.5		11.0	2.0	3.7	27.4	4.3	9.6	4.6	8.4	7.1	6.2
MS 060898[a,e]	Matrix Spike	Bluegill # 654C	14.79	3.91	6.32	1.54	2.82	11.40	2.63	19.44	8.45	1.06	12.05	0.38	3.23	1.34	9.38	13.13
Percent Recovery					*82*	*95*	*89*	*96*	*92*	*91*	*86*	*98*	*92*	*107*	*95*	*95*	*94*	*91*
MS 070698[a,e]	Matrix Spike	Chicken Egg	14.71	7.69	6.70	1.63	2.90	11.40	2.69	19.87	8.77	1.08	12.28	0.38	3.32	1.36	9.65	13.77
Percent Recovery					*87*	*100*	*91*	*95*	*94*	*92*	*89*	*100*	*94*	*105*	*98*	*96*	*96*	*95*
PC 060198[b,e]	Positive Control	Sag B Carp 6806	4.41	14.5	NQ	<0.11	5.89	6.63	7.60	139.60	56.49	5.69	71.31	0.78	162.44	37.91	72.49	133.13
PC 060898[a,e]	Positive Control	Sag B Carp 6806-123	9.80	14.50	4.37	0.89	4.46	9.21	6.46	84.54	33.06	3.80	45.39	0.12	31.81	23.48	44.59	85.38
PC 070698[a,e]	Positive Control	Sag B Carp 6806-123	9.97	14.75	4.91	0.90	4.50	4.99	6.60	87.09	33.84	3.92	46.70	0.22	32.04	22.89	47.39	89.66
MB 070698[b]	Matrix blank	Chicken egg	4.28	9.22	<0.01	<0.11	<0.01	<0.23	<0.03	0.61	0.77	<0.01	0.10	0.04	0.07	0.05	0.25	0.58
MB 060198[b]	Matrix blank	Bluegill tissue	4.48	2.76	<0.01	<0.11	<0.01	0.55	<0.03	0.12	0.06	0.04	0.07	<0.01	0.05	0.02	0.11	0.22
PB 060898[a]	Procedure Blank	Na_2SO_4	N/A	N/A	0.000	0.007	0.492	0.358	0.058	0.296	0.336	0.249	0.339	0.000	0.246	0.085	0.311	0.792
Mass adjusted PB 060898	Procedure Blank		(14.73)	N/A	0.000	0.000	0.033	0.024	0.004	0.020	0.023	0.017	0.023	0.000	0.017	0.006	0.021	0.054
MB 060898[a]	Matrix Blank	Bluegill # 654C	14.75	3.92	0.000	0.871	0.084	1.177	0.000	0.072	0.126	0.000	0.042	0.000	0.057	0.462	0.044	0.098
MB 070698[a]	Matrix Blank	Chicken Egg	14.72	7.42	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.052	0.000	0.401	0.870
Average[c]					*0.000*	*0.290*	*0.070*	*0.401*	*0.001*	*0.031*	*0.050*	*0.006*	*0.022*	*0.000*	*0.042*	*0.156*	*0.155*	*0.340*
SD (n-1)[c]					0.000	0.503	0.032	0.673	0.002	0.037	0.067	0.010	0.021	0.000	0.022	0.265	0.213	0.459
MDL (mass adjusted)	*Method Detection Limit = PB Avg + 3(SD)*				*0.01*	*1.80*	*0.17*	*2.42*	*0.01*	*0.14*	*0.25*	*0.03*	*0.08*	*0.01*	*0.11*	*0.95*	*0.80*	*1.72*
PB 070698[a,d]	Carryover check	Na_2SO_4	-	-	*0.000*	*0.000*	0.616	*0.000*	*0.000*	0.138	0.715	0.009	0.118	0.000	1.844	0.266	13.352	27.606
PB 060198 GCR1[b]	procedure blank	Na_2SO_4	-	-	0.000	0.360	0.000	0.918	0.171	0.146	0.164	0.056	0.050	0.000	0.040	0.059	0.083	0.133
PB 060198 GCR2[b]	procedure blank	Na_2SO_4	-	-	0.000	0.424	0.000	0.866	0.130	0.123	0.107	0.041	0.041	0.000	0.025	0.038	0.089	0.162
PB 060198 GCR3[b]	procedure blank	Na_2SO_4	-	-	0.000	0.372	0.000	0.657	0.097	0.078	0.039	0.035	0.037	0.000	0.052	0.038	0.060	0.092
PB 070698 GCR1[b]	procedure blank	Na_2SO_4	-	-	*0.000*	*0.062*	*0.031*	*0.197*	*0.162*	*0.169*	*0.092*	*0.038*	*0.104*	*0.000*	*0.054*	*0.058*	*0.253*	*0.469*
PB 070698 GCR2[b]	procedure blank	Na_2SO_4	-	-	0.000	0.119	0.026	0.161	0.159	0.105	0.033	0.053	0.076	0.000	0.011	0.042	0.245	0.423
PB 070698 GCR3[b]	procedure blank	Na_2SO_4	-	-	0.000	0.029	0.019	0.136	0.099	0.121	0.093	0.032	0.104	0.000	0.037	0.063	0.239	0.487
Average					0.000	0.227	0.013	0.489	0.136	0.124	0.088	0.042	0.069	0.000	0.036	0.049	0.161	0.294
SD(n-1)					0.000	0.176	0.015	0.367	0.033	0.032	0.048	0.010	0.031	0.000	0.016	0.012	0.093	0.184
MDL		Avg OC sample mass			0.00	0.76	0.06	1.59	0.23	0.22	0.23	0.07	0.16	0.00	0.09	0.08	0.44	0.85
Mass Adjusted MDL		*6.85*	*g*		*0.01*	*0.11*	*0.01*	*0.23*	*0.03*	*0.03*	*0.03*	*0.01*	*0.02*	*0.01*	*0.01*	*0.01*	*0.06*	*0.12*

[a]QC samples from PCB protocol.

[b]QC samples from OC protocol.

[c]Average of PB060898 and 2 Matrix Blanks.

[d]PB 070698 was contaminated, not used in MDL calculations.

[e]Average of GC replicate injections.

Non detects are set to the instrument detection limit of 0.01 ng/g.

10.4123

Table 2. Quality Control Data for Hudson River Biota--PCB congeners (ng/g)

(Method Detection Limits, Matrix Spike Recovery, Procedure and Matrix Blanks, Positive Control, Statistics)

Sample Name	Field ID	Sample Type	020,033	053	051	022	045	046	052	043	049	047	048	044	042	041	064	040	067	063
17141-A[a]	HUDNST2	Brown Bullhead	1.99	12.8	1.65	14.9	18.0	2.86	255	9.66	262	260	20.1	78.7	60.6	17.5	65.2	6.34	8.12	22.1
17141-B[a]	HUDNST2	Brown Bullhead	2.10	14.5	1.82	15.5	20.2	3.20	308	7.18	300	279	19.6	90.4	70.4	20.2	80.0	6.94	8.58	24.9
17141-C[a]	HUDNST2	Brown Bullhead	2.32	13.2	1.67	17.2	18.5	2.96	283	8.59	277	257	21.8	84.0	67.6	19.1	71.3	6.95	7.95	20.5
17141 Average			2.14	13.5	1.71	15.9	18.9	3.01	282	8.48	280	265	20.5	84.4	66.2	18.9	72.2	6.74	8.21	22.5
SD(n-1)			0.17	0.9	0.09	1.2	1.1	0.17	26	1.25	19	12	1.2	5.9	5.1	1.4	7.4	0.35	0.33	2.2
% RSD			7.9	6.7	5.3	7.5	6.0	5.8	9.4	14.7	6.9	4.4	5.7	6.9	7.6	7.2	10.3	5.2	4.0	9.9
MS 060898[a,e]	Matrix Spike	Bluegill # 654C	10.73	2.92	1.07	6.11	3.27	1.53	21.86	0.75	12.90	5.55	6.18	13.83	7.86	5.84	6.29	3.51	0.56	0.73
Percent Recovery			*93*	*92*	*94*	*93*	*93*	*93*	*95*	*93*	*95*	*98*	*94*	*95*	*69*	*96*	*95*	*94*	*91*	*95*
MS 070698[a,e]	Matrix Spike	Chicken Egg	11.10	2.86	1.15	6.48	3.48	1.63	21.90	0.61	13.25	5.72	6.28	13.86	7.89	5.93	6.40	3.58	0.53	0.89
Percent Recovery			*95*	*90*	*100*	*98*	*98*	*99*	*95*	*75*	*97*	*101*	*95*	*94*	*69*	*97*	*97*	*96*	*86*	*115*
PC 060198[b,e]	Positive Control	Sag B Carp 6806	20.11	54.86	24.51	19.69	40.23	14.63	666.93	26.40	597.54	394.72	70.06	355.69	351.12	207.26	154.99	64.22	8.50	43.85
PC 060898[a,e]	Positive Control	Sag B Carp 6806-123	12.84	31.78	15.26	14.52	26.28	10.18	412.87	17.99	423.50	257.38	53.11	246.32	213.91	133.46	105.35	51.85	6.16	30.59
PC 070698[a,e]	Positive Control	Sag B Carp 6806-123	13.40	32.10	15.55	15.21	26.78	10.29	418.93	17.13	442.38	265.00	54.14	247.00	215.09	136.65	109.05	51.65	6.43	31.16
MB 070698[b]	Matrix blank	Chicken egg	0.05	0.02	0.02	<0.02	0.02	0.02	0.42	0.44	0.30	0.23	0.02	0.18	0.31	0.06	0.05	0.45	0.42	0.09
MB 060198[b]	Matrix blank	Bluegill tissue	0.05	0.01	<0.01	0.03	0.02	<0.01	0.97	0.02	0.35	0.55	0.04	0.22	0.16	0.05	0.19	0.32	<0.01	<0.02
PB 060898[a]	Procedure Blank	Na_2SO_4	0.091	0.157	0.062	0.081	0.087	0.018	2.169	0.063	1.799	1.613	0.038	0.641	0.604	0.548	0.610	0.009	0.007	0.013
Mass adjusted PB 060898	Procedure Blank		0.006	0.011	0.004	0.005	0.006	0.001	0.147	0.004	0.122	0.109	0.003	0.044	0.041	0.037	0.041	0.001	0.000	0.001
MB 060898[a]	Matrix Blank	Bluegill # 654C	0.000	0.000	0.000	0.000	0.000	0.000	0.537	0.000	0.200	0.158	0.000	0.138	0.000	0.000	0.085	0.000	0.000	6.285
MB 070698[d]	Matrix Blank	Chicken Egg	0.000	0.000	0.000	0.000	0.000	0.000	0.543	0.000	0.435	0.294	0.000	0.057	0.000	0.000	0.098	0.000	0.000	0.173
Average[c]			*0.002*	*0.004*	*0.001*	*0.002*	*0.002*	*0.000*	*0.409*	*0.001*	*0.253*	*0.187*	*0.001*	*0.079*	*0.014*	*0.012*	*0.075*	*0.000*	*0.000*	*2.153*
SD (n-1)[c]			0.004	0.006	0.002	0.003	0.003	0.001	0.227	0.002	0.163	0.096	0.001	0.051	0.024	0.021	0.030	0.000	0.000	3.580
MDL (mass adjusted)	*Method Detection Limit = PB Avg + 3(SD)*		***0.01***	***0.02***	***0.01***	***0.01***	***0.01***	***0.01***	***1.09***	***0.01***	***0.74***	***0.47***	***0.01***	***0.23***	***0.08***	***0.08***	***0.16***	***0.01***	***0.01***	***12.89***
PB 070698[a,d]	Carryover check	Na_2SO_4	0.043	0.045	0.005	0.009	0.003	0.004	15.498	0.453	14.083	10.409	0.357	1.091	1.373	0.288	2.519	0.002	0.089	1.436
PB 060198 GCR1[f]	procedure blank	Na_2SO_4	0.049	0.011	0.026	0.008	0.034	0.000	0.364	0.000	0.191	0.098	0.048	0.133	0.049	0.027	0.037	0.000	0.034	0.005
PB 060198 GCR2[f]	procedure blank	Na_2SO_4	0.068	0.031	0.030	0.019	0.019	0.000	0.386	0.000	0.232	0.116	0.042	0.157	0.034	0.070	0.055	0.000	0.051	0.019
PB 060198 GCR3[f]	procedure blank	Na_2SO_4	*0.036*	*0.012*	*0.020*	*0.005*	*0.028*	*0.000*	*0.336*	*0.000*	*0.191*	*0.101*	*0.038*	*0.120*	*0.028*	*0.051*	*0.045*	*0.000*	*0.043*	*0.014*
PB 070698 GCR1[f]	procedure blank	Na_2SO_4	0.062	0.005	0.000	0.071	0.000	0.000	0.579	0.000	0.344	0.261	0.009	0.154	0.074	0.063	0.105	0.000	0.049	0.026
PB 070698 GCR2[f]	procedure blank	Na_2SO_4	0.079	0.022	0.000	0.055	0.000	0.000	0.532	0.000	0.373	0.296	0.050	0.157	0.047	0.075	0.102	0.000	0.054	0.016
PB 070698 GCR3[f]	procedure blank	Na_2SO_4	0.089	0.016	0.000	0.058	0.000	0.000	0.534	0.000	0.354	0.300	0.045	0.161	0.056	0.061	0.085	0.000	0.071	0.087
Average			*0.064*	*0.016*	*0.012*	*0.036*	*0.014*	*0.000*	*0.455*	*0.000*	*0.281*	*0.195*	*0.039*	*0.147*	*0.048*	*0.058*	*0.071*	*0.000*	*0.050*	*0.027*
SD(n-1)			0.019	0.009	0.014	0.029	0.016	0.000	0.105	0.000	0.085	0.100	0.015	0.017	0.016	0.017	0.030	0.000	0.013	0.030
MDL		Avg OC sample mass	0.12	0.04	0.05	0.12	0.06	0.00	0.77	0.00	0.54	0.50	0.08	0.20	0.10	0.11	0.16	0.00	0.09	0.12
Mass Adjusted MDL		*6.85*	***0.02***	***0.01***	***0.01***	***0.02***	***0.01***	***0.01***	***0.11***	***0.01***	***0.08***	***0.07***	***0.01***	***0.03***	***0.01***	***0.02***	***0.02***	***0.01***	***0.01***	***0.02***

[a]QC samples from PCB protocol.

[b]QC samples from OC protocol.

[c]*Average of PB060898 and 2 Matrix Blanks.*

[d]PB 070698 was contaminated, not used in MDL calculations.

[e]Average of GC replicate injections.

Non detects are set to the instrument detection limit of 0.01 ng/g.

10.4124

Table 2. Quality Control Data for Hudson River Biota--PCB congeners (ng/g)

(Method Detection Limits, Matrix Spike Recovery, Procedure and Matrix Blanks, Positive Control, Statistics)

Sample Name	Field ID	Sample Type	074	070,076	066	095	091	056,060	092	084	101	099	119	083	097	087	136	110	082	151
17141-A[a]	HUDNST2	Brown Bullhead	94.8	21.6	141	80	43.8	25.5	45.6	19.4	156	124	10.1	10.4	36.6	52.9	9.3	96.8	7.0	23.8
17141-B[a]	HUDNST2	Brown Bullhead	97.5	25.6	147	112	48.4	27.9	50.0	20.7	178	135	11.0	12.1	43.0	63.5	10.8	125	8.0	27.9
17141-C[a]	HUDNST2	Brown Bullhead	95.0	22.5	136	102	45.6	26.6	48.8	19.5	182	141	10.4	11.4	40.5	60.7	10.0	116	7.6	26.0
17141 Average			95.7	23.2	141	98	46.0	26.6	48.1	19.8	172	133	10.5	11.3	40.0	59.0	10.0	112	7.5	25.9
SD(n-1)			1.5	2.1	6	16	2.3	1.2	2.3	0.7	14	8	0.5	0.9	3.2	5.5	0.8	14.2	0.5	2.1
% RSD			1.6	8.9	3.9	16.8	5.0	4.5	4.8	3.7	8.2	6.4	4.6	7.8	8.0	9.2	7.7	12.7	6.8	8.0
MS 060898[a,e]	Matrix Spike	Bluegill # 654C	7.13	15.29	13.35	16.61	3.18	5.86	3.98	6.80	22.32	9.25	0.41	0.62	6.34	10.04	4.75	14.78	2.29	7.84
Percent Recovery			94	96	93	94	97	94	103	98	98	109	108	50	96	99	95	96	99	97
MS 070698[a,e]	Matrix Spike	Chicken Egg	7.51	15.63	14.09	16.60	2.92	6.05	3.85	6.79	22.22	8.89	0.40	0.96	6.45	10.11	4.80	14.84	2.29	7.83
Percent Recovery			99	97	98	94	89	97	99	97	97	104	106	78	97	99	96	96	98	96
PC 060198[b,e]	Positive Control	Sag B Carp 6806	275.65	148.50	577.58	232.76	125.28	94.13	132.68	111.11	521.26	404.50	25.23	50.58	227.25	249.32	47.58	341.75	79.73	65.00
PC 060898[a,e]	Positive Control	Sag B Carp 6806-123	213.24	100.55	420.28	156.14	84.29	75.19	81.50	73.19	371.72	306.68	18.59	39.21	161.53	178.50	31.46	239.03	60.16	44.00
PC 070698[a,e]	Positive Control	Sag B Carp 6806-123	206.46	101.55	421.00	154.86	82.25	75.65	77.86	73.14	372.02	308.06	18.39	37.33	164.84	179.41	30.69	241.56	59.96	44.42
MB 070698[b]	Matrix blank	Chicken egg	0.41	0.39	0.79	0.43	0.52	0.26	0.14	0.15	0.73	0.30	0.05	0.02	0.14	0.25	0.03	0.49	0.05	0.07
MB 060198[b]	Matrix blank	Bluegill tissue	0.41	0.62	0.72	0.67	0.22	0.11	0.57	<0.15	2.60	2.36	0.11	0.06	0.59	0.98	0.07	1.29	0.18	0.52
PB 060898[a]	Procedure Blank	Na_2SO_4	1.297	0.636	2.333	1.002	0.144	0.303	1.460	0.377	1.773	1.605	0.040	0.008	0.472	0.521	0.112	1.328	0.144	0.381
Mass adjusted PB 060898	Procedure Blank		0.088	0.043	0.158	0.068	0.010	0.021	0.099	0.026	0.120	0.109	0.003	0.001	0.032	0.035	0.008	0.090	0.010	0.026
MB 060898[a]	Matrix Blank	Bluegill # 654C	0.276	0.380	0.408	0.328	0.090	0.093	0.473	0.077	1.864	1.467	0.074	0.002	0.425	0.716	0.000	0.779	0.165	0.414
MB 070698[a]	Matrix Blank	Chicken Egg	0.565	0.441	1.096	0.079	0.091	0.223	0.000	0.000	0.312	0.288	0.000	0.017	0.073	0.135	0.000	0.225	0.000	0.000
Average[c]			0.310	0.288	0.554	0.158	0.064	0.112	0.191	0.034	0.765	0.621	0.026	0.006	0.177	0.296	0.003	0.365	0.058	0.147
SD (n-1)[c]			0.241	0.214	0.485	0.147	0.047	0.103	0.250	0.039	0.956	0.738	0.042	0.009	0.216	0.368	0.004	0.365	0.093	0.232
MDL (mass adjusted)	*Method Detection Limit = PB Avg + 3(SD)*		1.03	0.93	2.01	0.60	0.20	0.42	0.94	0.15	3.63	2.83	0.15	0.03	0.83	1.40	0.02	1.46	0.34	0.84
PB 070698[a,d]	Carryover check	Na_2SO_4	18.504	15.820	35.847	1.206	0.343	6.374	2.069	0.253	6.888	6.633	0.465	0.001	1.362	3.542	0.036	4.077	0.173	0.196
PB 060198 GCR1[e]	procedure blank	Na_2SO_4	0.187	0.313	0.269	0.371	0.061	0.050	0.099	0.141	0.647	0.369	0.059	0.040	0.213	0.453	0.031	0.492	0.011	0.086
PB 060198 GCR2[e]	procedure blank	Na_2SO_4	0.187	0.360	0.346	0.401	0.099	0.057	0.091	0.131	0.713	0.394	0.077	0.016	0.237	0.486	0.058	0.544	0.024	0.093
PB 060198 GCR3[e]	procedure blank	Na_2SO_4	0.094	0.237	0.273	0.331	0.077	0.039	0.075	0.153	0.605	0.306	0.034	0.035	0.168	0.527	0.023	0.430	0.018	0.068
PB 070698 GCR1[e]	procedure blank	Na_2SO_4	0.337	0.466	0.665	0.450	0.096	0.132	0.085	0.265	0.816	0.403	0.135	0.050	0.275	0.502	0.073	0.810	0.081	0.084
PB 070698 GCR2[e]	procedure blank	Na_2SO_4	0.274	0.480	0.647	0.449	0.071	0.114	0.097	0.360	0.817	0.437	0.116	0.046	0.268	0.471	0.052	0.715	0.055	0.076
PB 070698 GCR3[e]	procedure blank	Na_2SO_4	0.277	0.429	0.621	0.428	0.086	0.096	0.104	0.377	0.787	0.404	0.178	0.031	0.220	0.457	0.047	0.686	0.062	0.089
Average			0.226	0.381	0.470	0.405	0.081	0.081	0.092	0.238	0.731	0.385	0.100	0.036	0.230	0.483	0.047	0.613	0.042	0.082
SD(n-1)			0.087	0.095	0.193	0.047	0.015	0.038	0.010	0.112	0.091	0.045	0.053	0.012	0.039	0.028	0.018	0.147	0.028	0.009
MDL		Avg OC sample mass	0.49	0.67	1.05	0.55	0.13	0.19	0.12	0.58	1.00	0.52	0.26	0.07	0.35	0.57	0.10	1.05	0.13	0.11
Mass Adjusted MDL		*6.85*	0.07	0.10	0.15	0.08	0.02	0.03	0.02	0.08	0.15	0.08	0.04	0.01	0.05	0.08	0.01	0.15	0.02	0.02

[a] QC samples from PCB protocol.

[b] QC samples from OC protocol.

[c] Average of PB060898 and 2 Matrix Blanks.

[d] PB 070698 was contaminated, not used in MDL calculations.

[e] Average of GC replicate injections.

Non detects are set to the instrument detection limit of 0.01 ng/g.

10.4125

Table 2. Quality Control Data for Hudson River Biota--PCB congeners (ng/g)

(Method Detection Limits, Matrix Spike Recovery, Procedure and Matrix Blanks, Positive Control, Statistics)

Sample Name	Field ID	Sample Type	135,144,124	147	107	123,149	118	134	114	131,122	146	153	132	105	141	179	137	176	130	138
17141-A[a]	HUDNST2	Brown Bullhead	19.1	8.4	12.6	77.7	86.2	4.4	4.3	2.3	29.7	78.0	27.9	48.0	17.2	8.6	10.0	2.6	11.3	108.3
17141-B[a]	HUDNST2	Brown Bullhead	22.2	7.1	15.8	99.2	112.9	4.9	3.7	2.6	34.0	98.8	39.7	55.1	19.5	10.0	10.4	2.5	11.7	130.0
17141-C[a]	HUDNST2	Brown Bullhead	20.7	7.2	14.5	91.0	99.0	4.6	4.3	2.4	31.8	91.7	39.4	50.5	18.3	9.2	9.8	2.4	11.0	119.8
17141 Average			20.6	7.6	14.3	89.3	99.4	4.6	4.1	2.4	31.8	89.5	35.6	51.2	18.3	9.3	10.1	2.5	11.3	119.4
SD(n-1)			1.5	0.8	1.6	10.8	13.4	0.3	0.3	0.2	2.1	10.6	6.7	3.6	1.1	0.7	0.3	0.1	0.3	10.8
% RSD			7.4	10.1	11.3	12.1	13.4	5.5	8.3	6.8	6.7	11.9	18.8	7.0	6.3	7.6	2.9	5.4	3.0	9.1
MS 060898[a,e]	Matrix Spike	Bluegill # 654C	5.63	0.57	1.11	20.00	10.92	1.83	0.49	0.69	3.52	12.39	17.00	5.12	5.96	4.35	1.40	1.92	1.85	20.77
Percent Recovery			*97*	*121*	*105*	*97*	*100*	*99*	*95*	*98*	*105*	*104*	*110*	*77*	*99*	*97*	*109*	*102*	*108*	*103*
MS 070698[a,e]	Matrix Spike	Chicken Egg	5.67	0.57	1.08	19.84	10.94	1.82	0.52	0.71	3.41	12.07	15.38	6.31	5.97	4.32	1.36	1.89	1.83	20.45
Percent Recovery			*97*	*118*	*102*	*96*	*99*	*98*	*100*	*100*	*101*	*100*	*99*	*94*	*98*	*96*	*105*	*100*	*106*	*101*
PC 060198[b,e]	Positive Control	Sag B Carp 6806	49.82	16.91	55.21	187.52	380.05	18.47	21.24	8.37	67.45	174.52	122.27	180.56	46.03	25.62	24.85	7.99	31.24	292.75
PC 060898[a,e]	Positive Control	Sag B Carp 6806-123	34.57	10.63	40.69	124.91	265.42	10.08	12.78	6.14	47.14	120.91	106.88	134.11	32.32	17.08	17.37	5.47	22.56	205.61
PC 070698[a,e]	Positive Control	Sag B Carp 6806-123	34.67	10.12	41.12	126.27	268.57	11.68	9.67	6.33	48.61	122.98	90.87	147.96	32.99	17.27	18.06	6.36	23.66	207.67
MB 070698[b]	Matrix blank	Chicken egg	0.07	0.17	<0.01	0.32	0.64	0.03	0.11	0.06	0.08	0.29	0.40	0.23	0.08	0.05	0.03	<0.01	0.02	0.64
MB 060198[b]	Matrix blank	Bluegill tissue	0.26	0.17	0.28	1.55	2.42	0.12	0.19	0.11	0.84	2.28	0.81	0.71	0.42	0.12	0.24	<0.01	0.25	3.08
PB 060898[a]	Procedure Blank	Na_2SO_4	0.181	0.090	0.155	0.917	2.181	0.006	0.002	0.005	0.695	1.633	0.325	1.060	0.159	0.095	0.003	0.003	0.003	2.191
Mass adjusted PB 060898	Procedure Blank		*0.012*	*0.006*	*0.011*	*0.062*	*0.148*	*0.000*	*0.000*	*0.000*	*0.047*	*0.111*	*0.022*	*0.072*	*0.011*	*0.006*	*0.000*	*0.000*	*0.000*	*0.149*
MB 060898[a]	Matrix Blank	Bluegill # 654C	0.120	0.122	0.246	1.156	1.623	0.093	0.075	0.000	0.634	1.714	0.605	0.728	0.314	0.128	0.199	0.077	0.203	2.485
MB 070698[a]	Matrix Blank	Chicken Egg	0.000	0.000	0.000	0.082	0.321	0.000	0.000	0.000	0.000	0.167	0.073	0.248	0.000	0.000	0.000	0.000	0.000	0.122
Average[c]			0.044	0.043	0.086	0.434	0.697	0.031	0.025	0.000	0.227	0.664	0.233	0.349	0.108	0.045	0.067	0.026	0.068	0.918
SD (n-1)[c]			0.066	0.069	0.139	0.626	0.806	0.054	0.043	0.000	0.353	0.910	0.323	0.339	0.178	0.072	0.115	0.044	0.117	1.357
MDL (mass adjusted)	*Method Detection Limit = PB Avg + 3(SD)*		*0.24*	*0.25*	*0.50*	*2.31*	*3.12*	*0.19*	*0.16*	*0.01*	*1.29*	*3.39*	*1.20*	*1.37*	*0.64*	*0.26*	*0.41*	*0.16*	*0.42*	*4.99*
PB 070698[a,d]	Carryover check	Na_2SO_4	0.655	0.069	0.688	1.167	9.118	0.003	0.502	0.007	0.613	1.897	0.891	9.286	0.414	0.006	0.308	0.011	0.113	3.189
PB 060198 GCR1[b]	procedure blank	Na_2SO_4	0.052	0.027	0.061	0.357	0.545	0.026	0.146	0.000	0.096	0.331	0.360	0.161	0.063	0.034	0.025	0.000	0.007	0.456
PB 060198 GCR2[b]	procedure blank	Na_2SO_4	0.090	0.022	0.056	0.358	0.565	0.039	0.176	0.000	0.069	0.379	0.382	0.201	0.072	0.015	0.041	0.000	0.018	0.661
PB 060198 GCR3[b]	procedure blank	Na_2SO_4	0.106	0.018	0.038	0.293	0.470	0.036	0.155	0.000	0.048	0.320	0.316	0.150	0.066	0.025	0.023	0.000	0.025	0.539
PB 070698 GCR1[b]	procedure blank	Na_2SO_4	0.143	0.025	0.064	0.406	0.725	0.069	0.128	0.000	0.090	0.458	0.387	0.293	0.108	0.033	0.053	0.000	0.033	0.897
PB 070698 GCR2[b]	procedure blank	Na_2SO_4	0.094	0.034	0.055	0.380	0.673	0.034	0.114	0.000	0.040	0.493	0.457	0.282	0.087	0.020	0.043	0.000	0.046	0.561
PB 070698 GCR3[b]	procedure blank	Na_2SO_4	0.088	0.015	0.038	0.362	0.659	0.027	0.100	0.000	0.025	0.492	0.534	0.290	0.079	0.020	0.066	0.000	0.042	0.875
Average			0.095	0.023	0.052	0.359	0.606	0.039	0.136	0.000	0.061	0.412	0.406	0.229	0.079	0.024	0.042	0.000	0.029	0.665
SD(n-1)			0.029	0.007	0.011	0.038	0.095	0.016	0.028	0.000	0.029	0.079	0.078	0.067	0.017	0.008	0.017	0.000	0.015	0.184
MDL		Avg OC sample mass	0.18	0.04	0.09	0.47	0.89	0.09	0.22	0.00	0.15	0.65	0.64	0.43	0.13	0.05	0.09	0.00	0.07	1.22
Mass Adjusted MDL		*6.85*	*0.03*	*0.01*	*0.01*	*0.07*	*0.13*	*0.01*	*0.03*	*0.01*	*0.02*	*0.09*	*0.09*	*0.06*	*0.02*	*0.01*	*0.01*	*0.01*	*0.01*	*0.18*

[a] QC samples from PCB protocol.

[b] QC samples from OC protocol.

[c] Average of PB060898 and 2 Matrix Blanks.

[d] *PB 070698 was contaminated, not used in MDL calculations.*

[e] Average of GC replicate injections.

Non detects are set to the instrument detection limit of 0.01 ng/g.

10.4126

Table 2. Quality Control Data for Hudson River Biota--PCB congeners (ng/g)

(Method Detection Limits, Matrix Spike Recovery, Procedure and Matrix Blanks, Positive Control, Statistics)

Sample Name	Field ID	Sample Type	158	129	178	182,187	183	128	167	185	174	177	171,202	156	173	201	157	172	197	180
17141-A[a]	HUDNST2	Brown Bullhead	10.9	5.8	6.9	40.6	19.3	28.8	5.0	2.3	15.1	11.4	6.8	11.7	0.3	4.7	3.9	3.3	0.4	58.2
17141-B[a]	HUDNST2	Brown Bullhead	11.5	6.1	8.0	48.6	19.4	30.3	5.1	2.4	17.2	13.2	7.8	12.7	0.3	5.6	4.6	3.5	0.4	75.6
17141-C[a]	HUDNST2	Brown Bullhead	10.9	5.8	7.5	46.2	18.5	29.0	4.9	2.3	16.2	12.5	7.4	12.2	<0.01	5.4	4.4	3.3	0.4	70.7
17141 Average			11.1	5.9	7.5	45.1	19.1	29.4	5.0	2.3	16.2	12.4	7.4	12.2	0.2	5.2	4.3	3.4	0.4	68.2
SD(n-1)			0.3	0.2	0.6	4.1	0.5	0.8	0.1	0.1	1.1	0.9	0.5	0.5	0.2	0.5	0.4	0.1	0.0	8.9
% RSD			3.1	3.3	7.4	9.0	2.6	2.8	2.1	3.3	6.5	7.0	6.6	4.3		9.4	8.4	2.5	6.1	13.1
MS 060898[a,e]	Matrix Spike	Bluegill # 654C	2.77	1.48	1.59	9.28	5.40	5.33	0.93	0.95	6.99	4.24	2.13	2.44	0.25	0.77	1.05	0.98	0.11	12.60
Percent Recovery			*103*	*97*	*102*	*108*	*97*	*103*	*101*	*98*	*96*	*98*	*96*	*101*	*93*	*99*	*93*	*99*	*93*	*101*
MS 070698[a,e]	Matrix Spike	Chicken Egg	2.73	1.46	1.55	8.86	5.62	5.28	0.92	0.96	7.03	4.24	2.18	2.37	0.26	0.77	1.05	0.96	0.12	12.47
Percent Recovery			*101*	*95*	*99*	*103*	*100*	*101*	*99*	*99*	*96*	*98*	*98*	*98*	*96*	*99*	*92*	*97*	*96*	*99*
PC 060198[b,e]	Positive Control	Sag B Carp 6806	28.64	21.24	18.24	127.22	47.92	84.18	24.36	6.38	41.64	42.01	20.19	40.43	7.76	52.22	9.84	12.04	1.31	129.45
PC 060898[a,e]	Positive Control	Sag B Carp 6806-123	20.70	13.56	12.52	90.11	33.89	58.84	17.53	4.80	27.52	29.33	17.90	31.78	3.26	37.10	6.89	11.20	1.13	93.87
PC 070698[a,e]	Positive Control	Sag B Carp 6806-123	20.96	13.87	12.72	89.10	34.36	59.15	18.14	4.78	27.86	28.43	15.22	31.85	3.05	37.51	6.70	10.98	1.06	94.07
MB 070698[b]	Matrix blank	Chicken egg	0.05	0.02	0.05	0.12	0.16	0.11	0.03	0.09	0.04	0.05	0.02	0.09	0.07	0.22	<0.01	<0.01	0.09	0.18
MB 060198[b]	Matrix blank	Bluegill tissue	0.29	0.09	0.26	2.56	0.45	0.50	0.15	0.03	0.31	0.35	0.19	0.27	<0.01	0.09	<0.01	0.12	<0.01	1.42
PB 060898[a]	Procedure Blank	Na_2SO_4	0.111	0.015	0.027	1.494	0.192	0.318	0.012	0.001	0.141	0.145	0.082	0.217	0.000	0.000	0.000	0.000	0.000	0.924
Mass adjusted PB 060898	Procedure Blank		0.008	0.001	0.002	0.101	0.013	0.022	0.001	0.000	0.010	0.010	0.006	0.015	0.000	0.000	0.000	0.000	0.000	0.063
MB 060898[a]	Matrix Blank	Bluegill # 654C	0.271	0.063	0.179	2.003	0.385	0.555	0.102	0.000	0.265	0.268	0.150	0.196	0.000	0.000	0.000	0.092	0.000	1.179
MB 070698[a]	Matrix Blank	Chicken Egg	0.000	0.000	0.000	0.174	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047
Average[c]			0.093	0.021	0.060	0.760	0.133	0.192	0.034	0.000	0.092	0.093	0.052	0.070	0.000	0.000	0.000	0.031	0.000	0.430
SD (n-1)[c]			0.154	0.036	0.103	1.078	0.219	0.314	0.058	0.000	0.151	0.152	0.085	0.109	0.000	0.000	0.000	0.053	0.000	0.649
MDL (mass adjusted)	*Method Detection Limit = PB Avg + 3(SD)*		*0.56*	*0.13*	*0.37*	*3.99*	*0.79*	*1.14*	*0.21*	*0.01*	*0.54*	*0.55*	*0.31*	*0.40*	*0.01*	*0.01*	*0.01*	*0.19*	*0.01*	*2.38*
PB 070698[a,d]	Carryover check	Na_2SO_4	0.262	0.061	0.026	1.387	0.224	0.785	0.098	0.008	0.185	0.138	0.062	0.717	0.000	0.000	0.000	0.000	0.000	0.802
PB 060198 GCR1[e]	procedure blank	Na_2SO_4	0.014	0.037	0.006	0.166	0.047	0.081	0.018	0.007	0.037	0.024	0.018	0.047	0.000	0.066	0.000	0.000	0.000	0.129
PB 060198 GCR2[e]	procedure blank	Na_2SO_4	0.052	0.023	0.014	0.231	0.050	0.096	0.021	0.003	0.043	0.019	0.021	0.050	0.000	0.033	0.000	0.000	0.000	0.144
PB 060198 GCR3[e]	procedure blank	Na_2SO_4	0.024	0.026	0.019	0.132	0.034	0.076	0.018	0.001	0.049	0.027	0.025	0.050	0.000	0.027	0.000	0.000	0.000	0.097
PB 070698 GCR1[e]	procedure blank	Na_2SO_4	0.069	0.046	0.009	0.245	0.068	0.148	0.021	0.000	0.062	0.046	0.022	0.060	0.000	0.000	0.000	0.000	0.000	0.208
PB 070698 GCR2[e]	procedure blank	Na_2SO_4	0.036	0.039	0.007	0.285	0.056	0.127	0.010	0.000	0.047	0.030	0.034	0.066	0.000	0.000	0.000	0.000	0.000	0.225
PB 070698 GCR3[e]	procedure blank	Na_2SO_4	0.068	0.054	0.018	0.119	0.040	0.132	0.035	0.000	0.054	0.031	0.021	0.054	0.000	0.000	0.000	0.000	0.000	0.228
Average			0.044	0.037	0.012	0.196	0.049	0.110	0.020	0.002	0.049	0.030	0.023	0.055	0.000	0.021	0.000	0.000	0.000	0.172
SD(n-1)			0.023	0.012	0.006	0.067	0.012	0.030	0.008	0.003	0.009	0.009	0.006	0.007	0.000	0.027	0.000	0.000	0.000	0.056
MDL		*Avg OC sample mass*	*0.11*	*0.07*	*0.03*	*0.40*	*0.09*	*0.20*	*0.04*	*0.01*	*0.07*	*0.06*	*0.04*	*0.08*	*0.00*	*0.10*	*0.00*	*0.00*	*0.00*	*0.34*
Mass Adjusted MDL		*6.85*	*0.02*	*0.01*	*0.01*	*0.06*	*0.01*	*0.03*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.05*

[a] QC samples from PCB protocol.

[b] QC samples from OC protocol.

[c] Average of PB060898 and 2 Matrix Blanks.

[d] PB 070698 was contaminated, not used in MDL calculations.

[e] Average of GC replicate injections.

Non detects are set to the instrument detection limit of 0.01 ng/g.

10.4127

Table 2. Quality Control Data for Hudson River Biota--PCB congeners (ng/g)

(Method Detection Limits, Matrix Spike Recovery, Procedure and Matrix Blanks, Positive Control, Statistics)

Sample Name	Field ID	Sample Type	193	191	200	170,190	198	199	196,203	189	208,195	207	194	205	206	209	Total PCBs
17141-A[a]	HUDNST2	Brown Bullhead	2.7	1.2	1.3	15.2	1.1	12.4	11.6	0.8	4.8	1.1	8.6	0.9	8.4	3.3	3222
17141-B[a]	HUDNST2	Brown Bullhead	3.2	1.4	1.4	18.8	1.2	14.2	13.2	0.9	5.3	1.2	8.5	1.0	8.4	3.8	3702
17141-C[a]	HUDNST2	Brown Bullhead	3.3	1.8	1.3	18.1	1.2	13.4	12.5	0.8	5.1	1.1	8.3	0.9	7.9	3.6	3491
17141 Average			3.1	1.5	1.3	17.3	1.2	13.3	12.4	0.8	5.1	1.1	8.5	0.9	8.2	3.6	3472
SD(n-1)			0.3	0.3	0.1	1.9	0.1	0.9	0.8	0.0	0.3	0.0	0.2	0.0	0.3	0.2	241
% RSD			10.2	20.3	5.4	10.9	5.2	6.6	6.6	2.9	5.0	4.5	1.9	5.4	3.4	6.4	6.9
MS 060898[a,e]	Matrix Spike	Bluegill # 654C	0.81	0.63	0.47	5.94	0.30	2.77	2.87	0.24	1.17	0.11	2.87	0.22	0.94	0.14	549.8
Percent Recovery			*109*	*98*	*74*	*99*	*94*	*102*	*99*	*98*	*100*	*92*	*101*	*117*	*106*	*138*	*96*
MS 070698[a,e]	Matrix Spike	Chicken Egg	0.81	0.64	0.51	5.78	0.32	2.73	2.87	0.23	1.16	0.11	2.87	0.23	0.88	0.12	553.9
Percent Recovery			*108*	*99*	*79*	*96*	*100*	*100*	*98*	*97*	*99*	*86*	*100*	*121*	*98*	*117*	*96*
PC 060198[b,e]	Positive Control	Sag B Carp 6806	9.75	5.45	4.93	61.00	4.81	39.76	34.32	3.72	18.38	5.09	29.06	7.27	17.58	17.73	10210
PC 060898[a,e]	Positive Control	Sag B Carp 6806-123	7.01	4.57	3.79	43.29	2.61	27.87	25.63	2.89	13.15	5.51	20.46	5.43	12.38	13.04	7010
PC 070698[a,e]	Positive Control	Sag B Carp 6806-123	6.83	4.52	3.33	43.44	3.12	28.13	25.49	3.14	13.15	5.06	20.73	5.44	12.35	13.26	7066
MB 070698[b]	Matrix blank	Chicken egg	<0.01	0.10	0.67	0.12	0.10	0.04	0.03	0.02	0.02	0.05	0.05	0.05	0.04	0.40	17
MB 060198[b]	Matrix blank	Bluegill tissue	0.18	0.10	<0.01	0.70	<0.10	0.44	0.33	0.04	0.13	0.02	0.26	0.05	0.52	0.41	40
PB 060898[a]	Procedure Blank	Na_2SO_4	0.001	0.002	0.000	3.535	0.000	0.095	0.048	0.036	0.000	0.000	0.045	0.008	2.049	1.033	46.3
Mass adjusted PB 060898	Procedure Blank		0.000	0.000	0.000	0.240	0.000	0.006	0.003	0.002	0.000	0.000	0.003	0.001	0.139	0.070	3.1
MB 060898[a]	Matrix Blank	Bluegill # 654C	0.130	0.000	0.000	0.556	0.000	0.330	0.211	0.000	0.028	0.000	0.251	0.000	0.308	0.135	36.7
MB 070698[a]	Matrix Blank	Chicken Egg	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.048	0.000	0.094	7.9
Average[c]			0.043	0.000	0.000	0.265	0.000	0.112	0.071	0.001	0.009	0.000	0.085	0.016	0.149	0.100	15.9
SD (n-1)[c]			0.075	0.000	0.000	0.279	0.000	0.189	0.121	0.001	0.016	0.000	0.144	0.028	0.154	0.033	18.1
MDL (mass adjusted)	*Method Detection Limit = PB Avg + 3(SD)*		*0.27*	*0.01*	*0.01*	*1.10*	*0.01*	*0.68*	*0.43*	*0.01*	*0.06*	*0.01*	*0.52*	*0.10*	*0.61*	*0.20*	*70.3*
PB 070698[a,d]	Carryover check	Na_2SO_4	0.005	0.002	0.001	2.865	0.000	0.098	0.038	0.004	0.007	0.002	0.046	0.003	2.919	0.932	236.8
PB 060198 GCR1[b]	procedure blank	Na_2SO_4	0.000	0.000	0.005	0.701	0.015	0.042	0.004	0.000	0.001	0.012	0.004	0.000	0.000	0.753	12
PB 060198 GCR2[b]	procedure blank	Na_2SO_4	0.000	0.000	0.007	0.759	0.400	0.026	0.023	0.000	0.013	0.016	0.020	0.000	0.000	0.996	14
PB 060198 GCR3[b]	procedure blank	Na_2SO_4	0.000	0.000	0.006	0.771	0.367	0.024	0.011	0.000	0.018	0.015	0.019	0.000	0.000	0.830	11
PB 070698 GCR1[b]	procedure blank	Na_2SO_4	0.000	0.000	0.000	0.871	0.000	0.026	0.024	0.000	0.020	0.000	0.022	0.000	0.000	1.191	16
PB 070698 GCR2[b]	procedure blank	Na_2SO_4	0.000	0.000	0.000	0.858	0.000	0.037	0.036	0.000	0.012	0.000	0.013	0.000	0.000	1.006	15
PB 070698 GCR3[b]	procedure blank	Na_2SO_4	0.000	0.000	0.000	0.808	0.000	0.030	0.032	0.000	0.005	0.000	0.017	0.000	0.000	1.165	15
Average			*0.000*	*0.000*	*0.003*	*0.794*	*0.130*	*0.031*	*0.022*	*0.000*	*0.011*	*0.007*	*0.016*	*0.000*	*0.000*	*0.990*	*14*
SD(n-1)			0.000	0.000	0.003	0.064	0.196	0.007	0.012	0.000	0.007	0.008	0.007	0.000	0.000	0.175	4
MDL		Avg OC sample mass	0.00	0.00	0.01	0.99	0.72	0.05	0.06	0.00	0.03	0.03	0.04	0.00	0.00	1.51	26
Mass Adjusted MDL		*6.85*	*0.01*	*0.01*	*0.01*	*0.14*	*0.10*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.22*	*2.90*

[a]QC samples from PCB protocol.

[b]QC samples from OC protocol.

[c]Average of PB060898 and 2 Matrix Blanks.

[d]PB 070698 was contaminated, not used in MDL calculations.

[e]Average of GC replicate injections.

Non detects are set to the instrument detection limit of 0.01 ng/g.

10.4128

Table 3. Recovery Data for PCB congeners--Hudson River Samples

(Amount in ng and percent recovery for Recovery compounds 030 and 204)

Sample Name	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	PCB 030 Amount (ng)	PCB 030 % recovery	PCB 204 Amount (ng)	PCB 204 % recovery
17138[b]	HUDPL1	eagle plasma	1.47	0.74	71.2	52.4	103.8	76.3
17139[b]	HUDFT1	eagle fat	0.54	74.50	215.4	58.2	316.0	85.3
17140	HUDNST1	Amer. Eel	14.72	13.30	324.5	77.7	405.0	78.8
17141-A	HUDNST2	Brown Bullhead	14.73	5.09	118.5	28.4	147.3	28.7
17141-B	HUDNST2	Brown Bullhead	14.73	5.02	353.8	84.8	434.0	84.4
17141-C	HUDNST2	Brown Bullhead	14.82	5.09	307.6	73.7	443.4	86.3
17142	HUDRIV1	American Eel	14.68	8.28	379.1	90.8	447.8	87.1
17143	HUDRIV2	American Eel	14.92	4.04	339.6	81.4	416.4	81.0
17144	HUDRIV3	American Eel	15.01	1.99	324.5	77.7	435.9	84.8
17145	HUDRIV4	Brown Bullhead	14.73	2.13	291.0	69.7	445.6	86.7
17146	HUDRIV5	WhitePerch	14.78	1.56	369.1	88.4	435.7	84.8
17147	HUDRIV6	WhitePerch	14.73	3.49	359.6	86.2	448.1	87.2
17148	HUDRIV7	WhitePerch	14.69	2.20	361.5	86.6	436.0	84.8
17149	HUDRIV8	Blueback Herring	14.90	10.40	364.7	87.4	439.0	85.4
17150	HUDTS-1	Tree Swallow	3.16	4.35	316.1	75.7	407.8	79.3
17151	HUDTS-2	Tree Swallow	4.98	8.27	331.0	79.3	425.7	82.8
17152	HUDBB1	Bluebird nestling	14.87	3.72	352.7	84.5	439.0	85.4
17153	HUDBB2	Bluebird nestling	14.98	4.68	356.4	85.4	434.7	84.6
17154	HUDBB3	Bluebird nestling	15.00	3.07	351.1	84.1	431.2	83.9
17155	HUDBB4	Bluebird nestling	15.23	3.73	381.5	91.4	454.3	88.4
17156[b]	HUDWD1	wood duck embryo	3.63	11.9	111.1	70.4	158.2	91.9
17157[b]	HUDWD2	wood duck embryo	8.68	15.8	99.9	80.5	138.4	111.5
17158[b]	HUDHP	Henslow sparrow egg	0.36	7.36	267.7	61.6	336.6	77.4
17159[b]	HUDSP	Savannah sparrow egg	1.62	8.32	73.2	74.3	87.1	88.4
MB 060898	Matrix Blank	Bluegill # 654C	14.75	3.92	381.4	91.4	443.8	86.3
MB 070698	Matrix Blank	Chicken Egg	14.72	7.42	356.0	85.3	436.6	84.9
PC 060198[b]	Positive Control	Saginaw Bay Carp	4.41	14.5	86.2	66.4	101.8	71.8
PC 060898[a]	Positive Control	Sag B Carp 6806-123	9.80	14.50	359.2	86.1	462.2	89.9
PC 070698[a]	Positive Control	Sag B Carp 6806-123	9.97	14.75	340.9	81.7	450.5	87.6
MS 060898[a]	Matrix Spike	Bluegill # 654C	14.79	3.91	364.2	87.2	439.9	85.6
MS 070698[a]	Matrix Spike	Chicken Egg	14.71	7.69	357.0	85.5	435.9	84.8
PB 060198[a,b]	Procedure Blank	Na_2SO_4	n/a	n/a	268.1	46.6	415.1	66.4
PB 060898[a]	Procedure Blank	Na_2SO_4	n/a	n/a	366.4	87.8	438.7	85.4
PB 070698[a]	Procedure Blank	Na_2SO_4	n/a	n/a	358.6	85.9	442.9	86.2
PB 070698[a,b]	Procedure Blank	Na_2SO_4	n/a	n/a	333.6	58.2	425.6	68.1
Average						*76.9*		*82.6*
Standard Deviation (n-1)						*14.2*		*11.9*

n/a- not applicable. [a] average of GC replicate injection. [b] From OC procedure.

Cells that are gray indicate the recovery was below acceptable QC (50%).

Table 4. Organochlorine Pesticide Concentrations (ng/g)--Hudson River Biota

Sample Name	Field ID	Sample Type	Total geq for Analysis	% Lipid	HCB	PCA	A-BHC	Lindane	B-BHC	Heptachlor	D-BHC	Dacthal
17138	HUDPL1	Eagle Plasma	2.00	0.74	0.47	0.26	0.08	< 0.87	0.02	0.09	0.14	< 0.01
17139	HUDFT1	Eagle Fat	0.73	74.50	18.8	22.7	0.89	1.5	0.42	< 0.01	0.41	0.39
17140	HUDNST1	American Eel	4.94	13.30	3.1	1.2	1.2	1.7	0.04	0.48	1.5	0.08
17141[a]	HUDNST2	Brown Bullhead	5.07	4.25	2.6	0.99	0.10	< 0.87	< 0.02	< 0.01	0.14	0.03
17142	HUDRIV1	American Eel	5.13	6.87	1.6	0.36	0.53	< 0.87	0.04	0.12	0.39	< 0.01
17143	HUDRIV2	American Eel	5.17	3.79	0.95	0.16	0.14	< 0.87	< 0.02	< 0.01	< 0.11	< 0.01
17144	HUDRIV3	American Eel	5.12	1.53	0.52	< 0.13	0.02	< 0.87	< 0.02	< 0.01	< 0.11	< 0.01
17145	HUDRIV4	Brown Bullhead	5.04	1.56	0.45	< 0.13	0.02	< 0.87	< 0.02	< 0.01	< 0.11	< 0.01
17146	HUDRIV5	WhitePerch	5.05	0.97	0.38	0.44	0.03	< 0.87	< 0.02	< 0.01	< 0.11	0.10
17147	HUDRIV6	WhitePerch	5.23	2.81	0.85	1.1	0.27	< 0.87	< 0.02	< 0.01	0.23	< 0.01
17148	HUDRIV7	WhitePerch	5.02	1.66	0.82	1.1	0.32	< 0.87	< 0.02	0.34	0.42	< 0.01
17149	HUDRIV8	Blueback Herring	5.07	9.67	1.9	1.2	0.80	< 0.87	0.06	< 0.01	< 0.11	0.32
17150	HUDTS1	Tree Swallow	1.70	5.78	1.9	0.40	0.83	1.5	0.54	< 0.01	0.23	< 0.01
17151	HUDTS2	Tree Swallow	2.00	9.31	3.1	0.74	1.4	4.5	0.27	< 0.01	0.48	0.09
17152[a]	HUDBB1	Bluebird nestling	3.72	4.60	0.53	0.43	0.29	< 0.87	0.03	0.05	0.23	< 0.01
17153	HUDBB2	Bluebird nestling	4.92	5.28	1.6	1.1	0.07	< 0.87	0.03	< 0.01	< 0.11	< 0.01
17154	HUDBB3	Bluebird nestling	4.88	3.51	0.33	< 0.13	0.11	1.05	< 0.02	< 0.01	< 0.11	0.03
17155	HUDBB4	Bluebird nestling	4.86	4.44	0.27	< 0.13	0.18	< 0.87	0.43	0.03	0.14	< 0.01
17156	HUDWD1	Wood Duck embryo	4.12	11.90	1.0	0.20	0.32	< 0.87	< 0.02	0.08	0.37	< 0.01
17157	HUDWD2	Wood Duck embryo	9.29	15.80	1.0	0.16	0.01	< 0.87	< 0.02	< 0.01	0.3	0.08
17158	HUDHP	Henslow Sparrow Egg	0.53	7.36	2.3	0.78	1.2	1.8	3.03	0.45	1.17	< 0.01
17159	HUDSP	Savannah Sparrow Egg	2.30	8.32	1.2	0.19	0.64	< 0.87	1.26	0.18	0.56	< 0.01
MDL[b]	Average MDL in ng/g				0.04	0.13	0.01	0.87	0.02	0.01	0.11	0.01

[a]Average of method triplicate or duplicate.

[b]Weight adjusted detection limits. MDLs are adjusted for average sample mass.

10.4130

Table 4. Organochlorine Pesticide Concentrations (ng/g)--Hudson River Biota

Sample Name	Field ID	Sample Type	Endrin	*cis*-Nonachlor	o,p'-DDT	p,p'-DDD	p,p'-DDT	Methoxychlor	Mirex
17138	HUDPL1	Eagle Plasma	< 0.22	1.2	< 0.17	5.7	< 1.2	< 0.12	0.76
17139	HUDFT1	Eagle Fat	0.27	99	5.5	414	56	< 0.12	31
17140	HUDNST1	American Eel	< 0.22	9.9	1.6	54	10	< 0.12	0.14
17141[a]	HUDNST2	Brown Bullhead	< 0.22	2.2	0.30	10	2.1	< 0.12	0.11
17142	HUDRIV1	American Eel	< 0.22	3.0	< 0.17	22	2.0	< 0.12	0.06
17143	HUDRIV2	American Eel	< 0.22	< 0.68	< 0.17	6.6	1.3	< 0.12	0.43
17144	HUDRIV3	American Eel	< 0.22	1.2	0.22	7.9	< 1.2	< 0.12	< 0.05
17145	HUDRIV4	Brown Bullhead	< 0.22	0.96	< 0.17	6.3	< 1.2	< 0.12	1.0
17146	HUDRIV5	WhitePerch	< 0.22	1.2	< 0.17	5.8	< 1.2	< 0.12	< 0.05
17147	HUDRIV6	WhitePerch	< 0.22	1.9	0.43	12	3.0	< 0.12	< 0.05
17148	HUDRIV7	WhitePerch	< 0.22	1.8	0.20	10	1.3	< 0.12	1.0
17149	HUDRIV8	Blueback Herring	< 0.22	2.3	< 0.17	4.6	1.8	< 0.12	0.09
17150	HUDTS1	Tree Swallow	< 0.22	4.6	< 0.17	0.69	1.6	< 0.12	14
17151	HUDTS2	Tree Swallow	< 0.22	1.6	< 0.17	0.88	1.4	< 0.12	17
17152[a]	HUDBB1	Bluebird nestling	< 0.22	< 0.68	< 0.17	0.20	< 1.2	< 0.12	0.95
17153	HUDBB2	Bluebird nestling	< 0.22	< 0.68	< 0.17	0.37	< 1.2	< 0.12	0.05
17154	HUDBB3	Bluebird nestling	< 0.22	< 0.68	< 0.17	0.08	< 1.2	< 0.12	< 0.05
17155	HUDBB4	Bluebird nestling	< 0.22	< 0.68	< 0.17	0.30	< 1.2	< 0.12	< 0.05
17156	HUDWD1	Wood Duck embryo	< 0.22	< 0.68	< 0.17	0.85	< 1.2	< 0.12	< 0.05
17157	HUDWD2	Wood Duck embryo	< 0.22	< 0.68	< 0.17	0.76	< 1.2	< 0.12	0.06
17158	HUDHP	Henslow Sparrow Egg	< 0.22	0.99	< 0.17	0.94	< 1.2	< 0.12	9.4
17159	HUDSP	Savannah Sparrow Egg	< 0.22	< 0.68	< 0.17	0.36	< 1.2	< 0.12	1.3
MDL[b]	Average MDL in ng/g		0.22	0.68	0.17	0.03	1.2	0.12	0.05

[a]Average of method triplicate or duplicate.

[b]Weight adjusted detection limits. MDLs are adjusted for average sample mass.

10.4131

Table 5. Organochlorine Pesticide QC--Hudson River Biota

Sample Name	Field ID	Sample Type	Total geq for Analysis	% Lipid	HCB	PCA	A-BHC	Lindane	B-BHC	Heptachlor	D-BHC	Dacthal
17141-A	HUDNST2	Brown Bullhead	5.07	4.25	2.76	0.66	<0.01	<0.87	< 0.02	<0.01	<0.11	<0.01
17141-B	HUDNST2	Brown Bullhead	5.03	4.00	2.16	1.10	0.12	<0.87	< 0.02	<0.01	<0.11	0.08
17141-C	HUDNST2	Brown Bullhead	4.96	4.84	3.01	1.21	0.17	<0.87	< 0.02	<0.01	0.41	<0.01
AVERAGE					2.64	0.99	0.14					
SD(n-1)					0.44	0.29	0.04					
% RSD					*16.6*	*29.1*						
17152-A	HUDBB1	Bluebird nestling	3.72	4.60	0.09	0.14	0.06	<0.87	0.05	0.10	<0.11	<0.01
17152-B	HUDBB1	Bluebird nestling	3.65	4.57	0.97	0.15	0.07	<0.87	< 0.02	<0.01	<0.11	<0.01
average			3.69	4.59	0.53	0.14	0.06		0.05	0.10		
MS 060198	Matrix spike	Bluegill # 654C	4.99	3.04	126	15	38	113	147	126	154	56
% Recovery					**64.9**	**8.0**	**18.5**	**55.7**	**85.3**	**63.2**	**75.9**	**28.1**
MS 070698 GCR1	Matrix spike	Chicken Egg	4.91	9.38	123	147	158	182	186	168	139	89
MS 070698 GCR2	Matrix spike	Chicken Egg	4.91	9.38	122	146	159	173	180	163	137	73
MS 070698 GCR3	Matrix spike	Chicken Egg	4.91	9.38	139	151	165	176	180	151	136	76
AVERAGE					128	148	161	177	182	161	137	79
SD(n-1)					10	3	4	5	3	9	2	9
% RSD					7.5	1.8	2.4	2.6	1.9	5.5	1.2	10.8
% Recovery					**66.1**	**77.3**	**78.3**	**87.1**	**105.4**	**80.4**	**67.8**	**39.8**
MB 060198	Matrix blank	Bluegill # 654C	5.04	2.76	0.18	< 0.13	0.11	< 0.87	< 0.02	< 0.01	< 0.11	0.07
MB 070698	Matrix blank	Chicken Egg	4.79	9.22	< 0.04	0.14	<0.01	< 0.87	< 0.02	< 0.01	< 0.11	0.04
PC 060198 GCR1	positive control	Sag B Carp 6806-123	4.97	14.50	9.7	1.8	2.3	1.9	0.48	< 0.01	< 0.11	3.2
PC 060198 GCR2	positive control	Sag B Carp 6806-123	4.97	14.50	8.8	1.8	2.3	1.8	0.47	< 0.01	< 0.11	3.3
PC 060198 GCR3	positive control	Sag B Carp 6806-123	4.97	14.50	10.7	1.9	2.3	1.9	0.48	< 0.01	< 0.11	3.0
AVERAGE					9.7	1.8	2.3	1.9	*0.5*			3.2
SD(n-1)					1.0	0.1	0.0	0.0	0.0			0.1
% RSD					10.0	5.2	1.2	1.1	1.4			4.4
PC 070698	positive control	Sag B Carp 6806-123	4.90	14.80	7.7	2.4	4.5	2.3	0.63	0.08	0.16	1.0

10.4132

Table 5. Organochlorine Pesticide QC--Hudson River Biota

Sample Name	Field ID	Sample Type	Total geq for Analysis	% Lipid	HCB	PCA	A-BHC	Lindane	B-BHC	Heptachlor	D-BHC	Dacthal
PB 060198 GCR1	procedure blank	Na_2SO_4			0.07	0.11	0.00	5.85	0.03	0.00	0.34	0.00
PB 060198 GCR2	procedure blank	Na_2SO_4			0.06	0.26	0.00	4.58	0.00	0.00	0.27	0.00
PB 060198 GCR3	procedure blank	Na_2SO_4			0.09	0.26	0.02	4.43	0.00	0.00	0.26	0.00
AVERAGE					0.07	0.21	0.01	4.95	0.01	0.00	0.29	0.00
SD(n-1)					0.01	0.09	0.01	0.78	0.01	0.00	0.04	0.00
MDL	=PB Avg + 3*SD				**0.11**	**0.48**	**0.03**	**7.29**	**0.05**	**0.00**	**0.42**	**0.00**
PB 070698 GCR1	procedure blank	Na_2SO_4			0.21	0.13	0.01	0.13	0.08	0.00	0.07	0.00
PB 070698 GCR2	procedure blank	Na_2SO_4			0.17	0.17	0.05	0.18	0.06	0.02	0.29	0.00
PB 070698 GCR3	procedure blank	Na_2SO_4			0.19	0.39	0.01	0.19	0.05	0.02	0.24	0.00
AVERAGE					0.19	0.23	0.02	0.17	0.06	0.01	0.20	0.00
SD(n-1)					0.02	0.14	0.02	0.03	0.02	0.01	0.11	0.00
L=PB AVG+3(PB SD)					**0.25**	**0.64**	**0.08**	**0.26**	**0.12**	**0.04**	**0.54**	**0.00**
Average MDL		Avg of PBs MDLs			0.18	0.56	0.06	3.78	0.09	0.02	0.48	0.00
		avg mass adjusted	4.36	g	***0.04***	***0.13***	***0.01***	***0.87***	***0.02***	***0.01***	***0.11***	***0.01***

10.4133

Table 5. Organochlorine Pesticide QC--Hudson River Biota

Sample Name	Field ID	Sample Type	Oxychlordane	Heptachlor Epoxide	*trans*-Chlordane	*trans*-Nonachlor	o,p'-DDE	*cis*-Chlordane	p,p'-DDE	Dieldrin	o,p'-DDD
17141-A	HUDNST2	Brown Bullhead	< 0.06	<0.01	0.22	4.73	< 0.49	0.59	82.7	0.60	0.61
17141-B	HUDNST2	Brown Bullhead	6.78	0.18	2.33	6.07	0.99	6.91	61.0	2.26	1.70
17141-C	HUDNST2	Brown Bullhead	4.69	0.43	2.62	6.51	< 0.49	7.77	86.0	2.38	1.67
AVERAGE			5.7	0.3	1.7	5.8		5.1	76.6	1.7	1.3
SD(n-1)			1.5	0.2	1.3	0.9		3.9	13.6	1.0	0.6
% RSD					*76.1*	*16.1*		*77.1*	*17.7*	*57.2*	*46.6*
17152-A	HUDBB1	Bluebird nestling	1.03	0.37	<0.07	0.05	<0.49	0.33	95.7	1.12	0.78
17152-B	HUDBB1	Bluebird nestling	2.23	0.36	<0.07	0.16	<0.49	0.45	118.8	0.98	1.86
average			1.63	0.37		0.11		0.39	107.3	1.05	1.32
MS 060198	Matrix spike	Bluegill # 654C	163	183	175	189	197	235	163	209	178
% Recovery			**81.8**	**87.7**	**87.6**	**95.2**	**98.3**	**119.6**	**81.9**	**104.7**	**90.6**
MS 070698 GCR1	Matrix spike	Chicken Egg	173	192	163	157	154	163	148	195	174
MS 070698 GCR2	Matrix spike	Chicken Egg	171	190	162	158	153	161	151	194	173
MS 070698 GCR3	Matrix spike	Chicken Egg	173	187	155	167	166	169	183	192	178
AVERAGE			172	190	160	161	158	164	161	193	175
SD(n-1)			1	3	5	5	7	4	19	1	3
% RSD			0.7	1.4	2.9	3.2	4.5	2.4	12.1	0.8	1.5
% Recovery			**86.6**	**90.9**	**80.0**	**81.0**	**78.9**	**83.7**	**80.9**	**96.8**	**88.9**
MB 060198	Matrix blank	Bluegill # 654C	0.81	0.23	< 0.07	3.06	< 0.49	< 0.21	3.40	2.75	< 0.07
MB 070698	Matrix blank	Chicken Egg	< 0.06	0.05	< 0.07	0.06	< 0.49	<0.21	0.48	0.24	< 0.07
PC 060198 GCR1	positive control	Sag B Carp 6806-123	4.8	3.4	8.5	19.3	2.2	27.1	492	16.7	49.7
PC 060198 GCR2	positive control	Sag B Carp 6806-123	4.8	3.4	8.5	19.4	2.7	26.7	492	16.9	49.4
PC 060198 GCR3	positive control	Sag B Carp 6806-123	4.9	3.6	8.7	22.0	2.2	29.3	493	17.4	50.7
AVERAGE			4.9	3.4	8.6	20.2	2.4	27.7	492	17.0	49.9
SD(n-1)			0.1	0.1	0.1	1.5	0.3	1.4	0.4	0.4	0.7
% RSD			1.2	3.5	1.1	7.5	11.4	5.1	0.1	2.1	1.4
PC 070698	positive control	Sag B Carp 6806-123	4.0	3.3	5.1	16.8	1.9	18.9	564	15.2	44.4

Table 5. Organochlorine Pesticide QC--Hudson River Biota

Sample Name	Field ID	Sample Type	Oxychlordane	Heptachlor Epoxide	*trans-* Chlordane	*trans-* Nonachlor	o,p'-DDE	*cis-* Chlordane	p,p'-DDE	Dieldrin	o,p'-DDD
PB 060198 GCR1	procedure blank	Na_2SO_4	0.18	0.00	0.18	0.07	1.26	0.25	0.57	0.21	0.12
PB 060198 GCR2	procedure blank	Na_2SO_4	0.10	0.00	0.08	0.04	0.99	0.24	0.54	0.20	0.14
PB 060198 GCR3	procedure blank	Na_2SO_4	0.15	0.00	0.18	0.04	1.14	0.11	0.55	0.67	0.07
AVERAGE			0.14	0.00	0.15	0.05	1.13	0.20	0.55	0.36	0.11
SD(n-1)			0.04	0.00	0.06	0.02	0.14	0.08	0.02	0.27	0.04
MDL	=PB Avg + 3*SD		**0.26**	**0.01**	**0.33**	**0.10**	**1.55**	**0.44**	**0.60**	**1.17**	**0.22**
PB 070698 GCR1	procedure blank	Na_2SO_4	0.18	0.00	0.13	0.02	2.32	0.51	0.38	0.51	0.19
PB 070698 GCR2	procedure blank	Na_2SO_4	0.12	0.00	0.22	0.00	1.89	0.63	0.32	0.58	0.29
PB 070698 GCR3	procedure blank	Na_2SO_4	0.12	0.00	0.18	0.02	1.93	0.00	0.39	0.41	0.15
AVERAGE			0.14	0.00	0.17	0.01	2.05	0.38	0.36	0.50	0.21
SD(n-1)			0.03	0.00	0.05	0.01	0.24	0.33	0.03	0.09	0.07
L=PB AVG+3(PB SD)			**0.24**	**0.01**	**0.31**	**0.05**	**2.77**	**1.39**	**0.47**	**0.76**	**0.42**
Average MDL		Avg of PBs MDLs	0.25	0.01	0.32	0.08	2.16	0.91	0.54	0.97	0.32
		avg mass adjusted	***0.06***	***0.01***	***0.07***	***0.02***	***0.49***	***0.21***	***0.12***	***0.22***	***0.07***

10.4135

Table 5. Organochlorine Pesticide QC--Hudson River Biota

Sample Name	Field ID	Sample Type	Endrin	*cis*-Nonachlor	o,p'-DDT	p,p'-DDD	p,p'-DDT	Methoxychlor	Mirex
17141-A	HUDNST2	Brown Bullhead	<0.22	1.49	< 0.17	8.37	1.34	<0.12	0.08
17141-B	HUDNST2	Brown Bullhead	<0.22	2.49	0.55	9.79	2.40	<0.12	0.11
17141-C	HUDNST2	Brown Bullhead	<0.22	2.73	0.31	12.46	2.58	<0.12	0.12
AVERAGE				2.2	0.4	10.2	2.1		0.1
SD(n-1)				0.7	0.2	2.1	0.7		0.0
% RSD				*29.3*		*20.4*	*31.8*		*19.2*
17152-A	HUDBB1	Bluebird nestling	<0.22	<0.68	<0.17	0.18	<1.2	<0.12	<0.05
17152-B	HUDBB1	Bluebird nestling	<0.22	<0.68	<0.17	0.22	<1.2	<0.12	1.6
average									
MS 060198	Matrix spike	Bluegill # 654C	162	187	259	174	188	263	145
% Recovery			**74.9**	**94.1**	**139.3**	**84.1**	**91.0**	**119.5**	**74.6**
MS 070698 GCR1	Matrix spike	Chicken Egg	101	175	215	178	214	204	183
MS 070698 GCR2	Matrix spike	Chicken Egg	98	174	194	177	203	186	181
MS 070698 GCR3	Matrix spike	Chicken Egg	94	182	195	182	184	202	177
AVERAGE			98	177	201	179	201	197	180
SD(n-1)			3	4	12	3	15	10	3
% RSD			3.6	2.4	6.0	1.6	7.6	5.0	1.4
% Recovery			**45.1**	**89.0**	**108.3**	**86.8**	**97.1**	**89.9**	**92.4**
MB 060198	Matrix blank	Bluegill # 654C	<0.22	< 0.68	< 0.17	0.12	< 1.2	<0.12	< 0.05
MB 070698	Matrix blank	Chicken Egg	<0.22	< 0.68	< 0.17	<0.03	<1.2	<0.12	< 0.05
PC 060198 GCR1	positive control	Sag B Carp 6806-123	<0.22	10.4	0.61	195	3.6	<0.12	0.52
PC 060198 GCR2	positive control	Sag B Carp 6806-123	<0.22	10.5	0.53	198	3.7	<0.12	0.41
PC 060198 GCR3	positive control	Sag B Carp 6806-123	<0.22	10.2	0.55	204	3.9	<0.12	4.27
AVERAGE				10.4	0.6	199	3.7		1.7
SD(n-1)				0.1	0.0	5	0.1		2.2
% RSD				1.3	6.6	2.4	4.0		
PC 070698	positive control	Sag B Carp 6806-123	<0.95	9.9	< 0.15	196	2.6	<0.12	0.44

10.4136

Table 5. Organochlorine Pesticide QC--Hudson River Biota

Sample Name	Field ID	Sample Type	Endrin	*cis*-Nonachlor	o,p'-DDT	p,p'-DDD	p,p'-DDT	Methoxychlor	Mirex
PB 060198 GCR1	procedure blank	Na_2SO_4	0.01	0.19	0.02	0.10	0.04	0.26	0.00
PB 060198 GCR2	procedure blank	Na_2SO_4	0.37	0.10	0.73	0.06	0.45	0.00	0.19
PB 060198 GCR3	procedure blank	Na_2SO_4	0.02	2.58	0.07	0.01	4.30	0.00	0.02
AVERAGE			0.13	0.96	0.28	0.06	1.60	0.09	0.07
SD(n-1)			0.20	1.41	0.40	0.05	2.35	0.15	0.10
MDL	=PB Avg + 3*SD		**0.74**	**5.18**	**1.47**	**0.19**	**8.65**	**0.53**	**0.38**
PB 070698 GCR1	procedure blank	Na_2SO_4	0.01	0.48	0.02	0.04	0.06	0.26	0.00
PB 070698 GCR2	procedure blank	Na_2SO_4	0.56	0.24	0.01	0.00	0.02	0.01	0.03
PB 070698 GCR3	procedure blank	Na_2SO_4	0.00	0.27	0.01	0.01	0.91	0.00	0.00
AVERAGE			0.19	0.33	0.01	0.02	0.33	0.09	0.01
SD(n-1)			0.32	0.13	0.00	0.02	0.50	0.15	0.02
L=PB AVG+3(PB SD)			**1.16**	**0.72**	**0.03**	**0.07**	**1.84**	**0.54**	**0.06**
Average MDL		Avg of PBs MDLs	0.95	2.95	0.75	0.13	5.24	0.54	0.22
		avg mass adjusted	***0.22***	***0.68***	***0.17***	***0.03***	***1.20***	***0.12***	***0.05***

10.4137

Table 6. Non-*o*-Chloro-Substituted PCBs (pg/g) in Birds and Fish from the Hudson River Area, NY

27-Aug-99
N40secord.xls

GC/MS Sets: N39PCB and N40PCB
Dates: 12/10/98-12/11/98 and 12/14-17/98

				Non-o-Polychlorinated Biphenyls			
				Tetra:		Penta:	Hexa:
NFCR Number:	Field Number:	Sample Description:	GC/MS Run No.	3,4,4',5-TCB (81)	3,3',4,4'-TCB (77)	3,3',4,4',5-PeCB (126)	3,3',4,4',5,5'-HxCB (169)
17138	HUD PL 1	Bald Eagle Plasma, 2.04 g	40-14	101	527	142 LQ	5 LQ
17139	HUD FT 1	Bald Eagle Fat, 0.745 g	40-15	2,930	22,500	5,900	314
17140	HUD NST1	American Eel from Bald eagle nest, 15.02 g	40-16	10	84	560	25
17141-A	HUD NST 2	Brown bullhead from Bald eagle nest, 15.03 g	40-17	352	1,400	262	8 LQ
17141-B	HUD NST 2	Brown bullhead from Bald eagle nest, 15.03 g	40-19	340	1,070	255	6
17141-C	HUD NST 2	Brown bullhead from Bald eagle nest, 15.12 g	40-20	329	1,060	243	7 LQ
17142	HUD RIV 1	American eel from Hudson River, 14.98 g	40-21	5 S1	41 S1	230	11 LQ
17143	HUD RIV 2	American eel from Hudson River, 15.22 g	40-22	2 LQ	24	22	2 LQ
17144	HUD RIV 3	American eel from Hudson River, 15.32 g	40-24	52	265	46	5 LQ
17145	HUD RIV 4	Brown bullhead from Hudson River, 15.03 g	40-25	129	335	125	3
17146	HUD RIV 5	White Perch from Hudson River, 15.08 g	40-26	106	1,390	142	5.1
17147	HUD RIV 6	White Perch from Hudson River, 15.03 g	40-27	153	2,220	149	4.5
17148	HUD RIV 7	White Perch from Hudson River, 14.99 g	40-29	178	2,730	178	5
17149	HUD RIV 8	Blueback Herring from Hudson River, 15.20 g	40-30	9 S1	89 S1	69	4 LQ
17150	HUD TS 1	Tree Swallow Adult from Hudson River, 3.22 g	40-31, 47	28,400	253,000	10,400	125
17151	HUD TS 2	Tree Swallow Adult from Hudson River, 5.08 g	40-32, 49	50,900	495,000	21,600	105
17152	HUD BB 1	Bluebird Nestling from Hudson River, 15.17 g	40-34	10,200	4,100 S1	3,340	13

Table 6. Non-*o*-Chloro-Substituted PCBs (pg/g) in Birds and Fish from the Hudson River Area, NY

27-Aug-99
N40secord.xls

GC/MS Sets: N39PCB and N40PCB
Dates: 12/10/98-12/11/98 and 12/14-17/98

NFCR Number:	Field Number:	Sample Description:	GC/MS Run No.	Non-o-Polychlorinated Biphenyls			
				Tetra:		Penta:	Hexa:
				3,4,4',5-TCB (81)	3,3',4,4'-TCB (77)	3,3',4,4',5-PeCB (126)	3,3',4,4',5,5'-HxCB (169)
17153	HUD BB 2	Bluebird Nestling from Hudson River, 15.29 g	40-35, 50	28,800	75,900	9,820	26 LQ
17154	HUD BB 3	Bluebird Nestling from Hudson River, 15.31 g	40-36	61	137	64	5 LQ
17155	HUD BB 4	Bluebird Nestling from Hudson River, 15.54 g	40-37	8	62	7	4
17156	HUD WD 1	Wood Duck Pipping Embryo, 4.20 g	40-39	3,530	59,700	1,100	9
17157	HUD WD 2	Wood Duck Embryo, 9.48 g	40-40	1,530	20,700	417	9
17158	HUD HP	Henslow Sparrow Egg, 0.54 g	40-41	52 S1	1,360 S1	72 LQ	15 LQ
17159	HUD SP	Savannah Sparrow Egg, 2.34 g	40-42	12	285	75 LQ	5 ND
		Quality Control Samples:					
Proc. Blank 6/8/98		Procedure Blank, 6/8/98 **(15 g sample basis)**	39-9,40-4	1.3 LQ	20	1.3	0.2 LQ
Carryover Blank 7/6/98		Sample Carryover Blank, 7/6/98 **(% carryover)**	40-5	1.2 %	2.3 %	1.0 %	< 1 %
Bluegill Matrix Blank 6/8/98		654C Bluegill Matrix Blank, 6/8/98, 15.05 g	39-11,40-4	1.2 LQ	41	5 LQ	0.6 LQ
Chicken egg Matrix Blank 7/6/98		Chicken egg Matrix Blank, 7/6/98, 15.02 g	39-13,40-7	30	170	8.2	0.3 ND
Bluegill Matrix Spike 6/8/98		654C Bluegill Matrix Spike w/10 ug, 6/8/98, 15.0	39-15,40-9	37	635	28	1.6
Chicken egg Matrix Spike 7/6/98		Chicken egg Matrix Spike w/10 ug, 7/6/98, 15.0	40-10	46	823	31	0.9 LQ
Pos.Ctrl Sag. Carp 6/8/98		6806-123 Saginaw Carp 6/8/98, 10 g	40-11	293	2,640	893	69
Pos.Ctrl Sag. Carp 7/6/98		6806-123 Saginaw Carp 7/6/98, 10.17 g	40-12	340	3,120	1,070	84

S1 Concentration Value Listed after subtraction of 1 % of previous sample run on HP-PGC and/or HP-GPC
LQ Less than Method Quantification Limit due to Incomplete Ion Cluster or Inaccurate Ion Ratio (Outside +/- 15% Tolerances)
ND Not Detected at Specified Detection Limit