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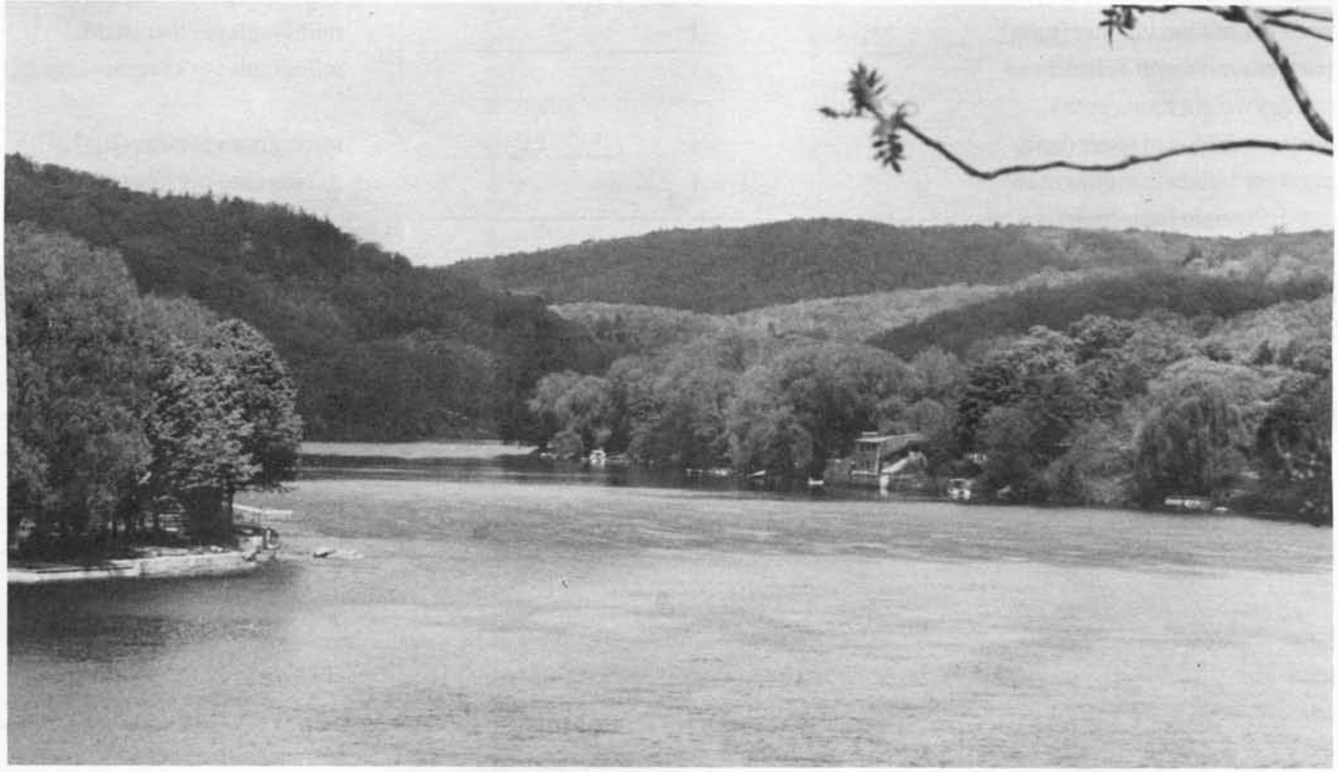
Polychlorinated Biphenyls in Housatonic River Sediments in Massachusetts and Connecticut: Determination, Distribution, and Transport

By C.R. Frink, B.L. Sawhney, K.P. Kulp, and C.G. Fredette

A cooperative study by
The Connecticut Agricultural Experiment Station,
the Connecticut Department of Environmental Protection,
and the U.S. Geological Survey



THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION NEW HAVEN

Factors for Converting Inch-pound Units to International System (SI) Units

Multiply inch-units	By	To obtain SI Units
inch	25.40	millimeter (mm)
foot	0.3048	meter (m)
mile	1.609	kilometer (km)
acre	0.4047	hectometers (hm^2)
ton (short)	907.2	kilograms (kg)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
square mile (mi^2)	2.590	square kilometer (km^2)
ton per day (ton/d)	907.2	kilograms per day (kg/d)
degree Fahrenheit (°F)	°C = (F-32)/1.8	degree Celsius (°C)
pound avoirdupois	0.454	kilogram (kg)

Other Useful Conversions

million gallon per day (mgd)	1.55	cubic foot per second (ft^3/s)
parts per million in water (ppm)	1	milligrams per liter (mg/L)
parts per million in sediment on a dry weight basis (ppm)	1	milligrams per kilogram (mg/kg)
parts per billion in water (ppb)	1	micrograms per liter ($\mu g/L$)
parts per billion in sediment on a dry weight basis (ppb)	1	micrograms per kilogram ($\mu g/kg$)

Cover photo by Joseph Leary.

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Polychlorinated Biphenyls in Housatonic River Sediments in Massachusetts and Connecticut: Determination, Distribution and Transport

By C.R. Frink, B.L. Sawhney, K.P. Kulp and C.G. Fredette [1]

The Housatonic River rises near Pittsfield, Massachusetts, and flows south approximately 150 river miles to Long Island Sound. It drains 497 square miles in western Massachusetts, 217 square miles in eastern New York, and 1,232 square miles in western Connecticut (Figure 1). The river and its tributaries have been used for industrial and domestic wastewater disposal in all three states for many years. The Housatonic also has long been impounded for water supplies, water power, and, more recently, for hydroelectric power. There are 18 dams on the river—13 in Massachusetts and five in Connecticut. The river drops 900 feet from its headwaters to the Connecticut state line and an additional 600 feet from there to its mouth (Figure 2).

In 1974 and 1975, a joint monitoring program between the DEP (Connecticut Department of Environmental Protection) and the USGS (U.S. Geological Survey) revealed that surficial sediments in the river in Connecticut were contaminated with trace amounts of PCBs (polychlorinated biphenyls). Subsequent limited sampling in 1976 and 1977 confirmed the presence of PCBs in the sediments of the large impounded lakes, with total concentrations ranging up to about 2 ppm (parts per million) on a dry weight basis. Similar concentrations were observed in core samples of deeper sediments, suggesting that deposition of contaminated sediments may have prevailed for several decades (U.S. Geological Survey, 1981a). Limited data collected in Massachusetts in 1975 suggested that sediment and fish in the upper reaches of the river had substantially higher concentrations of PCBs than those found in Connecticut (Massachusetts Department of Environmental Quality Engineering data files.)

The direct impact of the contamination of the river in Massachusetts was minimal, because significant recreational or commercial fisheries had not been established along the river. However, there were serious implications for recreational fisheries along the river in Connecticut. A 9-mile stretch of free-flowing water near Cornwall is an outstanding trout fishing area, and the impounded Lakes Lillinonah, Zoar, and Housatonic (formed by Derby Dam) provide 3,200 acres of excellent warm-water fisheries.

In 1977, analyses of fish collected in the Connecticut portion of the river showed that concentrations of PCBs exceeded the existing federal Food and Drug Administration tolerance level of 5 ppm total PCBs. Fillets from 16 trout ranged from 7.6 to 43 ppm PCBs, with a mean of approximately 18 ppm. Sixteen of 30 samples of various warm-water species from the impoundments were also found to exceed the tolerance level (Connecticut Department of Health Services, Environmental Chemistry data files).

In response to this information, the DOHS (Connecticut Department of Health Services) and the DEP issued advisories in the late spring and summer of 1977 which recommended against consumption of fish taken from the river between the Massachusetts state line and Stevenson Dam at Lake Zoar. The reaches below the Lake Zoar impoundment, as well as Candlewood Lake, were not included in the advisory due to comparatively low concentrations of PCBs in sediment (U.S. Geological Survey, 1981a) and in fish and shellfish (DOHS, Environmental Chemistry data files).

CASE (Connecticut Academy of Science and Engineering) reviewed existing data on PCBs in the Housatonic River in response to widespread public concern. According to the CASE (1978) report, approximately 1.25 billion pounds of PCBs were used in the United States beginning in 1929 in a wide variety of industrial and commercial applications. In the 1970's, recognition of the environmental persistence and potential toxicity of PCBs prompted federal restrictions on their use and disposal. The 1976 Toxic Substances Control Act (PL 94-469) prohibited the continued manufacture of PCBs and prohibited their use in all but totally enclosed systems.

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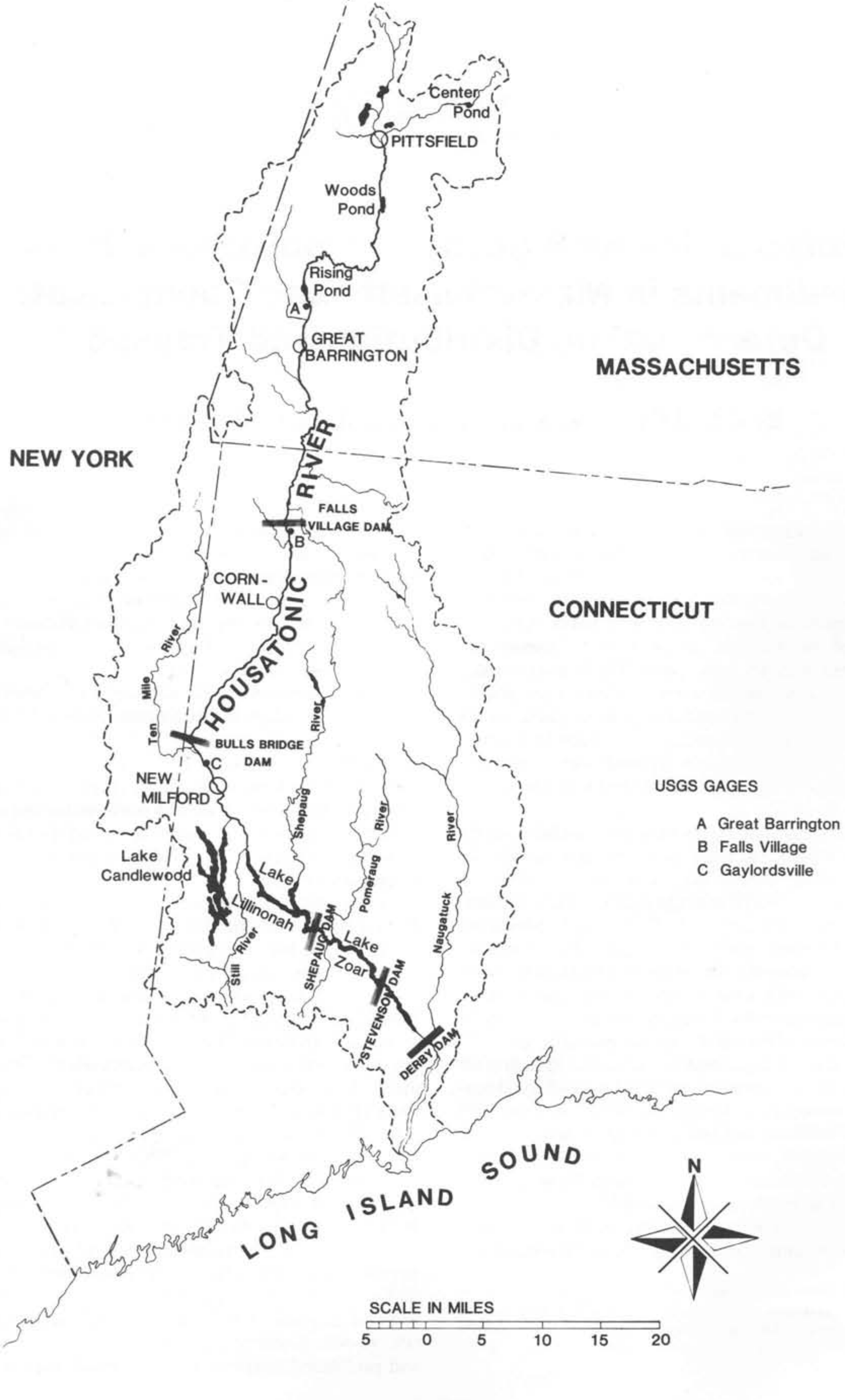
[1] A cooperative study by the CAES (Connecticut Agricultural Experiment Station, New Haven), the USGS (U.S. Geological Survey), and the DEP (Connecticut Department of Environmental Protection). The authors are Chief Soil Chemist and Soil Chemist, CAES; Hydrologist, USGS; and Principal Sanitary Engineer, DEP, respectively.

Figure 1. The Housatonic River and watershed.



According to the CASE (1978) report, the largest known contributor of PCBs to the Housatonic River is the General Electric Company in Pittsfield, which used PCBs marketed as Aroclors 1254 and 1260 in the manufacture of electrical transformers from the early 1930's to the mid 1970's. During the 1970's, the General Electric Company implemented extensive operational changes and rigorous control measures to prevent further escape of PCBs to the environment. In early 1977, the General Electric Company discontinued the use of PCBs. It was apparent that PCB contamination in the Housatonic River was largely the result of previous industrial activity.

The CASE report recommended expanded studies of PCBs in sediments and in fish, as well as further research on the effects on human health from eating fish contaminated with PCBs. In the spring of 1978, the Connecticut General Assembly appropriated $200,000 to DEP for a comprehensive investigation of the extent and significance of PCB contamination in the Housatonic River. Guided by the CASE recommendations, DEP developed three inter-related studies to determine contamination levels in fish and aquatic invertebrates, to determine effects on human health of consumption of contaminated fish, and to determine levels of sediment contamination and mechanisms of transport of PCBs in the river.

The specific objectives of the sediment study were to determine the mass of PCBs in bottom sediments of the Housatonic River and to determine the rate of transport of suspended sediment and PCBs down the river. Some parts of the study were performed under cooperative agreement between DEP and the USGS, and some were performed by CAES. This report presents and interprets the results of the sediment study.

PHYSICAL AND HYDRAULIC CHARACTERISTICS OF THE HOUSATONIC RIVER

Geometry

The Housatonic River, formed by the confluence of three branches in Pittsfield, Massachusetts (Figure 1), is described by Wright and DeGabriele (1975) and the Massachusetts Department of Environmental Quality Engineering (1975). The East Branch originates at Muddy Pond in Washington and at Ashmere Lake in Windsor. From the headwaters it flows westerly through Dalton where a Byron Weston Company dam forms the 30-acre impoundment of Center Pond. The East Branch then flows through five small mill impoundments before passing the General Electric Company facilities in the Pittsfield business district. The headwaters of the West Branch include Pontoosuc Lake, a 467-acre body of water in Pittsfield and Lanesboro, and Onota Lake, a 617-acre body of water in Pittsfield. The West Branch flows southerly through the Pittsfield business district to the confluence with the other two branches. The headwaters of the Southwest Branch drain into Richmond Pond along the Richmond-Pittsfield town line. The Southwest Branch then flows northeasterly through Pittsfield to join the other two branches.

From the confluence of the three branches, the river flows south approximately 9 miles to the Woods Pond impoundment in Lenox. This 122-acre impoundment was formed in 1901 (Schwarz, personal commun., 1979) by a dam built by the Smith Paper Company, now the P.J. Sweitzer Company. A wetland flood plain of bays, coves, and seasonal ponds extends for several miles upstream of Woods Pond. Below Woods Pond, river flow is impeded slightly by two small dams in Lee, one small dam in West Stockbridge, and one small dam in Great Barrington at the Village of Housatonic. In Great Barrington, the Rising Paper Company dam, built in 1900 (Schwarz, personal commun., 1979) forms a 45-acre impoundment (Chesebrough, personal commun., 1981) known as Rising Pond. Below Rising Pond, the river flows through a broad, flat flood plain which includes a series of meanders and oxbows with backwater pools in Sheffield, Massachusetts.

As the Housatonic River enters Connecticut, it enters the Falls Village impoundment, constructed in 1914 for hydroelectric power by the Hartford Electric Light Company. Below the dam at Falls Village, the river flows unimpeded for approximately 20 miles, a stretch which includes the trout fishing area near Cornwall. Further downstream is the Bulls Bridge impoundment in Kent, constructed for hydroelectric power in 1903 by the CL&P (Connecticut Light and Power Company).

Below Bulls Bridge, the river flows through New Milford past the Candlewood Lake pump-storage facility. Candlewood Lake was created in 1928 when CL&P impounded the Rocky River just upstream from its confluence with the Housatonic. This reservoir, with a surface area of 5,420 acres, impounds water for generation of power at the Rocky River Station and is also used for recreation. Some water is also pumped from the Housatonic River during periods of high flow.

Downstream of New Milford, the Housatonic flows through a series of three large impoundments. Lake Lillinonah, with a surface area of 1,900 acres and a maximum

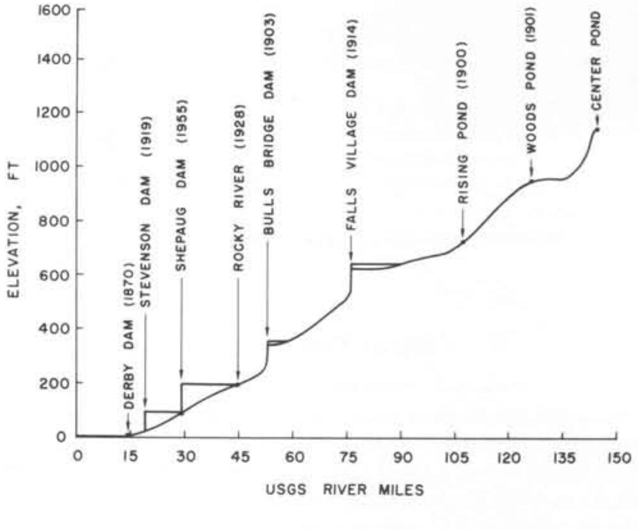


Figure 2. Elevation above sea level of the river bed and water surface of the Housatonic River from Long Island Sound to Dalton, Massachusetts.

depth of 100 feet, was formed in 1955 by the construction of the Shepaug Dam by CL&P. This reservoir is used for hydroelectric power and for recreation. Below Lake Lillinonah, the Housatonic flows into Lake Zoar, an impoundment formed in 1919 by CL&P by construction of the Stevenson Dam. This reservoir, with a surface area of 975 acres and a maximum depth of 75 feet, is also used for hydroelectric power and recreation. Below Lake Zoar, the river flows into Lake Housatonic which was formed in 1870 by the Housatonic Water Company by construction of the Derby Dam (Connecticut Light and Power Company, 1979). Lake Housatonic is used for recreation and has a surface area of 328 acres and a maximum depth of 26 feet (Connecticut Board of Fisheries and Game, 1959). Below Derby, the river flows southward several miles to the tidal estuary in Stratford and Milford.

Flow

The mean annual flow in the Housatonic River and its major tributaries is shown in Table 1. The flow increases substantially as the river proceeds downstream; the mean annual flow is 2,622 ft^3/s at Stevenson Dam, which is essentially the lower boundary of the study. The flow of the river in Connecticut varies greatly from seasonal changes and from regulation during power generation.

Table 1.—Gaging stations and mean annual flow in the Housatonic River and its tributaries (U.S. Geological Survey, 1981 a, b, c)

Location	Years of record	Mean annual flow (ft^3/s)
East Branch of Housatonic River at Coltsville, MA	44	115
Housatonic River near Great Barrington, MA[1]	67	529
Green River at Sheffield town line, MA	20	79
Williams River in Great Barrington, MA	0	68[2]
Hubbard Brook at Sheffield, MA	1	40
Housatonic River at Falls Village, CT[1]	68	1090
Blackberry River at Canaan, CT	22	73.7
Hollenbeck River at Huntsville, CT	2	40
Salmon Creek at Lime Rock, CT	19	48.8
Ten Mile River near Gaylordsville, CT	51	305
Housatonic River at Gaylordsville, CT[1]	40	1701
Still River at Lanesville, CT	40	116
Shepaug River near Roxbury, CT	40	236
Pootatuck River at Sandy Hook, CT	8	48
Pomperaug River at Southbury, CT	41	124
Housatonic River at Stevenson, CT	52	2622

[1] Sediment transport stations.

[2] Estimated based on Norvitch and others, 1968.

Waste Discharges

Seven municipal wastewater treatment plants in Massachusetts discharge a total of approximately 13.5 mgd (million gallons per day, 1 mgd = 1.55 ft^3/s) of treated wastewater to the river. The Pittsfield plant accounts for approximately 10 mgd, and the Great Barrington plant accounts for approximately 2.5 mgd. The remaining five municipal plants each discharge less than 1 mgd of wastewater (Massachusetts Department of Environmental Quality Engineering, 1978).

Several industrial plants in Massachusetts discharge a total of approximately 17 mgd of treated wastewater to the river. The General Electric Company plant in Pittsfield accounts for approximately 4.5 mgd of this total. Six paper companies operating a total of 12 mills account for the remaining 12.5 mgd (Massachusetts Department of Environmental Quality Engineering, 1978).

Four small municipal treatment plants in Connecticut above Bulls Bridge in New Milford discharge a total of approximately 1 mgd of treated wastewater to the river or its tributaries. The Ten Mile River enters at Bulls Bridge, carrying a total of 2.5 mgd of sanitary wastewater from three treatment plants in New York (New York Department of Environmental Conservation, 1977). Below Bulls Bridge, the New Milford municipal treatment plant discharges approximately 2 mgd to the river. Five industrial plants in New Milford discharge a total of approximately 5 mgd of treated wastewater. The largest of these is the Kimberly Clark Corporation paper mill which accounts for approximately 4.5 mgd (DEP, NPDES permit file).

There are also numerous discharges in Bethel and Danbury to the Still River, a tributary that enters the Housatonic River at the headwaters of Lake Lillinonah. The Bethel municipal treatment plant discharges approximately 1 mgd, and the Danbury plant approximately 8 mgd of sewage effluent. Four industrial plants in Bethel discharge approximately 3 mgd of treated wastewater, and six industries in Danbury discharge approximately 0.2 mgd (DEP, NPDES permit file).

FIELD METHODS

Streamflow

Streamflow, or water discharge, is a measurement of the quantity of water being transported past a given point per unit of time. It is usually expressed in ft^3/s or cfs (cubic feet per second). Water discharge for this study was developed from data collected at USGS gaging stations on the Housatonic River near Great Barrington, MA, and Falls Village and Gaylordsville, CT (Table 1 and Appendix A). Each gaging station collected a continuous record of river stage (height) as described by Buchanan and Somers (1968). By measuring water discharge at various river stages, a stage-discharge relationship was developed for each gaging station as described by Carter and Davidian (1968).

Suspended Sediment

Sediment is essentially fragmentary material originating from weathering of rocks and includes soil particles and associated organic matter. Suspended sediment in water is sediment which is supported by the upward components of turbulent currents and which is transported in suspension. The concentration of suspended sediment is the ratio of the mass of dry sediment to the mass of the water-sediment mixture, expressed as ppm. This can be converted to weight per unit volume, such as mg/L. Sediment discharge is the quantity of suspended sediment transported past a given point in a unit period of time, and can be calculated if the concentration and water discharge are known. The relationship is:

$$Q_s = Q_w \cdot C \cdot K$$

where:

Q_s = sediment discharge, in tons per day,

Q_w = water discharge, in ft^3/s,

C = concentration of suspended sediment, in mg/L, and

K = conversion factor equal to 0.0027 based on these units of measurement (Porterfield, 1972).

For example, if the Q_w (water discharge) is 1,200 ft^3/s, and C (suspended sediment concentration) is 15 mg/L, the Q_s (sediment discharge) would be $(1,200)(15)(0.0027) = 48.6$ tons/day.

Samples of suspended sediment were obtained daily at each of the three gaging stations, using a US D-74 TM depth-integrating sampler (U.S. Department of the Interior, 1977). The sampler was located at a fixed point at each site, which had been determined to be representative of the river by comparison with samples collected from the entire cross-section at that site. All samples were collected according to methods described by Guy and Norman (1970).

At the Great Barrington, MA, and Gaylordsville, CT, sites, pendulum-type automatic samplers were used to collect samples of suspended sediment hourly during selected periods of high flow. These samples were used to supplement the data derived from the daily collection with the US D-74 TM sampler. The sediment concentration of these samples and water-discharge data from the gaging stations were used to develop daily records of suspended sediment concentration and discharge by the methods and techniques described by Porterfield (1972).

During selected storms, additional samples of the water-sediment mixture were collected at the three sites with the US D-74 TM sampler for analyses for PCBs and particle size. The number of samples collected during each storm, and the time interval between the collection of samples, was based on the rate of change in river stage. During periods of rapidly changing stage, samples were collected as often as once per hour. Following collection, samples were immediately chilled and maintained at 4° C until analyzed. All sampling equipment was washed with reagent grade hexane and rinsed in the water being sampled.

Seismic Reflection Survey

In March 1977, the USGS, in cooperation with DEP, did preliminary seismic reflection profiling and core sampling to estimate the thickness of sediment in Lake Zoar and Lake Lillinonah. The study showed that the sediments consist mainly of black organic mud, up to 5 feet thick, which were deposited after the lakes were formed. In March 1979, an expanded study was undertaken by the CAES who contracted with the USGS to extend the seismic reflection investigations to those parts of Lake Zoar and Lake Lillinonah not previously studied; and to profile selected parts of the Housatonic River, including the impoundments at Bulls Bridge, Falls Village, Woods Pond, and Rising Pond.

A 17-foot motorboat with portable electric generators was used for both the March 1977 and the March 1979 seismic reflection surveys. A 7 kHz (kilohertz) reflection profiling system and a small 1 kHz sparker unit were used to measure the thickness of the recent sediment and, in some places, the depth to bedrock. The seismic reflection system transmits an acoustic signal that penetrates the water column and the bottom sediment through a transducer mounted on or trailed behind the boat. At each acoustic interface, starting with the river or lake bottom, part of the pulse is reflected back to the surface and recorded on a chart recorder. Because the boat is moving and the outgoing sound pulse is repeated at frequent intervals, a continuous record is produced that shows a cross section of the bottom sediment and the acoustic interfaces within them. The 7 kHz system is capable of penetrating 30 to 50 feet of organic material with excellent resolution of individual layers that reflect the acoustical signal. As the bottom material becomes sandier, however, the penetration of the sound signal decreases and the distinction between the post- and pre-lake sediments is harder to identify. The sparker unit, which operates at a frequency of 1 kHz, is capable of greater penetration but less resolution than the 7 kHz system.

Navigation on the lakes and rivers consisted of maintaining a constant surveying speed between known objects on opposite shorelines. These track lines were plotted on 1:24,000 scale USGS topographic maps, and are on file with the USGS in Hartford along with the seismic profiles.

Bottom Sediment

Samples of bottom sediment were collected from numerous points in the Housatonic River between Dalton, MA, and Stevenson, CT. A limited number of samples were collected in the free flowing stretches of the river. Areas containing large quantities of fine-grained sediment such as behind dams and in slow moving stretches of the river were sampled most intensively. To locate these areas, a preliminary reconnaissance was made by canoe in those reaches of the river not adequately defined by maps or previous work. Following initial site selection and sample collection, the samples were analyzed, and additional sampling sites were selected where necessary. Samples were also collected from the bottom sediment of several tributaries to the Housatonic River to determine if they contributed PCBs to the Housatonic River. A list of the sites sampled is provided in Appendix A along with maps showing the location of each site.

In areas where bottom sediment was relatively coarse or thin, surficial samples were collected using a Ponar grab sampler or Eckman dredge, which collected a sample of the upper 3 to 6 inches of bottom material. In areas where bottom sediment was relatively fine and thick, surficial and core samples were collected. The type of core sampler used depended on the depth of water. In water less than 35 feet deep, a piston-type corer was manually driven into the bottom. This type of corer creates very little disturbance in the loose water-sediment layer at the surface of the bed, and worked well in fine, loose sediment. A gravity core sampler was used in areas where the depth of water exceeded 35 feet. This sampler disturbed the upper bed surface more than the piston corer, and could not be used to collect cores over 30 inches in length.

All equipment used by USGS to collect and handle samples was washed with certified reagent grade hexane between samples. As a further measure to prevent contamination, the sample handling equipment used was made of stainless steel or was teflon-coated. Core samples were divided into approximately 6-inch segments for analyses. After collection, each sample was well mixed and divided into two portions. One portion was placed in a plastic freezer container and frozen for subsequent analysis for particle-size distribution. The other portion was placed in a hexane-washed glass container and stored at 4° C for subsequent analysis for PCBs and total organic carbon. Methods of sample collection by CAES are described by Sawhney, Frink, and Glowa (1981).

LABORATORY METHODS

Suspended Sediment

All suspended sediment samples were analyzed by USGS for sediment concentration, and, where sufficient samples were available from storms, they were analyzed for particle-size distribution. The methods used for these analyses are described by Guy (1969). Individual Aroclors were determined by the USGS in samples filtered under vacuum through Gelman-type AE (142 mm) glass filter paper with a pore size of 0.3 micrometers. The concentrations found in the unfiltered water samples represent the total PCB Aroclor concentrations, and the concentrations found in the filtered samples represent the dissolved Aroclors. Concentrations of PCBs in the suspended phase are the arithmetic difference between the total and dissolved concentrations.

The method for PCB analysis of suspended sediment is described in detail by Goerlitz and Brown (1972). Briefly, the sample is extracted three times with n-hexane, dried, and the bulk of the solvent is then removed. The PCB is isolated by microcolumn adsorption chromatography on alumina and its concentration determined by gas chromatography.

Bottom Sediment

Samples for PCB analyses were sent either to the USGS Central Laboratory or the CAES Laboratory. Several samples were split in the field and sent to both locations to compare PCB analyses by both laboratories.

PCB analyses were done in the USGS laboratory by the gas chromatograph method in which PCB is first extracted from the sediment sample with acetone and n-hexane. The extract is washed with distilled water and dried by filtering through sodium sulfate. A preliminary gas chromatographic analysis is then performed. Following this, the volume is reduced and extraneous material is removed by adsorption chromatography. The PCB is then determined by gas chromatography. This procedure is described in more detail by Goerlitz and Brown (1972).

Size distribution analyses of bottom sediments were done by the USGS by methods described by Guy (1969). The USGS size classes are: Sand, 2-0.062 mm; silt, 0.062-0.004 mm; and clay < 0.004 mm. Total organic carbon concentration was determined by the USGS according to methods described by Goerlitz and Brown (1972).

Methods used by CAES for analyses of sediments for PCBs are described by Sawhney, et al. (1981). Other sediment analyses, with the exception of bulk density, are described by Frink (1969). Bulk density of a representative number of samples was obtained by weighing a known volume of wet sediment, drying at 110°C, and weighing the residue. Results were expressed as pounds of solids per cubic foot of wet sediment. Organic matter was determined by loss on ignition. Particle size classes used by CAES are: Sand, 2-0.050 mm; silt, 0.050-0.002 mm; and clay < 0.002 mm. The differences between USGS and CAES methods for determining organic matter and particle-size distribution are not important for the purpose of the present study.

Sampling and Analytical Variability

The distribution of PCBs in surficial sediment in Lake Lillinonah is largely controlled by the distribution of fine-grained sediment (Sawhney, et al., 1981). To determine sampling variability at a particular site, six samples were collected at site 114 in Lillinonah near the dam and in the center of the old river channel. The boat was allowed to drift within an area of several hundred feet during sample collection. The results of the analyses by CAES for PCBs and sediment properties are shown in Table 2.

Table 2.—Variations in concentrations of PCBs and size distribution of surficial sediment at site 114 in Lake Lillinonah, CT (Particle designations are CAES classes.)

Sample	PCBs (ppm)	Loss on ignition (%)	Sand (%)	Silt (%)	Clay (%)
1	2.29	11.7	0.7	73.4	25.8
2	2.63	12.4	0.7	73.4	25.8
3	2.46	12.6	1.2	71.5	27.1
4	2.39	12.9	0.3	73.2	26.3
5	2.60	8.5	0.9	70.2	28.8
6	1.00	11.5	14.8	63.5	21.5
Mean	2.23	11.6	3.1	70.9	25.9
Standard Deviation	0.62	1.61	5.74	3.83	2.42

The coefficient of variation (standard deviation divided by the mean) for the determination of PCBs in these six samples is 0.62/2.23 or 27.8%. This variability is because sample 6 is clearly lower in PCBs. Because it is higher in coarse textured sediment than the other five, its PCB content is low. If sample 6 is omitted from the analysis, the coefficient of variability for the remaining five is 5.7%. This is in reasonable agreement with the variability encountered in other chemical analyses in CAES laboratories. However, these analyses reflect the difficulty of collecting replicate samples even in areas where sediment seems to be uniform.

Comparison of analysis of 20 samples split in the field and analyzed by the CAES and USGS laboratories are shown in Table 3. Site numbers refer to collection sites described in Appendix A. A two-way analysis of variance showed that differences between sites were statistically significant at the 0.01 level, but that differences between the two laboratories were not. However, it is clear that agreement is not perfect.

Because most chemical analyses including determination of PCBs tend to have constant relative errors, the data were

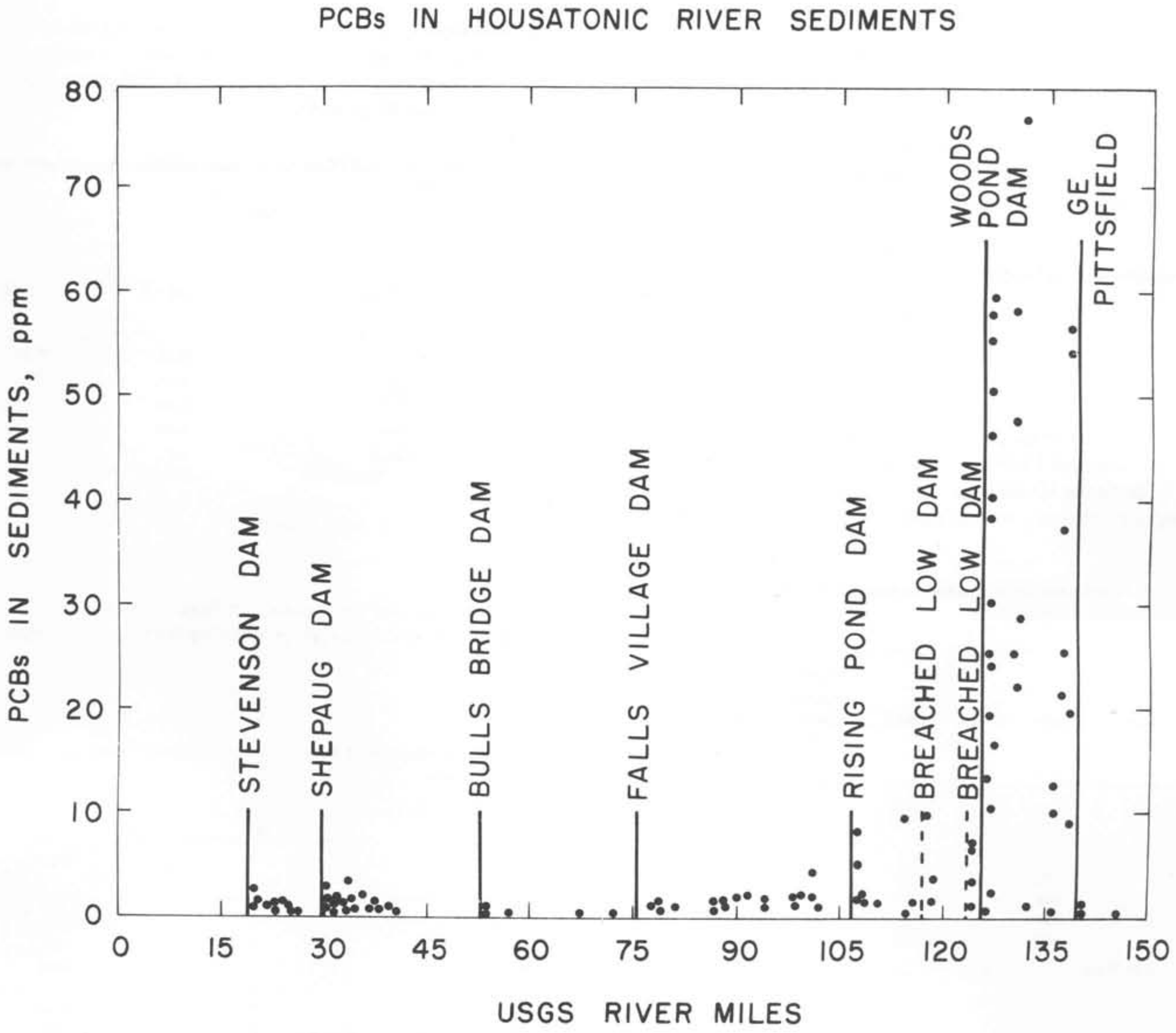


Figure 3. Concentration of PCBs in surficial sediment samples in the Housatonic River.

transformed to logarithms to provide homogeneity of variance. A two-way analysis of variance on the transformed data (with site 74 with no measurable PCBs omitted) also showed no difference between laboratories.

DISTRIBUTION OF PCBs

The concentration of PCBs in 153 surficial samples from 148 sites in the Housatonic River are contained in Appendix B and are plotted in Figure 3 where some data points overlap. PCBs have accumulated in the fine-grained sediment behind dams and in the oxbow section of the river between Falls Village and Rising Pond. The concentration of PCBs increases sharply in Woods Pond, the first impoundment below Pittsfield, Massachusetts. By contrast, the concentration of PCBs in free-flowing stretches of the river is low since little fine sediment has accumulated.

Some samples were collected between 1974 and 1977 by the USGS below Lake Zoar and analyzed for PCBs (U.S. Geological Survey, 1981a). The results are shown in Table 4, confirming that few PCBs have accumulated in the relatively coarse sediments (U.S. Geological Survey, 1976, 1977) between Lake Zoar and Long Island Sound.

Table 3.—Comparison of analytical results from surficial sediments which were split in the field and analyzed by the USGS and CAES laboratories

	Total PCBs (ppm)			Total PCBs (ppm)			Total PCBs (ppm)	
Site	USGS	CAES	Site	USGS	CAES	Site	USGS	CAES
3	0.03	0.56	45	3.90	1.70	70	0.26	0.23
4	56.00	53.75	57	1.30	0.82	71	0.04	0.04
5	19.00	8.59	60	0.27	0.03	72	0.23	0.04
9	12.00	9.58	61	0.58	0.65	74	0.00	0.00
11	76.00	28.59	62	0.29	0.19	75	0.51	1.81
19	10.00	23.74	67	0.73	0.72	142	0.13	0.28
31	6.60	6.19	69	0.05	0.05			

Table 4.—Concentration of PCBs in surficial sediments below Lake Zoar, CT

Location	Date sampled	PCBs (ppm)
Lake Housatonic at Derby, CT	Oct. 13, 1977	0.030
Housatonic River at Shelton, CT	Oct. 23, 1974	0.009
	Nov. 11, 1975	0.010
	Aug. 24, 1976	0.029
Housatonic River at Stratford, CT	Oct. 16, 1974	0.029
	Oct. 7, 1975	0.043
	Aug. 16, 1976	0.014

Several other locations were sampled to determine background levels of PCBs and to determine other possible sources of PCBs in the Housatonic River. The results of separate sampling for sediments in two tributaries are shown in Table 5.

Table 5—Concentration of PCBs in surficial sediments of the Still River and of the Ten Mile River, CT

Location	Site	PCBs (ppm) USGS	PCBs (ppm) CAES	Total organic carbon (%)	Sand (%)	Silt (%)	Clay (%)
Still River	142	0.13	0.28	—	—	—	—
	143	0.13	—	—	—	—	—
	144	—	0.30	—	—	—	—
	145	—	0.07	—	—	—	—
	146	—	0.38	—	—	—	—
	147	—	0.21	—	—	—	—
	148	—	0.28	—	—	—	—
Ten Mile River	74	0.00	0.00	—	—	—	—
Still River at Brookfield Junction							
Oct. 22, 1974	—	0.087	—	3.4	98	1	1
Nov. 10, 1975	—	0.067	—	1.8	98	1	1
Aug. 18, 1976	—	2.40	—	4.4	55	34	11
Still River at U.S. 84							
Aug. 24, 1976	—	1.30	—	—	—	—	—
Still River at Newtown Road							
Jan. 6, 1976	—	0.00	—	—	—	—	—

These results suggest that sediment in the Still River contains PCBs that may enter Lake Lillinonah, although estimates of the total amounts from this source are not available. Little or no fine-grained sediment is present in the Ten Mile River in Connecticut, and two analyses from site 74 revealed no PCBs. No attempt was made to examine sediment at other sites in the Ten Mile River in New York.

A number of core and surficial samples were collected in Candlewood Lake, the pump-storage impoundment at Rocky River. Because of interest in the possible impact of Housatonic River water on Candlewood Lake, the results for all samples analyzed are summarized in Table 6. Sediment in Candlewood seems to have accumulated relatively little PCBs from pumping of Housatonic River water.

Table 6.—Concentration of PCBs in core and surficial sediment samples, Candlewood Lake, CT

Site	Description	PCBs (ppm) USGS	PCBs (ppm) CAES
75	Surficial	0.51	1.81
76	Core 00-07″	0.19	—
	07-14″	0.00	—
	14-21″	0.00	—
77	Core 00-06″	0.01	—
	06-12″	0.00	—
—	USGS 1977 Core (upper)	0.67	—
	USGS 1977 Core (lower)	0.01	—

Sediment samples were collected from several other lakes in Connecticut and analyzed by CAES with the results shown in Table 7.

Table 7.—Concentration of PCBs in surficial sediment samples in other Connecticut lakes

Lake	Number of samples	PCBs (ppm)
Ball Pond	1	0.36
Bantam	4	0.03
Cream Hill	2	0.00
Eagleville	1	0.00
Linsley	3	0.05
Powers	1	0.00
West Hill	1	0.00

Of the seven lakes examined, the sediments of only three contained measurable quantities of PCBs. Ball Pond, Bantam and Linsley are highly eutrophic and receive substantial urban runoff (Norvell, Frink, and Hill, 1979), which may account for the presence of PCBs. Concentrations of PCBs in the upper 0.5 cm of Lake Superior sediment were reported by Eisenreich, Hollod, and Johnson (1979) to be 0.17 ± 0.13 ppm and were attributed to airborne transport. The role of airborne transport in Connecticut is not clear since four of the lakes we examined contained no PCBs. However, sedimentation rates in Connecticut may be different than in Lake Superior, making direct comparisons difficult.

During 1973-77, the USGS collected and analyzed 79 sediment samples from the Connecticut and Thames River basins, but no samples were taken from impoundments. Frink (1978) summarized these data and found that the concentration of PCBs ranged from 0 to 1.0 ppm, with a mean of 0.043 ppm.

Since there may be different sources of PCBs, or fractiona-

Table 8.—Percentage distributions of PCB concentrations by Aroclor numbers in surficial sediments from the Housatonic River, CT

Site	Mile	1248,%	1254,%	1260,%	Total PCBs ppm
3	139.80	5.3	25.5	69.2	0.57
4	138.10	26.9	29.6	43.4	53.76
5	138.10	11.2	31.9	56.9	8.59
7	136.81	0	1.1	98.9	36.91
9	135.60	5.9	4.6	89.5	9.58
10	131.66	2.4	28.4	69.2	0.56
11	130.81	4.6	7.1	88.4	28.59
12	129.28	8.6	17.8	73.5	21.70
14	129.90	7.3	13.2	79.5	47.61
19	126.54	5.2	21.7	73.1	23.74
20	126.32	14.4	32.0	53.6	40.02
21	126.17	6.2	18.5	75.3	57.52
23	126.23	3.9	19.2	76.9	45.85
24	126.50	5.5	13.8	80.7	50.13
31	123.69	6.7	33.0	60.3	6.20
37	108.06	1.4	28.4	70.2	0.97
38	107.91	8.4	14.9	76.7	1.10
40	107.46	2.8	29.7	67.5	1.16
41	107.32	5.8	28.6	65.6	1.44
42	107.19	2.0	17.2	80.8	8.02
44	101.51	13.4	34.1	52.6	0.70
45	100.39	0.8	24.2	75.1	1.71
46	98.71	2.1	31.4	66.5	1.67
47	97.99	2.1	11.3	86.3	0.75
49	97.99	0	28.9	71.1	1.39
50	93.56	0	33.5	66.5	0.62
53	91.28	2.3	22.4	75.4	1.77
54	89.69	2.8	45.9	51.2	1.41
55	88.20	1.0	13.1	85.9	0.70
57	87.80	4.3	0	95.7	0.82
59	86.40	2.2	25.2	72.6	0.37
60	86.40	7.6	16.0	76.3	0.03
61	80.79	4.1	15.6	80.3	0.65
62	78.39	2.4	19.7	77.9	0.20
67	77.59	3.1	19.8	77.1	0.73
69	71.76	0	29.2	70.8	0.06
70	67.00	2.0	27.0	71.0	0.23
71	56.61	0	22.1	77.9	0.05
72	53.20	3.4	12.8	83.7	0.04
78	40.06	33.8	20.0	46.3	0.22
80	39.58	31.1	22.7	46.2	0.55
81	39.11	29.7	22.3	48.0	0.55
83	38.54	40.0	22.9	37.1	0.12
85	37.60	31.6	23.5	44.9	1.17
87	36.91	26.2	20.2	53.6	0.89
89	36.35	41.1	23.2	35.7	0.22
91	33.94	22.1	21.4	56.5	1.65
94	33.69	16.9	16.4	66.7	1.41
96	33.09	25.6	21.6	52.8	3.16
98	32.33	19.8	13.0	67.2	1.22
109	31.29	29.9	19.7	50.3	1.12
112	30.34	21.2	19.7	59.1	1.25
114	29.68	25.6	15.3	59.1	2.30
114	29.68	39.0	11.9	49.2	1.00
114	29.68	25.2	11.4	63.4	2.60
114	29.68	31.5	15.7	52.8	2.40
114	29.68	36.6	17.2	46.3	2.46
114	29.68	33.5	16.8	49.7	2.64
119	26.21	9.4	27.5	63.1	0.01
120	25.70	10.5	22.3	67.2	0.02
121	25.07	19.1	23.1	57.7	0.30
123	24.82	28.2	27.2	44.5	0.05
124	24.65	35.1	22.3	42.6	0.76
125	24.26	36.9	17.5	45.6	0.69
126	23.76	32.5	15.3	52.1	1.15
127	23.39	48.4	8.5	43.1	1.09
128	23.03	14.4	23.3	62.4	0.82
131	22.91	18.0	29.5	52.6	0.28
132	22.70	18.9	20.5	60.6	0.60
133	22.32	19.6	22.3	58.1	1.04
136	20.85	11.2	27.2	61.6	0.98

tion of PCBs in transport down the river, the percentages of Aroclors 1248, 1254 and 1260 for 71 surficial samples from the Housatonic River were determined by the method of Sawhney, et al. (1981). Table 8 shows that the PCBs in Lakes Zoar and Lillinonah (sites 78-136) are relatively high in Aroclor 1248 when compared with those further up river, with the possible exception of sites 20 and 44 in the river and sites 4 and 5 in Silver Lake.

Table 9 shows concentrations of Aroclors present in six samples from the Still River analyzed by CAES.

Table 9—Percentage distribution of PCB concentrations by Aroclor numbers in surficial sediment samples from the Still River, CT

Site	Aroclor			
	1248 (%)	1254 (%)	1260 (%)	Total PCB (ppm)
142	100.0	0.0	0.0	0.28
144	76.7	13.3	12.0	0.30
145	42.9	57.1	0.0	0.07
146	68.4	13.2	18.4	0.38
147	85.7	0.0	14.3	0.21
148	89.3	3.6	7.1	0.28

Although these data suggest that some of the Aroclor 1248 found in Lakes Zoar and Lillinonah could have entered via the Still River, the low concentrations in the sediments of the Still River have not revealed any source that seems sufficient to contribute substantially to the mass of PCBs found in Lakes Zoar and Lillinonah. Also, the possibility of preferential transport of Aroclor 1248 which is more soluble in water than Aroclors 1254 and 1260, should not be ruled out.

MASS OF PCBs

The data shown in Appendices A and B as well as the seismic profiles were used to estimate the mass of PCBs accumulated in the river; the results are shown in Table 10. The calculations are described in detail since different assumptions and

Table 10—Estimated mass of PCBs in Housatonic River sediments

Location	Area (acres)	Volume of sediment (ft^3 x 10^6)	Mass of sediment (pounds x 10^6)	Mean PCB concentration (ppm)	Mass of PCBs	
					(pounds)	(percent of total)
Lake Zoar	975	110	3700	0.58	2150	9.7
Lake Lillinonah	1900	250	8760	0.74	6440	29.0
Bulls Bridge	116	2.5	220	0.09	20	0.1
Falls Village	106	2.3	165	0.70	115	0.5
Oxbows	81	14	610	0.97	590	2.7
Rising Pond	45	9.8	710	1.92	1360	6.1
Woods Pond	122	24	790	14.6	11,520	51.9
Totals	3345	413	14,955	—	22,195	100.0

methods were used in different portions of the river. The methods generally use the fitting of analytical expressions to the data for individual parameters to derive by integration a closed-form expression for estimating the total mass of PCBs. The law of parsimony was adhered to in the selection of fitting equations. According to this law the simplest model of fewest parameters that can explain the data should be used. Linear or exponential functions were chosen according to which could be supported by the data and theoretical considerations.

Lakes Zoar and Lillinonah

Seismic profiles of Lake Zoar and Lillinonah show that the thickness of the recent sediment overlying the pre-lake surface was well defined in most parts of the lakes. An exception was at the upper part of both lakes, where the sediment is mainly sand, similar in texture to the pre-lake sediment, which made the distinction between the pre- and post-lake sediment difficult.

The recent sediment in Zoar is thickest at the dam (4.5 to 5 feet) and gradually thins upstream to 3.5 to 4 feet. The sand content also increases in the upstream direction and, in the vicinity of Riverside, a large sand and silt delta contains a very small amount of organic material. In the rest of the lake, the organic material is thickest where the bottom topography is flat or gently sloping. It is slightly thinner on the steeper slopes and is absent on the margin of the lake where wave action has apparently prevented accumulation. In cross-section, the recent lake bottom sediment is generally composed of up to 2 feet of loose water-sediment mixture, underlain by significantly more consolidated organic-rich sediment. The upper water-sediment layer was thickest near the dam and thinned upstream.

Lake Lillinonah is similar to Lake Zoar but the organic material is thinner and less consolidated. The organic sediment is about 3.5 feet thick at the dam and becomes sandy and thins to 2 feet at the upstream end of the impoundment. Cores obtained in 1977 by the USGS indicate the organic sediment is less compact than in Lake Zoar and the sediment is thinner.

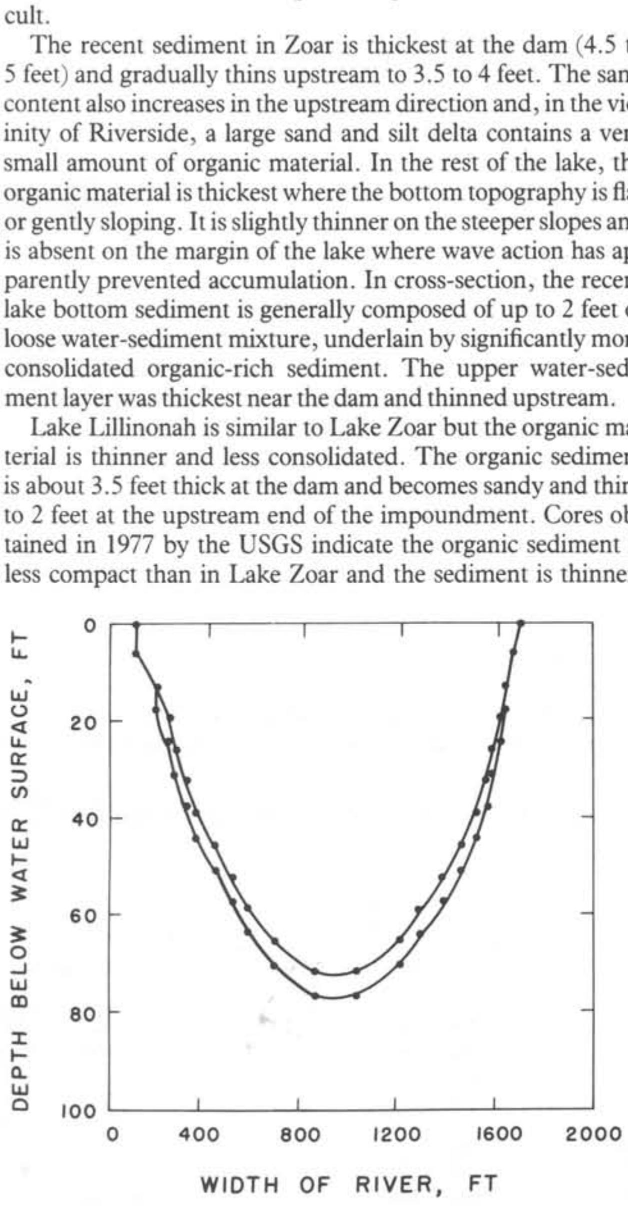


Figure 4. Typical transect across Lake Zoar showing thickness of sediment estimated from seismic profiles.

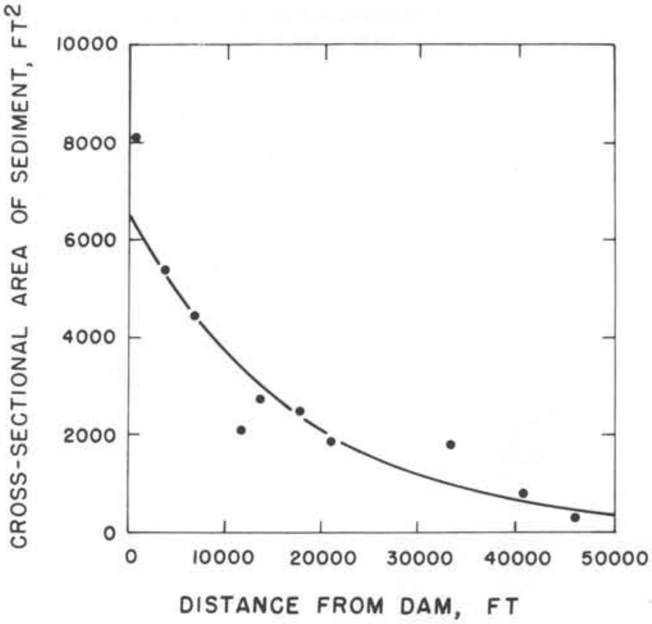


Figure 5. Cross-sectional area of sediment in Lake Zoar as a function of distance from Stevenson Dam.

Several profiles obtained in the Shepaug River inlet show about 2 feet of loose sediment on the river bottom. The relationship of topography to sediment thickness is similar to that in Lake Zoar.

Areas of cross-sections at various transects across the river had been determined previously from bathymetric data from Lake Zoar and topographic maps covering Lake Lillinonah by Aylor and Frink (1980). These estimates of cross-sectional area were used with USGS seismic data to estimate the volume of sediment. For example, in Lake Zoar, the thickness of sediment was estimated by the USGS to range from 4.5 to 5 feet at the dam to 3.5 to 4 feet at the backwater of the lake at about mile 26.2. Moreover, the depth of sediment at any one transect appeared to be reasonably uniform across the lake. Thus, the cross-sectional area of sediment was estimated at various transects across Lake Zoar as illustrated for one transect in Figure 4.

These areas were then plotted as a function of distance from the dam and a smooth curve fitted as shown in Figure 5. In both lakes, the equation had the form:

$$\text{Area} = A_1 e^{B_1 x}$$

where:

x = the distance from the dam, in feet,

A_1 = a constant fitted by regression, and

B_1 = a constant fitted by regression.

For Lake Zoar, the values are:

$A_1 = 6.622 \times 10^3$, and

$B_1 = -5.707 \times 10^{-5}$.

The coefficient of determination for this relationship is $r^2 = 0.88$. The volume of sediment in the 10-mile stretch of the lake is obtained by integrating the above expression for the cross-sectional area of the sediment.

$$
\begin{aligned}
V &= \int_0^X A_1 e^{B_1 x} dx \\
&= -C_o + C_o e^{B_1 X} \\
&= 110 \times 10^6 \text{ ft}^3
\end{aligned}
$$

where:

V = volume of sediment, in ft^3,

$C_o = A_1/B_1 = -1.160 \times 10^8$, and

X = length of the reservoir = 52,800 feet.

The calculated sediment volume for Lake Zoar of 110×10^6 ft^3 is about 10% of the lake volume. If the surface area of the sediment is equal to that of the lake, then in Lake Zoar, with a surface area of 975 acres and 4 feet of sediment, the volume of the sediment would be 170×10^6 ft^3; hence, the calculated volume of 110×10^6 ft^3 seems reasonable.

Bulk density of sediment in Lake Zoar is related to distance from the dam as shown in Figure 6. Although there is considerable variability, regression analysis showed that bulk density did not differ significantly with depth in the sediment at any one location. Thus, the effect of depth was ignored and the relationship between bulk density and distance for Lake Zoar was determined by regression analysis to be:

$$BD = A_2 + B_2 x$$

where:

BD = bulk density in lb/ft^3,

$A_2 = 18.09$,

$B_2 = 1.027 \times 10^{-3}$, and

$r^2 = 0.39$.

The weight of sediment for Lake Zoar is then given by integration of the product of the equations relating volume and bulk density to distance from the dam:

$$
\begin{aligned}
WS &= \int_0^X (A_2 + B_2 x) A_1 e^{B_1 x} dx \\
&= C_1 - C_1 e^{B_1 X} + C_2 X e^{B_1 X} \\
&= 3700 \times 10^6 \text{ lb}
\end{aligned}
$$

where:

WS = weight of sediment,

$C_1 = (A_1/B_1)(B_2/B_1 - A_2) = 4.19 \times 10^9$, and

$C_2 = B_2 A_1/B_1 = -1.19 \times 10^5$.

Dividing the estimated weight of sediment in Lake Zoar by its volume gives an average bulk density of 33.6 lb/ft^3.

Finally, an expression was required for the concentration of PCBs as a function of distance from the dam (Figure 7). As with bulk density, the concentration of PCBs was not significantly different at different depths in the sediment. Hence, the concentration was related to distance by:

$$CN = A_3 + B_3 x$$

where:

CN = concentration of PCBs, in ppm, for Lake Zoar,

$A_3 = 1.335$,

$B_3 = -3.826 \times 10^{-5}$, and

$r^2 = 0.35$.

The weight of PCBs is then given by integration of the following expression:

$$
\begin{aligned}
\text{Weight of PCBs} &= \int_0^X (A_3 + B_3 x)(A_2 + B_2 x) A_1 e^{B_1 X} dx \\
&= C_3 - C_3 e^{B_1 X} + C_4 X e^{B_1 X} + C_5 X^2 e^{B_1 X} \\
&= 2150 \text{ lb.}
\end{aligned}
$$

where:

weight of PCBs = estimated weight, in pounds of PCBs in Lake Zoar,

$C_3 = (-A_1/B_1)(A_2A_3 - A_3B_2/B_1 - A_2B_3/B_1 + 2B_2B_3/B_1)^2$,
$= 1.382 \times 10^3$,

$C_4 = (A_1/B_1)(A_3B_2 + A_2B_3 - 2B_2B_3/B_1)$,
$= 8.103 \times 10^{-2}$

$C_5 = (A_1/B_1)(B_2B_3)$, and
$= 4.559 \times 10^{-6}$.

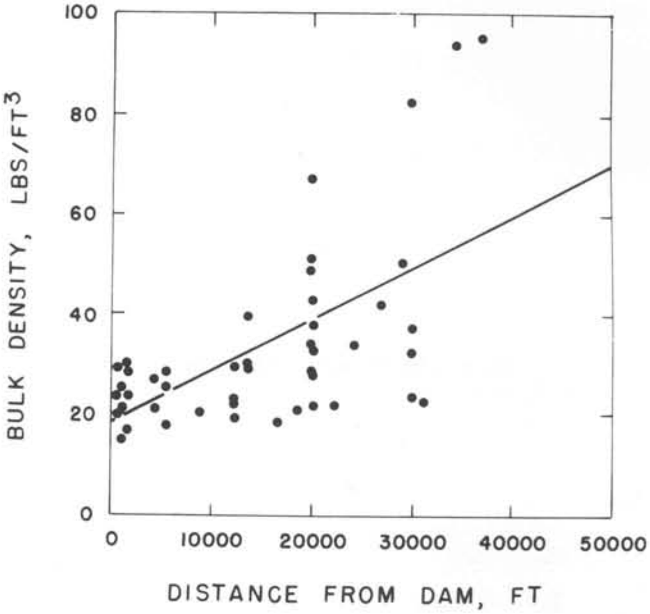


Figure 6. Bulk density of sediment in Lake Zoar as a function of distance from Stevenson Dam.

In Lake Zoar, based on analyses of 53 samples, the calculated weight of PCBs was 2150 lb (Table 10). The arithmetic mean concentration of PCBs in these 53 samples is 0.80 ppm. The mean of 0.58 ppm in Table 10 was obtained by dividing the total mass of PCBs by the total mass of sediment, and presumably represents the mean that would be observed if the sediment were thoroughly mixed to eliminate differences in texture, bulk density, and concentrations of PCBs.

Similar methods were used for the 76 samples collected in Lake Lillinonah. The Shepaug Arm was treated as a separate impoundment because sediment in this arm is significantly lower in PCBs than in the main section of the lake, confirming the limited excursion of Housatonic River water into the Shepaug Arm as described by Aylor and Frink (1980).

In Lake Lillinonah, the same functions were used with the coefficients shown below:

Function	Coefficients	Coefficient of determination
Area vs. Distance	$A_1 = 7197$	$r^2 = 0.76$
	$B_1 = -2.413 \times 10^{-5}$	
Bulk Density vs. Distance	$A_2 = 22.27$	$r^2 = 0.27$
	$B_2 = 5.926 \times 10^{-4}$	
PCBs vs. Distance	$A_3 = 1.101$	$r^2 = 0.10$
	$B_3 = -1.212 \times 10^{-5}$	
Coefficients	$C_0 = -2.982 \times 10^8$	—
	$C_1 = 1.397 \times 10^{10}$	—
	$C_2 = -1.767 \times 10^5$	—
	$C_3 = 4.683 \times 10^3$	—
	$C_4 = 6.346 \times 10^{-2}$	—
	$C_5 = 2.142 \times 10^{-6}$	—

In the Shepaug Arm, the area of the sediment was a linear function of distance:

$$\text{Area} = A_1 + B_1 x$$

where:

$A_1 = 3027$,

$B_1 = -0.1854$,

$r^2 = 0.96$.

Neither bulk density nor PCBs were correlated with distance; hence, the integral of the area function was multiplied by the mean bulk density and the mean concentration of PCBs. The calculated mass of PCBs was 218 lbs, a small proportion of the 6220 lbs estimated in the main part of Lake Lillinonah.

Bulls Bridge and Falls Village

The impoundment at Falls Village is 30 feet deep near the dam, but the depth decreases rapidly to 8 to 10 feet upstream. Seismic profiles showed that the sediment is about 6 inches thick. The sediment along the shore near the dam is mostly clay and silt with little organic material. The thickness of sediment in Bulls Bridge is similar to that at Falls Village.

The surface area of water behind these two dams is somewhat uncertain since they are run-of-the-river impoundments. The surface areas were estimated by Connecticut Light & Power to be: Bulls Bridge, 116 acres; Falls Village, 106 acres.

The sediment is estimated to be 0.5 feet deep. The concentration of PCBs in the coarse sediment at Bulls Bridge (bulk density 86.5 lb/ft^3) is estimated from the mean of five analyses of surficial samples at sites 71, 72, and 73; the mean concentration is 0.09 ppm and the s.d.m. (standard deviation of the mean) = 0.04 ppm. PCBs in Falls Village sediment (bulk density = 71.8 lb/ft^3) are estimated from analyses of seven surficial samples collected at sites 62-68 with mean concentration = 0.70 ppm (s.d.m. = 0.10 ppm). The volume of sediment is calculated by multiplying the surface area by 0.5 feet, which assumes that the surface area of the sediment can be approximated by the area of the lake. This assumption is used for all subsequent areas upstream.

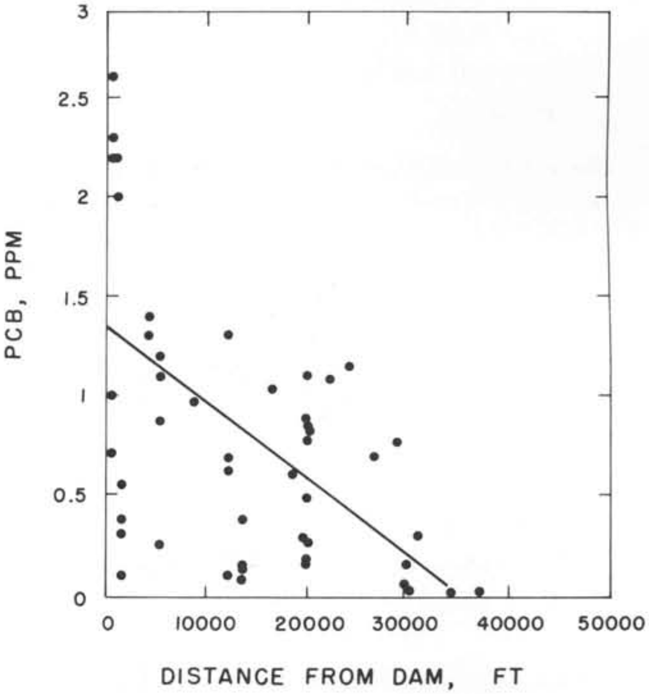


Figure 7. Concentration of PCBs in sediment in Lake Zoar as a function of distance from Stevenson Dam.

Oxbows

The 30-mile stretch of river from the backwater of the Falls Village impoundment to Rising Pond Dam contains about 9.6 miles of oxbows. As the river meanders, new oxbows are cut off and old ones are reconnected to the river. Barring some large geologic change, the proportion of sediment in oxbows will likely remain constant. Seismic profiles in one oxbow with quiet shallow water showed that the bottom consisted of 6 to 8 feet of soft sediment. Cores taken in other oxbows suggest that the sediment was generally thinner than at this particular site.

The oxbows are estimated to be 70 feet in width and to contain 4 feet of sediment with bulk density 43.0 lb/ft^3. The concentration of PCBs is estimated from 27 core and surficial samples to be 0.96 ppm (s.d.m. = 0.14 ppm).

Rising Pond

In Rising Pond, the depth of water ranges from 15 feet in a narrow winding channel to less than 1 foot where the pond has silted in. The sediment thickness was 6 to 8 feet where seismic profiling was possible near the dam. The sediments were estimated from probing and coring to have an average thickness of 5 feet with mean bulk density = 72.7 lb/ft^3. The surface area of Rising Pond is about 45 acres. The mean PCB concentration determined on 13 core and surficial samples was 1.91 ppm (s.d.m. = 0.48 ppm).

Woods Pond

Woods Pond is generally shallow with depths of water up to 15 feet and resembles an impounded swamp rather than a lake. An irregular channel 10 to 15 feet deep extends down to the dam with hard cobble overlain with 6 inches to 1 foot of black organic material. Elsewhere, the sediment is 3 to 6 feet thick. Sediment at the upstream end of the pond was actively gassing at the time of the seismic survey which makes interpretation more difficult because gas bubbles also reflect sound waves.

No dependence of PCBs or particle size of sediment on distance from the dam was found in Woods Pond. Hence, representative sampling was more difficult and estimates of the mass of PCBs may be less certain. The concentration of PCBs is not well correlated with depth in the core as shown in Figure 8. For 39 core samples, regression analysis of PCBs on depth (Z) gave:

$$\text{PCBs} = 35.26 - 0.765Z$$

where:

PCBs = concentration of PCBs in the sediment in ppm,

Z = depth, in inches, of the core from the sediment surface.

with coefficient of determination $r^2 = 0.15$ (significant at the 0.05 level). Integration of this equation to a depth of 54 inches with sediment bulk density of 33.0 lb/ft^3, gave the estimate of 11,520 pounds of PCBs inTable 10. An alternative would be to ignore the slight dependence on depth and use the mean concentration of PCBs = 21.3 ppm for all core samples in Woods Pond. In this case the calculated mass of PCBs is 16,800 pounds. Because Woods Pond was constructed prior to the use of PCBs, it seems reasonable to use the more conservative estimate obtained by allowing PCB concentrations to decrease with depth.

Other Areas

Three free-flowing reaches of the Housatonic River—near Falls Village, CT, near Ashley Falls, MA, and near Kent, CT—were profiled to determine the thickness of bottom sediment. All three areas are similar with almost no backwater and generally swift currents. The most prominent feature of these areas is active bank erosion and subsequent redeposition. The bottom sediments consist of 1 to 2 feet of loose silt and very fine sand with little or no organic matter and are quite similar to the material that forms the banks.

The analyses by the USGS for seven sites in other free-flowing reaches of the river between Bulls Bridge and Woods Pond are shown in Table 11 where it is evident that these coarse-grained sediments contain few PCBs.

Table 11.—Concentration of PCBs and size distribution of surficial sediment in the Housatonic River between Bulls Bridge, CT, and Woods Pond, MA

Sites	PCBs (ppm)	Total organic carbon (%)	Sand (%)	Silt (%)	Clay (%)
28	0.14	0.8	96.0	2.0	2.0
32	1.00	0.9	67.0	29.0	4.0
34	0.14	0.2	98.0	0.0	2.0
43	0.64	—	89.0	8.0	4.0
69	0.04	0.5	92.0	5.0	3.0
70	0.26	2.3	74.0	21.0	5.0
71	0.03	0.5	94.0	3.0	3.0

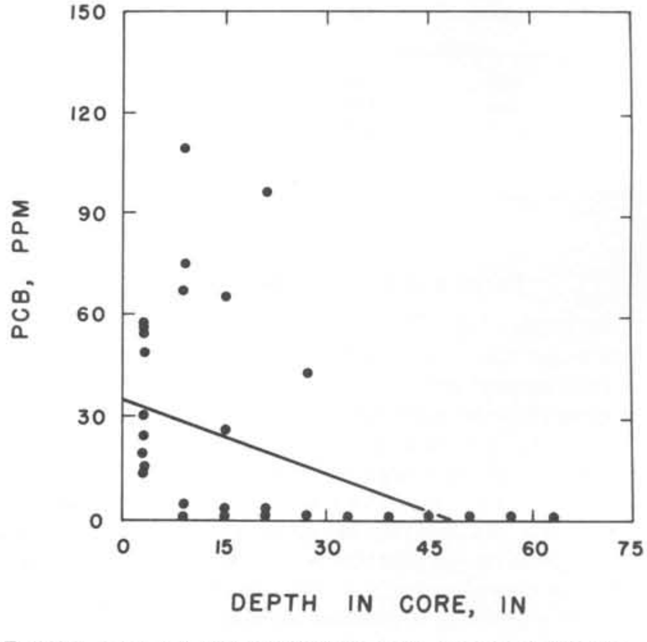


Figure 8. Concentration of PCBs in sediment cores in Woods Pond as a function of depth in the sediment.

Four sites in the river above Woods Pond but below Pittsfield were examined; the site locations were determined largely by the presence of accumulated sediment. The results by the USGS are shown in Table 12.

Table 12.—Concentration of PCBs and size distribution of surficial sediment in the Housatonic River between Woods Pond and Pittsfield, MA

Sites	PCBs (ppm)	Total organic carbon (%)	Sand (%)	Silt (%)	Clay (%)
6	25.0	0.36	96.0	1.0	3.0
7	21.0	1.10	91.0	7.0	2.0
9	12.0	5.90	90.0	7.0	2.0
11	76.0	2.50	71.0	23.0	6.0

Thus, in this section of the Housatonic River where pockets of sediment may be found, even the coarse-grained sediment contains significant amounts of PCBs.

Silver Lake adjoins the General Electric Company plant and drains to the Housatonic River. Two surficial sediment samples were collected and analyzed by both the USGS and CAES. The mean concentration was 34.0 ppm. The lake is about 24 acres, but we have no measurements of sediment depth and cannot estimate the mass of PCBs in Silver Lake.

Four sites upstream from the plant were also sampled to obtain additional information on background concentrations. The results by the USGS are shown in Table 13 and indicate little contamination with PCBs upstream of the plant.

Table 13.—Concentration of PCBs and size distribution of surficial sediment in the Housatonic River above the Pittsfield, MA business district

Sites	PCBs (ppm)	Total organic carbon (%)	Sand (%)	Silt (%)	Clay (%)
1	0.04	3.70	56.0	39.0	5.0
2	0.04	3.00	64.0	29.0	6.0
3	0.03	0.84	41.0	44.0	15.0
8	0.03	2.20	81.0	13.0	6.0

PCBs and Sediment Properties

The relationship between concentrations of PCBs and sediment properties in the three major impoundments on the river are summarized below. The coefficients of determination (r^2) are given for linear regression analysis of PCBs vs. each of the various individual sediment components (Table 14). The concentration of PCBs is negatively related to the percentage of sand in the sample, and positively related to the percentage of silt plus clay. Because they are given as percentages, and the percentage of the silt plus clay is equal to 100 minus the percentage of sand, the correlation between PCBs and the percentage of silt plus clay is identical to the correlation coefficient between PCBs and sand. As reported by Sawhney, et al. (1981), the distribution of PCBs in Lake Lillinonah is controlled to a considerable extent by the distribution of fine-grained sediment. Thus, the apparent significant correlations between PCBs and sand are due to the relationship between the percentage of sand and the percentage of finer materials. The same is true for Lake Zoar where organic matter also plays an important role. In Woods Pond, the correlations with particle size are not as strong, probably because PCB concentrations decrease with increasing depth in the sediment.

Table 14—Coefficients of determination for relationships between PCBs and sediment properties

Impoundment	Coefficient of determination, r^2			
	Total organic carbon	Sand	Silt	Clay
Woods Pond	ns	0.10*	0.24**	ns
Lillinonah	0.16**	0.26**	ns	0.36**
Zoar	0.59**	0.17**	ns	0.38**

ns = not significant
* = significant at the 0.05 level
** = significant at the 0.01 level

Slight improvements in the correlation coefficients might have been obtained by using some transformations of the data, however, the loss of interpretability of the results after transformation more than offsets any potential gain in such a fit.

TRANSPORT OF PCBs

The Housatonic River at the Great Barrington, MA gaging station (USGS station 01197500) drains an area of 280 mi^2. The average discharge for the 67-year period of record is 529 ft^3/s, equivalent to 25.66 inches of runoff per year. The maximum discharge recorded at this site was 12,200 ft^3/s on January 1, 1949, and the minimum daily discharge was 1.0 ft^3/s on October 18, 1914.

During the present PCB study, (April 1979 through September 1980) the maximum discharge at the Great Barrington gage was 4,520 ft^3/s on March 23, 1980, and the minimum daily discharge was 81 ft^3/s on August 10, 1980. During periods of low flow, discharge is moderately affected by infrequent regulation upstream.

The Housatonic River at Falls Village, CT (USGS station 01199000) drains an area of 634 mi^2. The average discharge for the 68-year period of record is 1,090 ft^3/s, equivalent to 23.33 inches of runoff per year. The maximum discharge recorded was 23,900 ft^3/s on January 1, 1949, and the minimum daily discharge was 24 ft^3/s on October 15, 1914, and September 18, 1932.

During the April 1979 through September 1980 sampling period, the maximum discharge at the Falls Village gage was 7,940 ft^3/s on March 22, 1980, and the minimum daily discharge was 37 ft^3/s on September 13, 1980. The gage at Falls Village is directly downstream of a Hartford Electric Light Company hydroelectric plant; hence the river is completely regulated at the gage during low and medium flows. This regulation causes rapid changes in stage in the range of 1 to 2 feet over a 1- to 3-hour interval.

The Housatonic River at Gaylordsville, CT (USGS station 01200500) drains an area of 993 mi^2. The average discharge for the 40-year period of record is 1,707 ft^3/s, equivalent to 23.31 inches of runoff per year. The maximum discharge recorded at this site was 5,800 ft^3/s on August 19, 1955 and the minimum daily discharge was about 60 ft^3/s, on August 31, 1944 and September 20, 1949.

During the PCB sampling period, April 1979 through September 1980, the maximum discharge was 15,400 ft^3/s on March 22, 1980 and the minimum daily discharge was 73 ft^3/s, from September 12-16, 1980. The gage at Gaylordsville is directly downstream of the Bulls Bridge hydroelectric plant of the Connecticut Light and Power Company, and ordinary flow is regulated by the plant. Changes in river stage and discharge are often frequent and rapid, as at the Falls Village gaging station.

The data in Appendix C for suspended sediment for 18 months, and analyses for PCBs and suspended sediment during storm events, show that PCBs were present mainly in the suspended phase. Thus, during any storm event, the apparent PCB content of the suspended sediment was calculated by dividing the total PCB concentration in the sample (for example, 0.50 mg/L) by the suspended sediment concentration (for example, 10 mg/L) to give an apparent PCB concentration on the suspended sediment of 0.05 μg/mg or 50 ppm. Analyses of the apparent PCB concentrations showed that they decreased rapidly with increasing flow at Great Barrington and Falls Village gaging stations and could best be fitted with equations of the form:

$$\ln(\mathrm{PCB}) = \ln A + B \ln Q$$

where PCB is concentration, in ppm, and

Q is the flow, in ft^3/s.

For Great Barrington the coefficients were $A = 1.348 \times 10^6$, $B = -1.690$ and $r^2 = 0.57$ which is significant at the 0.10 level. For Falls Village the coefficients were $A = 1.448 \times 10^5$, $B = -1.440$ and $r^2 = 0.92$ which is significant at the 0.01 level. Figures 9 and 10 show the apparent concentration of PCBs in suspended sediment during storm events at Great Barrington and at Falls Village as a function of flow.

The load of PCBs at Great Barrington and Falls Village was determined by calculating an apparent concentration of PCBs on the suspended sediment on a daily, weekly or monthly basis and summing over the appropriate time period. Since the data are limited, we chose to calculate a monthly load and then to sum over the 18 month period as shown below:

$$\text{load of PCBs lb} = \sum_{i=1}^{18} VW_i \, \frac{WS_i}{VW_i} \, \frac{WPCB_i}{WS_i}$$

where:

VW_i = the volume of water, in ft^3, during month i,
WS_i = the weight of sediment, in pounds during month i, and

$WPCB_i$ = the weight of PCBs, in pounds during month i.

The weight of PCBs calculated by summation over 18 months was divided by 18 to give a mean monthly load and then multiplied by 12 to give a mean annual load.

At Gaylordsville, the dependence of apparent PCB concentration on flow was not strong, perhaps due to regulation of flow upstream. (The results shown in Appendix C for Gaylordsville are truncated at one decimal place. Hence, the USGS Central Laboratory estimated three decimal places to

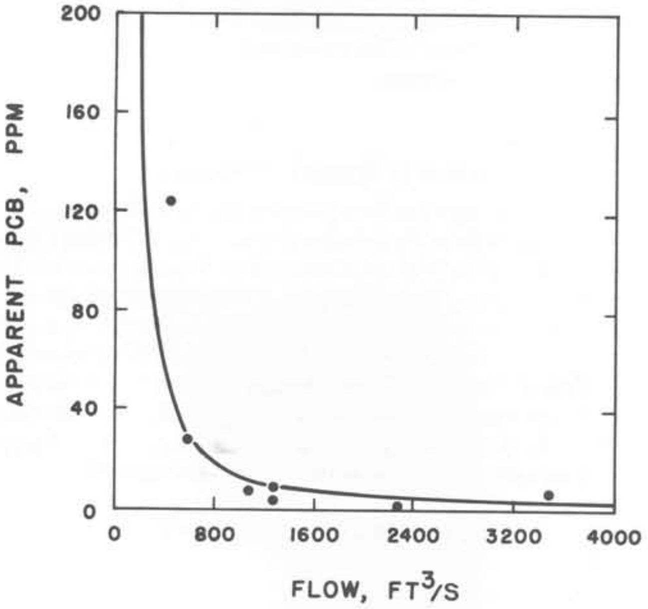


Figure 9. Apparent concentration of PCBs in suspended sediment during storm events at Great Barrington as a function of flow.

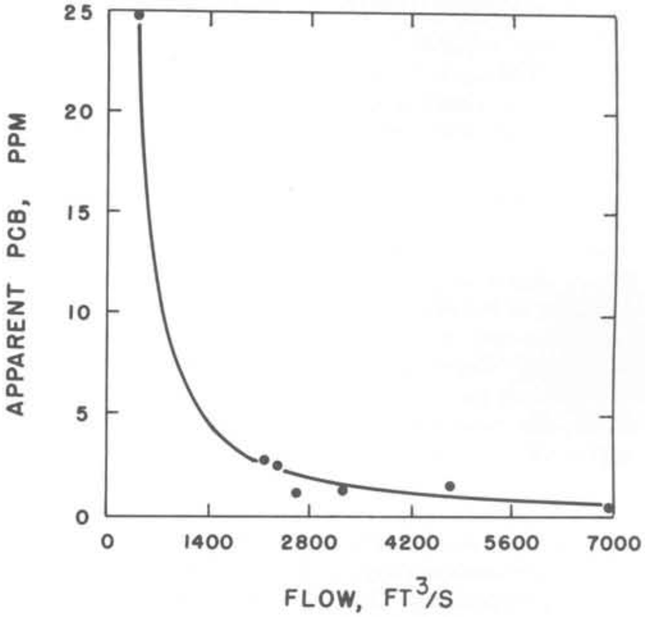


Figure 10. Apparent concentration of PCBs in suspended sediment during storm events at Falls Village as a function of flow.

provide as much data as possible.) The mean apparent PCB concentration of 2.44 ppm observed during storm events was used to estimate the annual transport of PCBs at Gaylordsville. The estimated annual transport of sediment and PCBs in the Housatonic River is shown in Table 15.

Table 15.—Estimated annual transport of sediment and PCBs at selected stations on the Housatonic River

Station	Mean flow (ft^3/s)	Sediment (tons/day)	Sediment (tons/year)	PCBs (pounds/year)
Great Barrington	489	19.4	7,080	490
Falls Village	1009	98.1	35,800	415
Gaylordsville	1578	146.7	53,545	265

Although flow and sediment load increase considerably in the downstream direction, the amount of PCB transported appears to decrease. This is probably due to some deposition within the stream, although there are no substantial sediment deposits between Great Barrington and Gaylordsville. The calculated amounts can be compared with the amounts present in impoundments in Connecticut below Gaylordsville. For example, Lakes Zoar and Lillinonah contain about 8,600 lb of PCBs which, at a hypothetically uniform rate of 265 lb/year, could be transported in 32 years. These estimates of the rate of transport are uncertain due to a limited number of storm events during the 18-month period of study, which also was a period of generally lower than average flow. Moreover, some PCBs may be transported at low flow in the soluble phase (Turk and Troutman, 1981). Finally, the rate of transport may change with time since there is no longer a known major source of PCBs upstream from Woods Pond.

PRECISION OF RESULTS

The data in Table 10 represent our best estimates of the mass of PCBs in sediments in the Housatonic River. There are, however, many uncertainties associated with these estimates. A completely rigorous statistical analysis of these uncertainties is not possible, but rough estimates of the precision of the quantities of PCBs are presented in the following section.

Several measures of error are used and are defined herein. Where only a single measurement was made, such as the thickness of sediment at a particular site, no replicate measurements were made and the errors were estimated from judgement. These are expressed as relative errors, i.e., ±10%, with the implicit assumption that the errors will be within this range most of the time. In order to treat them statistically, they are considered to be the 95% confidence limits.

Where replicate analyses are available, the usual measurements of mean and standard deviation are used. Because most of our measurements have constant relative errors, they are expressed accordingly. The coefficient of variation, i.e., the standard deviation divided by the mean, is one common relative measure. To combine errors based on measurements of different sample size, the s.d.m. is used, which for independent observations is the standard deviation divided by the square root of the number of observations, expressed as percent of the mean.

Where sediment properties varied in some systematic fashion, these properties were related by regression analysis. For example, PCBs were found to decrease with increasing distance from the dam in impoundments in Connecticut. In this case, the estimated errors can be obtained from the regression equation (Draper and Smith, 1966). The s.e.e. (standard error of estimate) from regression analysis has the same dimensions and interpretation as the standard deviation discussed above. The s.e.e.m. (standard error of estimate of the mean) is obtained by dividing by the square root of the number of observations and also expressed as a percentage of the mean.

Because estimates of the mass of PCBs are based on different numbers of observations at different locations, this must be accounted for as well. This can be accomplished by placing confidence limits on each mean, which of course are narrow for large numbers of observations and increase as observations decrease.

Errors in Volume of Sediment

In Lakes Zoar and Lillinonah, the volume of sediment was calculated as the integral of the cross-sectional area of the sediment over the distance from the dam. In the other impoundments, the volume was calculated as the product of surface area and thickness of sediment. In all cases, the largest uncertainty is the determination of the thickness of sediment. The estimates by the USGS from seismic profiling are probably within 0.5 foot in impoundments such as Zoar and Lillinonah. For Zoar with a mean thickness of sediment of about 4.5 feet, this could introduce an error of 0.5/4.5 or about 10%. In Lillinonah, where the mean thickness is about 2.5 feet, the error could be about 20%. In Woods Pond, measurements of thickness are less certain, and it is estimated that the error could be 30%. It is estimated that the cross-sectional area of the sediment is known within 10%, as is the surface area of an impoundment.

Errors in Weight of Sediment

The largest uncertainty is in the bulk density which ranges from about 10 lb/ft^3 for samples containing 25% organic matter, to about 85 lb/ft^3 for sandy samples. Because bulk density was not measured for all samples, it was necessary to first relate it to other sediment properties in 24 samples where all properties were measured, and then to use this relationship to calculate the bulk density for all other samples. Several predictors were tested for the 24 samples analyzed, including sand, silt, clay, and organic matter. The percentage of sand in the sample was chosen, with the prediction equation:

$$BD = 14.18 + 0.843(SAND)$$

where:

BD = bulk density, in lb/ft^3,

SAND = percentage of sand in the sample, with $r^2 = 0.84$ and s.e.e. = 8.7 lb/ft^3. Thus, if the percentage of sand is known without error, uncertainties in bulk density can be estimated from the mean of these 24 samples of 27.0 and the s.e.e.m. of $8.7/(24)^{1/2} = 1.78$. The 95% confidence limit is then obtained from a t-table and is 27.0 ± 3.7 for a relative error of ± 13.7%.

Concentration of PCBs

Several uncertainties are involved in determining the concentration of PCBs in sediment, including the variability of PCBs within the area of an impoundment. The variability of PCB concentrations in Lakes Zoar and Lillinonah with distance from the dams, and in Woods Pond with depth in the sediment, was accounted for, in part, by regression analysis. Table 16 gives the s.e.e.m., or the s.d.m., whichever is appropriate, as well as the 95% confidence limits for PCB concentrations in the sediment.

Table 16.—The standard error of estimate of the mean or the standard deviation of the mean for concentrations of PCBs in Housatonic River sediment

Location	Number of samples	Arithmetic[1] mean PCB, (ppm)	s.d.m. or s.e.e.m.	95% confidence limit
Lake Zoar	53	0.80	0.078	±0.16
Lake Lillinonah	67	0.84	0.089	±0.18
Bulls Bridge	5	0.09	0.038	±0.10
Falls Village	9	0.70	0.104	±0.24
Oxbows	27	0.96	0.136	±0.28
Rising Pond	13	1.91	0.484	±1.05
Woods Pond	39	21.3	4.59	±9.27

[1] These concentrations differ from the weighted mean concentrations shown in Table 10.

Propagation of Errors

In Lakes Zoar and Lillinonah, the weight of PCBs was obtained by integration of the equation:

$$\text{PCBs (lb)} = \int_0^X (A_3 + B_3x)(A_2 + B_2x)(A_1e^{B_1x})\,dx$$

where:

$A_3 + B_3x$ = concentration of PCBs in sediment in ppm as a function of distance from the dam in feet (x),

$A_2 + B_2x$ = bulk density of the sediment in lb/ft^3 as a function of distance from the dam, and

$A_1e^{B_1x}$ = cross-sectional area of the sediment in ft^2, as a function of distance from the dam.

In the remaining sections, the weight of PCBs was calculated by multiplication of:

$$\text{PCBs (lb)} = (\text{CN}) \cdot (\text{BD}) \cdot (\text{A}) \cdot (\text{T})$$

where

CN = concentration of PCBs in the sediment,

BD = bulk density of the sediment, in lb/ft^3,

A = surface area of the sediment, in ft^2, and

T = thickness of the sediment, in feet

Thus, we require a principle for calculating the relative error of a product to determine the uncertainties associated with the estimated weight of PCBs within an impoundment.

The squared relative error of a product is approximated by the sum of the squared relative errors of its individual terms (Ku, 1966). The main assumptions in this approximation are that the relative errors are small and that errors of measurement of the variates are not correlated. A thorough discussion of the application of this principle to chemical measurements may be found in Frink and Waggoner (1968). It can be shown that this approximation is not seriously in error even for the relatively large errors encountered in this study. Moreover, there is little likelihood that errors of measurement of bulk density, for example, are correlated with errors of measurement of PCBs.

The coefficient of variation—i.e., the standard deviation divided by the mean—is the measure of relative error commonly used in propagating errors in a product. As noted earlier, the numbers of observations of each sediment property vary widely, and we must take this into account. We chose to establish 95% confidence limits on each measurement and express them as relative errors. Thus, if the sampling were repeated in a particular impoundment with the same number and distribution of sampling sites, the mean should be within our confidence limits 95% of the time.

Propagation of errors in the determination of the mass of PCBs in Lake Zoar according to these principles is described below in detail.

The volume of sediment was determined by integration of the function relating cross-sectional area to distance from the dam. The standard error of estimate at the mean distance and depth expressed as a percent of the mean was 4.5%. As noted earlier, the uncertainty in the thickness of the sediment itself is greater than the error in our fitted curve; thus, we estimate the error in the E_A (cross-sectional area) of the sediment to be 10% in Lake Zoar.

The standard error of estimate of bulk density in Lake Zoar as a function of distance from the dam was 14.2 lb /ft^3. For 51 samples with mean 32.4 lb/ft^3, the 95% confidence limit would be ±3.98 lb/ft^3 or ±12.3%. Remembering that BD was calculated from the sand content of the sediment with a relative error of 13.7%, we combine these errors according to the rule for a product to obtain the E_{BD} (error in bulk density):

$$E_{BD} = [(13.7)^2 + (12.3)^2]^{1/2} = 18.4\%$$

where:

E_{BD} = relative error in bulk density, in %.

The E_{PCB} (errors of determination of PCBs) in Lake Zoar were previously given as the 95% confidence limits on the mean of 0.80 ppm ±0.16 or ± 20.0%. This, of course, includes the sampling and analytical errors described earlier.

We can now estimate the 95% confidence limits on the mass of PCBs in Lake Zoar by:

$$\text{Confidence limit} = [E^2_{PCB} + E^2_{BD} + E^2_{A}]^{1/2} = [(20\%)^2 + (18.4\%)^2 + (10\%)^2]^{1/2} = 28.9\%$$

The calculated mass of PCBs in Lake Zoar was 2,150 lbs (Table 10). The 95% confidence limits are, therefore, 2,150 ± 28.9% or 2,150 ± 620 lb. Calculations for the other impoundments followed a similar pattern with the results shown in Table 17.

Now, we inquire what the uncertainty in the total amount present may be. For uncorrelated variates, the variance of a sum of variates is the sum of the variances of the individual variates (Ku, 1966). In this application, there must be no correlation between errors of measurement in one impoundment vs. errors in another. The error in the sum can be estimated by converting the errors in percent in Table 17 to absolute errors, squaring and summing them, and expressing the answer as a percentage of the total. If we do so, the errors amount to 7,020 lbs, or about 31.6% of the total of 22,195 lbs shown in Table 10. A more conservative estimate is obtained by summing the absolute errors in Table 17 as though they all had the same sign. In this event, the errors are 10,604 lbs or about 47.8% of the total. This corresponds to the worst case where the errors are perfectly correlated. Since there is likely to be some correlation between errors of measurement, it is estimated that the errors in an impoundment or in the total are within ±50%.

Table 17.—Estimated errors in determination of mass of PCBs in Housatonic River sediments

Location	PCB, %	BD, %	Area, %	Thickness, %	Error[3] %	Error[3] lbs PCB
Zoar	20.0	18.4	4.5[1]	10	28.9	620
Lillinonah	21.4	19.2	3.4	20	35.0	2,255
Bulls Bridge	106.3	19.8	10[2]	20	110.4	22
Falls Village	34.3	20.5	10[2]	20	45.8	53
Oxbows	29.0	22.0	10[2]	20	42.7	252
Rising Pond	55.0	19.0	10[2]	20	62.3	847
Woods Pond	43.5	18.7	10[2]	30	56.9	6,555
Total					47.8	10,604

[1] Cross-sectional area of the sediment
[2] Surface area of the sediment
[3] See text for discussion

Additional Sampling

Whether these estimates would be improved by additional sampling is difficult to answer. On a purely statistical basis, narrowing the 95% confidence limit for the mean PCB concentration as a function of distance from the dam in Lake Zoar from 20% of the mean to 10% of the mean would require about 200 samples compared to the 53 actually taken. Although PCBs are associated with fine-grained sediment, the correlation between clay content and distance from the dam is not strong; therefore, the correlation between PCB content and distance is far from perfect. In other impoundments, such as Woods Pond, we have greater variability because the sediments are quite variable in composition. Thus, the estimated errors in the present study seem to stem more from the difficulty of describing the distribution of sediment than from errors in PCB analyses. Greater difficulties were encountered in determining the mass of PCBs in the Hudson River, where little or no correlation was observed between PCBs and sediment characteristics (Horn et al., 1979). The greatest uncertainty in our study is the estimated rate of transport of PCBs down the river.

SUMMARY AND CONCLUSIONS

PCBs have accumulated in the Housatonic River wherever sediments have accumulated. The concentration of PCBs in these sediments increased gradually with increasing distance upstream and then increased sharply in Woods Pond, the first impoundment below Pittsfield, Massachusetts. The distribution of PCBs within impoundments was found to be controlled by the distribution of fine-grained sediment.

Sediment samples taken above Pittsfield, in the Ten Mile River, and in several lakes in Connecticut contained only typical background concentrations of 0-0.1 ppm. Six samples from the Still River, a tributary in Connecticut, contained an average of 0.25 ppm, with Aroclor 1248 predominating. The ratio of Aroclor 1248 to 1260 was higher in samples from Lakes Zoar and Lillinonah than in samples collected upstream, suggesting that some PCBs entered these lakes from the Still River. Differential transport of Aroclor 1248 downstream may also have occurred.

Calculations of the mass of PCBs in the river sediment indicate that, of the estimated total of 22,200 lbs, about 60% is in Massachusetts and nearly all of this amount is in sediment in Woods Pond. The remaining 40% of the total is in sediment in Connecticut: About 29% is in Lake Lillinonah, 10% is in Lake Zoar, and small amounts are at other locations. An analysis of these estimates indicates that errors should be within ±50%. Transport of PCBs by suspended sediment down the river into Connecticut is estimated to be at the rate of 250 to 500 pounds per year.

In conclusion, the principal source of PCBs at present in sediment of the Housatonic River in Connecticut seems to be the sediment in Woods Pond, Massachusetts. Because the General Electric Company plant located in Pittsfield was the only known contributor of large amounts of PCBs to the river, the plant seems the likely source of Aroclors 1254 and 1260 found in the river. The source of Aroclor 1248 is not known. These results suggest that removal or containment of sediment in Woods Pond would help to alleviate further transport of PCBs into Connnecticut.

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Appendix A

All project sites are shown in Appendix Table A1 which contains site number, USGS sample number, CAES sample number, station name and location, latitude, longitude, USGS quadrangle, locator map number, and type of sample where S is surficial and C is core. Table A2 shows the locations of the gaging stations used in the study. Appendix Figure A1 shows the general study area and is a key to specific sites shown in Appendix A maps 1 through 4.

Appendix Table A1.

Site	USGS ID number	CAES ID number	Station name and location	Latitude	Longitude	USGS quadrangle	Map	Type sample
1	422840073092400		Center Pond nr Riverview St at Dalton, MA	42°28'40"	073°09'24"	Pittsfield E.	1	S
2	422837073391400		Center Pond at Otis St at Dalton, MA	42°28'37"	073°09'14"	Pittsfield E.	1	S
3	422818073145500		W. Br. Housatonic R nr Lenox Ave. at Pittsfield, MA	42°28'18"	073°14'55"	Pittsfield E.	1	S
4	422704073142000		Silver Lake nr East St at Pittsfield, MA	42°27'04"	073°14'20"	Pittsfield E.	1	S
5	422704073143200		Silver Lake nr Lincoln St at Pittsfield, MA	42°27'04"	073°14'32"	Pittsfield E.	1	S
6	422627073145600		E. Br. Housatonic R at Dawes Ave. at Pittsfield, MA	42°26'27"	073°14'56"	Pittsfield E.	1	S
7	422611073145400	27C	E. Br. Housatonic R at Pomeroy Ave. at Pittsfield, MA	42°26'11"	073°14'54"	Pittsfield E.	1	S
8	422618073173100		S. W. Br. Housatonic R nr West Pittsfield, MA	42°26'18"	073°17'31"	Pittsfield W.	1	S
9	422548073142100		Housatonic R at Holmes Rd nr Pittsfield, MA	42°25'48"	073°14'21"	Pittsfield E.	1	S
10		44C	Housatonic R below treatment plant nr New Lenox, MA	42°24'04"	073°14'16"	Pittsfield E.	1	S
11	422337073142700		Housatonic R at New Lenox, MA	42°23'37"	073°14'27"	Pittsfield E.	1	S
12		13C	Cut-off Oxbow nr Housatonic R at New Lenox, MA	42°23'27"	073°14'43"	Pittsfield E.	1	S
13	422310073144200		Housatonic R nr Yokun Bk nr New Lenox, MA	42°23'10"	073°14'42"	Pittsfield E.	1	C
14		53C	Housatonic R Oxbow nr New Lenox, MA	42°23'07"	073°14'45"	Pittsfield E.	1	S
15	422313073144800		Housatonic R nr New Lenox, MA	42°23'13"	073°14'48"	Pittsfield E.	1	C
16	422140073143300		Upper Woods Pond nr Lenox, MA	42°21'40"	073°14'33"	East Lee	1	C
17	422130073143000		Upper Woods Pond nr channel nr Lenox, MA	42°21'30"	073°14'30"	East Lee	1	C
18	422124073143200		Woods Pond nr Substation at Lenox, MA	42°21'24"	073°14'32"	East Lee	1	C
19	422118073141800		Woods Pond East Side at Lenox, MA	42°21'18"	073°14'18"	East Lee	1	S
20		31C	Woods Pond West Side at Lenox, MA	42°21'08"	073°14'29"	East Lee	1	S
21	422102073143500	24C	Lower Woods Pond at Lenox Station, MA	42°21'02"	073°14'35"	East Lee	1	C
22	422102073142500		Lower Woods Pond at Center at Lenox, MA	42°21'02"	073°14'25"	East Lee	1	C
23		14C	Lower Woods Pond East Side nr Lenox, MA	42°20'58"	073°14'15"	East Lee	1	S
24	422057073141900	22C	Lower Woods Pond nr Lenox, MA	42°20'57"	073°14'19"	East Lee	1	C
25	422056073142000		Lower Woods Pond nr Woodland St nr Lenox, MA	42°20'56"	073°14'20"	East Lee	1	C
26	422052073144300		Woods Pond Outflow at Lenox Sta., MA	42°20'52"	073°14'43"	East Lee	1	S
27	422040073143800		Canal Pond below Woods Pond at Lenox Dale, MA	42°20'40"	073°14'38"	East Lee	1	C
28	422026073144300		Housatonic R nr Gravel Pit at Lenox Dale, MA	42°20'26"	073°14'43"	East Lee	1	S
29	421909073144000		Housatonic R at Golden Hill Rd nr Lee, MA	42°19'09"	073°14'40"	East Lee	1	S
30	421904073144600		Housatonic R nr Columbia St at Lee, MA	42°19'04"	073°14'46"	East Lee	1	C
31	421903073144500		Housatonic R nr Golden Hill Rd at Lee, MA	42°19'03"	073°14'45"	East Lee	1	S
32	421632073161000		Housatonic R at Beartown Brook nr S. Lee, MA	42°16'32"	073°16'10"	Stockbridge	1	S
33	421632073170500		Housatonic R at South Lee, MA	42°16'32"	073°17'05"	Stockbridge	1	S
34	421653073192300		Housatonic R at Stockbridge, MA	42°16'53"	073°19'23"	Stockbridge	1	S
35	421658073193400		Golf Course Pond at Stockbridge, MA	42°16'58"	073°19'34"	Stockbridge	1	C
36	421654073211200		Housatonic R nr Glendale, MA	42°16'54"	073°21'12"	Stockbridge	1	C
37	421508073215800	19C	Upper Risingdale Pond at Housatonic, MA	42°15'08"	073°21'58"	Stockbridge	1	C
38		54C	Upper Risingdale Pond nr Housatonic, MA	42°14'58"	073°21'57"	Great Barrington	1	S
39	421453073213600		Middle Risingdale Pond at Housatonic, MA	42°14'53"	073°21'36"	Great Barrington	1	C
40		30C	Middle Risingdale Pond nr Risingdale, MA	42°14'48"	073°21'30"	Great Barrington	1	S
41		29C	Lower Risingdale Pond nr Risingdale, MA	42°14'42"	073°21'29"	Great Barrington	1	C
		32C	Lower Risingdale Pond nr Risingdale, MA	42°14'42"	073°21'29"	Great Barrington	1	C
42	421436073212900	28C	Lower Risingdale Pond at Risingdale, MA	42°14'36"	073°21'29"	Great Barrington	1	C
43	01197500		Housatonic R nr Great Barrington, MA	42°13'55"	073°21'19"	Great Barrington	1	S
44		20C	Housatonic R Oxbow at Great Barrington, MA	42°11'14"	073°21'33"	Great Barrington	1	S
45	421040073212600	21C	Housatonic R at Great Barrington, MA	42°10'40"	073°21'26"	Great Barrington	2	S
46		15C	Housatonic R Oxbow nr Great Barrington, MA	42°09'33"	073°21'46"	Great Barrington	2	S
47		18C	Top Oxbow nr Sheffield, MA	42°08'49"	073°21'48"	Great Barrington	2	S
		59C	Top Oxbow nr Sheffield, MA	42°08'49"	073°21'48"	Great Barrington	2	S
48	420848073214100		Middle Oxbow nr Sheffield, MA	42°08'48"	073°21'41"	Great Barrington	2	C
49		41C	Bottom Oxbow nr Sheffield, MA	42°08'49"	073°21'37"	Great Barrington	2	S
		57C	Bottom Oxbow nr Sheffield, MA	42°08'49"	073°21'37"	Great Barrington	2	S
50	420637073204200	39C	Hubbard Brook at Sheffield, MA	42°06'37"	073°20'42"	Ashley Falls	2	S
51	420636073203600		Hubbard Brook outlet at County Rd at Sheffield, MA	42°06'36"	073°20'36"	Ashley Falls	2	C
52	420633073202800		Housatonic R at Sheffield, MA	42°06'33"	073°20'28"	Ashley Falls	2	S
53		38C	Housatonic R nr Sheffield, MA	42°05'48"	073°20'32"	Ashley Falls	2	S
54		55C	Housatonic R nr Hewins Rd nr Sheffield, MA	42°05'28"	073°19'43"	Ashley Falls	2	S
55	420419073200300	23C	Housatonic R Oxbow Top nr Ashley Falls, MA	42°04'19"	073°20'03"	Ashley Falls	2	S
56	420417073195900		Housatonic R Oxbow Center nr Ashley Falls, MA	42°04'17"	073°19'59"	Ashley Falls	2	C
57	420415073200500		Housatonic R Oxbow Bottom nr Ashley Falls, MA	42°04'15"	073°20'05"	Ashley Falls	2	S
58	420342073205900		Housatonic R Oxbow Top at Ashley Falls, MA	42°03'42"	073°20'59"	Ashley Falls	2	S
59	420344073205900	45C	Housatonic R Oxbow Center at Ashley Falls, MA	42°03'44"	073°20'59"	Ashley Falls	2	C
60	420345073210100	68C	Housatonic R Oxbow Bottom at Ashley Falls, MA	42°03'45"	073°21'01"	Ashley Falls	2	S
61	415958073221000	65C	Housatonic R nr Pine Grove, CT	41°59'58"	073°22'10"	S. Canaan	2	S
62	415830073221300	66C	Housatonic R nr Hollenbeck R nr Amesville, CT	41°58'30"	073°22'13"	S. Canaan	2	S
63		78-2F	Housatonic R at Hollenbeck R nr Amesville, CT	41°58'27"	073°22'12"	S. Canaan	2	S
64		78-3F	Falls Village Reservoir Center at Falls Village, CT	41°58'08"	073°22'04"	S. Canaan	2	S
65	415809073220000		Falls Village Reservoir East side at Falls Village, CT	41°58'09"	073°22'00"	S. Canaan	2	S
66	415754073221800		Falls Village Reservoir West Side at Falls Village, CT	41°57'54"	073°22'18"	S. Canaan	2	S
67	415748073221900	64C	Housatonic R at Amesville, CT	41°57'48"	073°22"19"	S. Canaan	2	S
68		78-4F	Housatonic R at Falls Village Dam at Amesville, CT	41°57'47"	073°22'18"	S. Canaan	2	S

Site	USGS ID number	CAES ID number	Station name and location	Latitude	Longitude	USGS quadrangle	Map	Type sample
69	415319073212900	34C	Housatonic R nr West Cornwall, CT	41°53'19"	073°21'29"	S. Canaan	2	S
70	414951073230500	35C	Housatonic R nr Ellsworth, CT	41°49'51"	073°23'05"	Ellsworth	3	S
71	414321073290800	40C	Housatonic R at Kent, CT	41°43'21"	073°29'08"	Kent	3	S
72	414047073303500	67C	Housatonic R at Bulls Bridge, CT	41°40'47"	073°30'35"	Dover Plains	3	S
73	414043073303000		Housatonic R at Dam at Bulls Bridge, CT	41°40'43"	073°30'30"	Dover Plains	3	S
74	01200000	26C	Tenmile R nr Gaylordsville, CT	41°39'32"	073°31'44"	Dover Plains	3	S
75	413414073264100	36C	Candlewood Lake nr New Milford, CT	41°34'14"	073°26'41"	New Milford	4	S
76	413407073263700		Candlewood Lake at Lynn Deming Park nr New Milford, CT	41°34'07"	073°26'37"	New Milford	4	C
77	413312073263300		Candlewood Lake at Birch Point nr New Milford, CT	41°33'12"	073°26'33"	New Milford	4	C
78		78-23F	Housatonic R nr Still River, CT	41°32'47"	073°24'30"	New Milford	4	S
79	413225073241400		Lake Lillinonah at Lovers Leap nr Still River, CT	41°32'25"	073°24'14"	New Milford	4	C
80		78-22F	Lake Lillinonah at Goodyear Island nr Still River, CT	41°32'23"	073°24'17"	New Milford	4	S
81		78-35F	Lake Lillinonah at Marsh Rd nr Mead Corners, CT	41°31'58"	073°24'20"	New Milford	4	S
82	413133073240700		Lake Lillinonah at Pumpkin Hill nr Mead Corners, CT	41°31'33"	073°24'07"	New Milford	4	C
83		78-21F	Lake Lillinonah Center at Pumpkin Hill nr Mead Corners, CT	41°31'29"	073°24'11"	New Milford	4	S
84		69C	Lake Lillinonah near Pumpkin Hill nr Mead Corners, CT	41°31'15'	073°24'03"	New Milford	4	C
85		78-34F	Lake Lillinonah at Hemlock Rd nr Brookfield, CT	41°30'58"	073°23'27"	New Milford	4	S
86	413038073231600		Lake Lillinonah at Rocky Hill nr Brookfield, CT	41°30'38"	073°23'16"	New Milford	4	C
87		78-20F	Lake Lillinonah nr Old Bridge Rd nr Brookfield, CT	41°30'30"	073°23'20"	New Milford	4	S
88		70-C	Lake Lillinonah at Rock Hill Rd nr Kinneys Corners, CT	41°30'13"	073°22'56"	New Milford	4	C
89		78-33F	Lake Lillinonah at Hitchcock Mill Brook nr Kinneys Corners, CT	41°30'12"	073°22'53"	New Milford	4	S
90	413002073223300		Lake Lillinonah nr Kinneys Corners, CT	41°30'02"	073°22'33"	New Milford	4	C
91		78-32F	Lake Lillinonah nr Iron Ore Hill Rd nr Brookfield, CT	41°29'10"	073°21'58"	Newtown	4	S
92	412900073213400		Lake Lillinonah nr Northrop St nr Brookfield, CT	41°29'00"	073°21'34"	Newtown	4	C
93	412846073204700		Lake Lillinonah at Wewaka Brook nr Brookfield, CT	41°28'46"	073°20'47"	Newtown	4	C
94		78-18F	Lake Lillinonah Center at Wewaka Brook nr Brookfield, CT	41°28'39"	073°20'49"	Newtown	4	S
95		71C	Lake Lillinonah nr Wewaka Brook nr Brookfield, CT	41°28'40"	073°20'43"	Newtown	4	C
96		78-31F	Lake Lillinonah nr Hanover Rd nr Brookfield, CT	41°28'27"	073°20'04"	Newtown	4	S
97	412824073200500		Lake Lillinonah at Hanover Rd nr Brookfield, CT	41°28'24"	073°20'05"	Newtown	4	C
98		78-17F	Lake Lillinonah at Pond Brook nr Brookfield, CT	41°28'08"	073°19'23"	Newtown	4	S
99		78-25F	Lake Lillinonah at Shepaug R nr Brookfield, CT	41°28'07"	073°18'42"	Newtown	4	S
100		78-30F	Shepaug R at Milepoint 2.50 nr Roxbury Falls, CT	41°29'57"	073°19'20"	Newtown	4	S
101		78-15F	Shepaug R at Milepoint 2.20 nr Roxbury Falls, CT	41°29'49"	073°19'26"	Newtown	4	S
102		78-29F	Shepaug R at Milepoint 2.00 nr Roxbury Falls, CT	41°29'42"	073°19'34"	Newtown	4	S
103		78-14F	Shepaug R at Milepoint 1.80 nr Roxbury Falls, CT	41°29'28"	073°19'32"	Newtown	4	S
104		78-28F	Shepaug R at Milepoint 1.60 nr Roxbury Falls, CT	41°29'18"	073°19'32"	Newtown	4	S
105		78-13F	Shepaug R at Milepoint 1.40 nr Roxbury Falls, CT	41°29'09"	073°19'37"	Newtown	4	S
106		78-27F	Shepaug R at Milepoint 1.05 nr South Britain, CT	41°28'53"	073°19'25"	Newtown	4	S
107		78-12F	Shepaug R at Milepoint 0.65 nr South Britain, CT	41°28'35"	073°19'12"	Newtown	4	S
108		78-26F	Shepaug R at Milepoint 0.20 nr South Britain, CT	41°28'20"	073°18'57"	Newtown	4	S
109		78-11F	Lake Lillinonah below Shepaug R nr South Britain, CT	41°28'17"	073°18'15"	Newtown	4	S
110	412807073180500		Lake Lillinonah below Shepaug R nr Brookfield, CT	41°28'07"	073°18'05"	Newtown	4	C
111		72C	Lake Lillinonah nr South Britain, CT	41°28'00"	073°18'00"	Newtown	4	C
112		78-24F	Lake Lillinonah at G.C. Waldo State Park nr Newtown, CT	41°27'42"	073°17'58"	Newtown	4	S
113		73C	Lake Lillinonah nr Newtown, CT	41°27'20"	073°18'07"	Newtown	4	C
114		78-5-10F	Lake Lillinonah Cross Section nr Newtown, CT	41°27'00"	073°17'58"	Newtown	4	S
115		75C	Lake Lillinonah Right Side nr Shepaug Dam nr Newtown, CT	41°27'00"	073°17'52"	Newtown	4	C
116	412657073175200		Lake Lillinonah at Shepaug Dam nr Newtown, CT	41°26'57"	073°17'52"	Newtown	4	C
117		76C	Lake Lillinonah Left Side nr Shepaug Dam nr Newtown, CT	41°26'54"	073°17'56"	Newtown	4	C
118		74C	Lake Lillinonah at Cavanaugh Brook nr Newtown, CT	41°26'50"	073°18'00"	Newtown	4	C
119		4C	Housatonic R at Oakdale Manor, CT	41°26'17"	073°15'02"	Newtown	4	S
120		9C	Lake Zoar at Rock Road nr Riverside, CT	41°26'12"	073°14'36"	Southbury	4	S
121		16C	Lake Zoar at Riverside, CT	41°25'41"	073°14'33"	Southbury	4	S
122	412534073141700		Lake Zoar at Lakeside, CT	41°25'34"	073°14'17"	Southbury	4	C
123		8C	Lake Zoar at Center nr Cedarhurst, CT	41°25'34"	073°14'13"	Southbury	4	S
124		7C	Lake Zoar Right Side at Lakeside, CT	41°25'40"	073°14'07"	Southbury	4	S
125		6C	Lake Zoar at Lee Brook at Lakeside, CT	41°25'48"	073°13'43"	Southbury	4	S
126		5C	Lake Zoar at Lakeside, CT	41°25'44"	073°13'08"	Southbury	4	S
127		4C	Lake Zoar at Cedarhurst, CT	41°25'30"	073°12'53"	Southbury	4	S
128		3C	Lake Zoar above Kettletown Brook nr Cedarhurst, CT	41°25'17"	073°12'37"	Southbury	4	S
129	412513073123400		Lake Zoar nr Cedarhurst, CT	41°25'13"	073°12'34"	Southbury	4	C
130	412514073123100		Lake Zoar at Kettletown State Park nr Cedarhurst, CT	41°25'14"	073°12'31"	Southbury	4	C
131		52C	Lake Zoar below Kettletown Brook nr Cedarhurst, CT	41°25'13"	073°12'27"	Southbury	4	S
132		2C	Lake Zoar nr Kettletown State Park nr Cedarhurst, CT	41°25'06"	073°12'19"	Southbury	4	S
133		1C	Lake Zoar nr Hulls Hill nr Cedarhurst, CT	41°24'48"	073°12'03"	Southbury	4	S
134	412438073113300		Lake Zoar at Jackson Cove nr Stevenson, CT	41°24'38"	073°11'33"	Southbury	4	C
135	412434073112900		Lake Zoar nr Jackson Cove nr Stevenson, CT	41°24'37"	073°11'29"	Southbury	4	C
136		17C	Lake Zoar at Good Hill nr Stevenson, CT	41°24'03"	073°11'16"	Southbury	4	S
137	412332073110800		Lake Zoar at Halfway R Inlet nr Stevenson, CT	41°23'32"	073°11'08"	Southbury	4	C
138	412327073105800		Lake Zoar at Halfway R at Stevenson, CT	41°23'27"	073°10'58"	Southbury	4	C
139	412306073102500		Lake Zoar at Stevenson Dam at Riverside, CT	41°23'06"	073°10'25"	Southbury	4	C
140	412303073102100		Lake Zoar, Right Channel at Stevenson, CT	41°23'03"	073°10'21"	Southbury	4	C
141	412259073102200		Lake Zoar, Left Channel at Stevenson, CT	41°22'59"	073°10'22"	Southbury	4	C
142	412424073253200	46C	Still R at Beaverbrook, CT	41°24'24"	073°25'32"	Danbury	4	S
143	412446073252600		Still R at Eagle Road at Beaverbrook, CT	41°24'46"	073°25'26"	Danbury	4	S
144		58C	Still R at Limekiln Brook at Beaverbrook, CT	41°24'34"	073°24'52"	Danbury	4	S
145		60C	Still R nr Brookfield Center, CT	41°27'22"	073°23'46"	Danbury	4	S
146		78-01F	Still R nr Lanesville, CT	41°31'14"	073°25'07"	New Milford	4	S
147		78-37F	Still R at Still River, CT	41°32'27"	073°24'45"	New Milford	4	S
148		78-36F	Still R nr Still River, CT	41°32'39"	073°24'44"	New Milford	4	S

Appendix Table A2.

Site	USGS ID number	Station name and location	Latitude	Longitude	USGS quadrangle	Map
A	01197500	Housatonic R nr Great Barrington, MA	42°13'55"	073°21'19"	Great Barrington	1
B	01199000	Housatonic R at Falls Village, CT	41°57'26"	073°22'11"	South Canaan	2
C	01200500	Housatonic R at Gaylordsville, CT	41°39'11"	073°29'25"	Kent	3

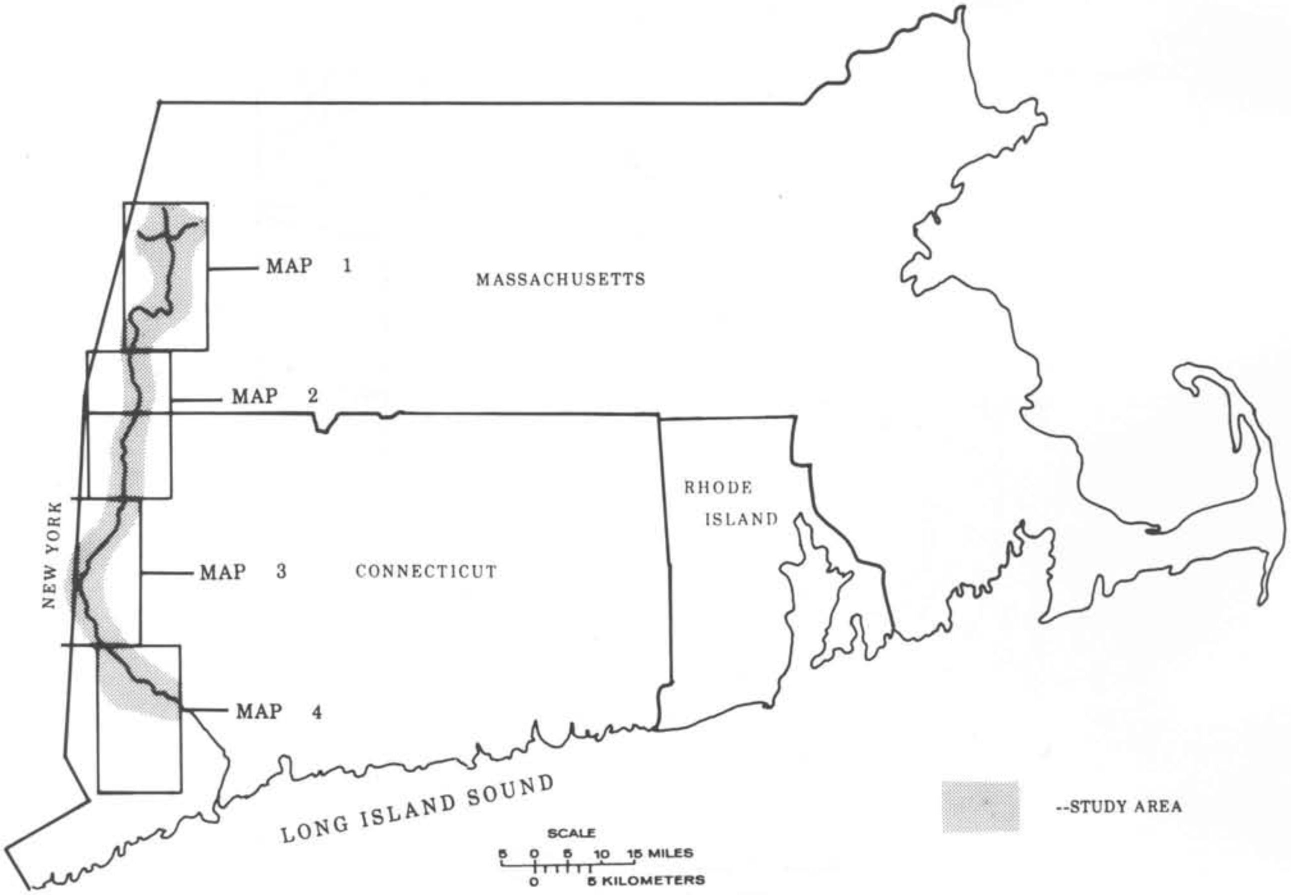

Figure A-1. Location of study area.

MAP 1

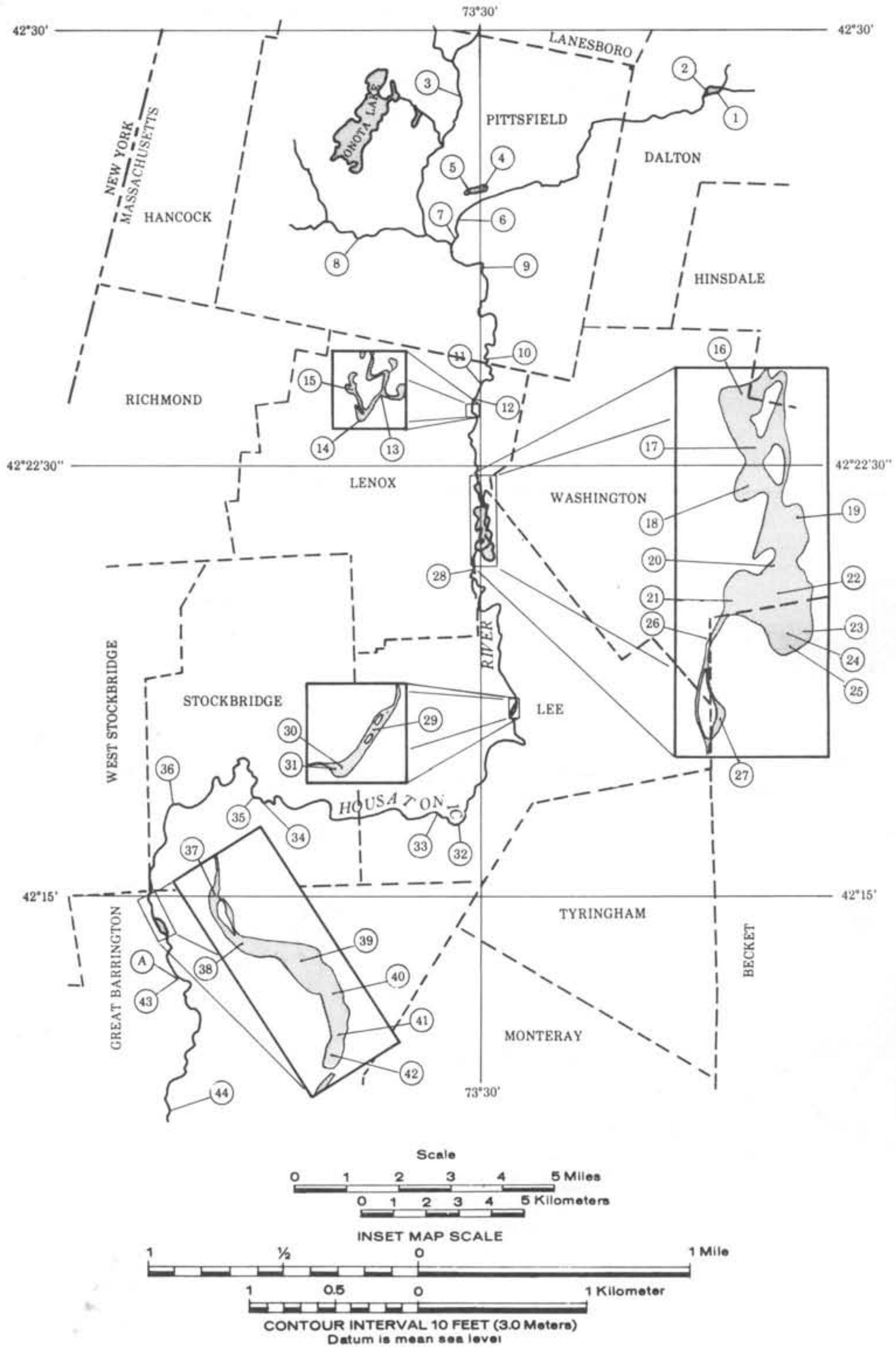

Figure A-2. Locations of sampling sites.

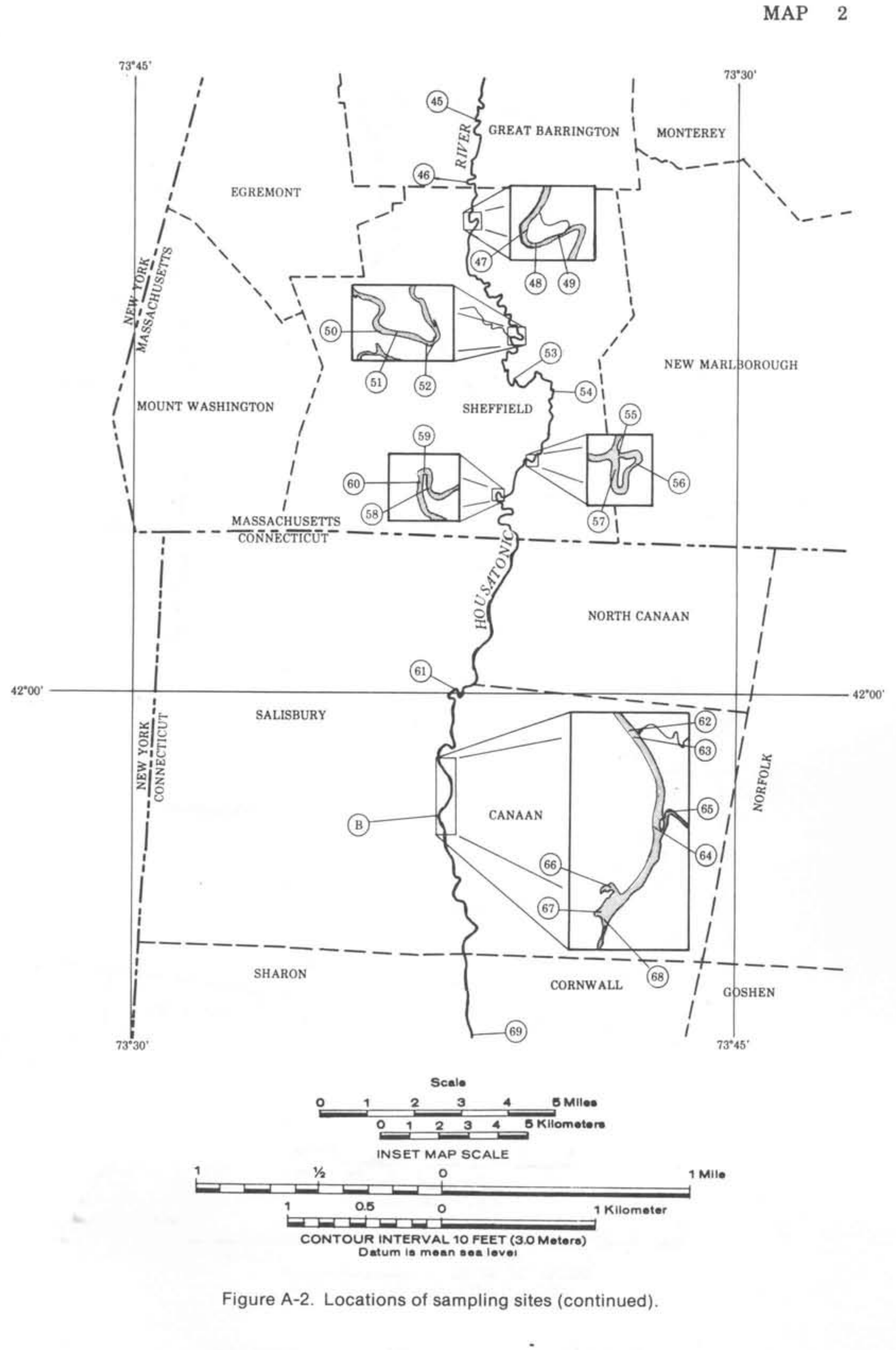

Figure A-2. Locations of sampling sites (continued).

MAP 3

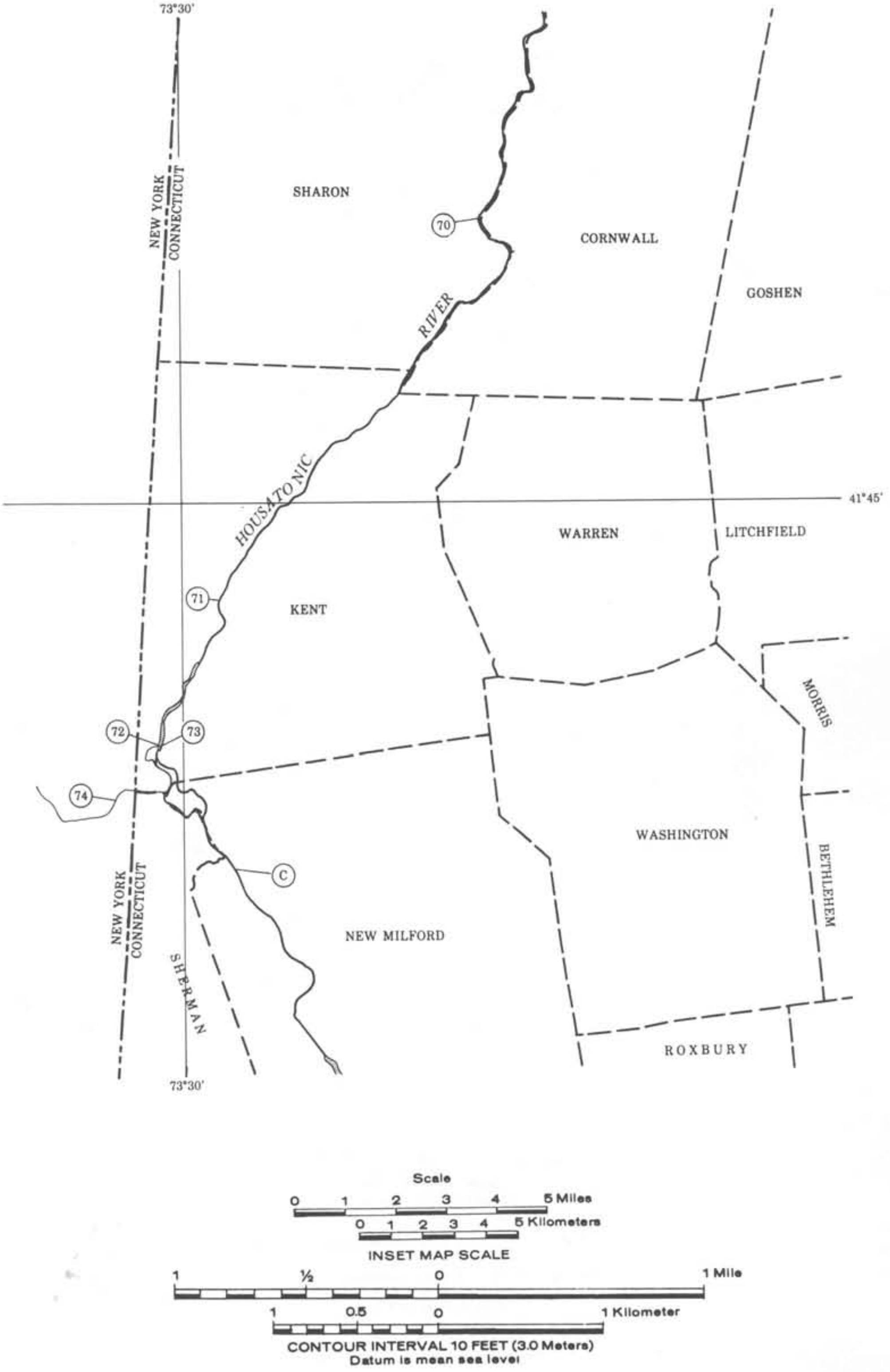

Figure A-2. Locations of sampling sites (continued).

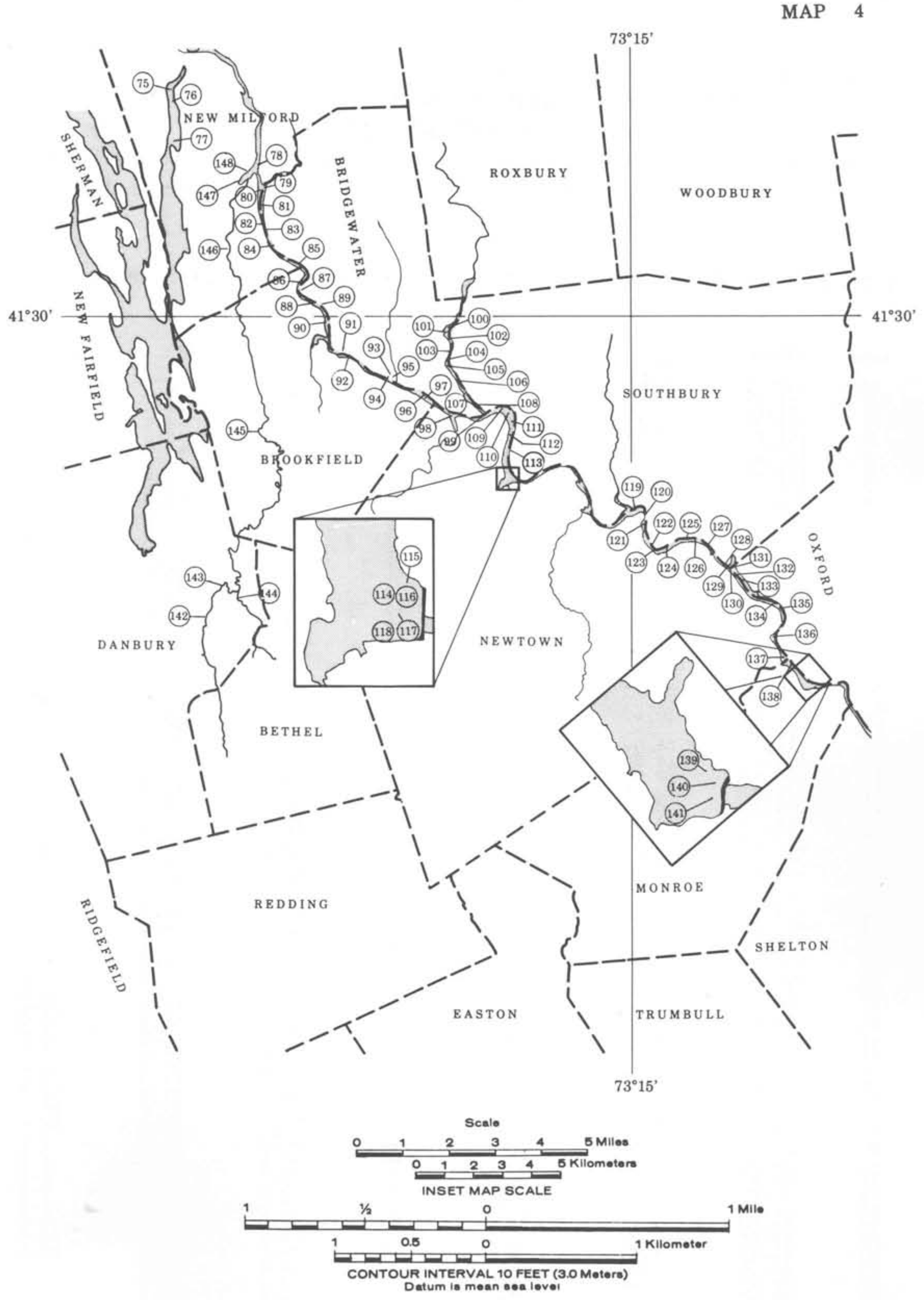

Figure A-2. Locations of sampling sites (continued).

Appendix B

All physical and chemical analyses of surficial sediment samples in the study area are shown in Appendix Table B1 where -- indicates that the particular analysis was not performed. PCB analyses by both the USGS and CAES are shown. Mechanical analyses and total organic carbon reported are those done by the USGS with a few exceptions where CAES analyses were used. Appendix Table B2 contains the same information for all core samples, including depth of core. Samples not in the study area are discussed in the text.

Appendix Table B1. Physical and chemical analyses of surficial sediment samples.

Site	Miles	PCB, ppm		Total organic carbon, %	Sand, %	Silt, %	Clay, %
		USGS	CAES				
1	145.00	0.04	--	3.70	56.0	39.0	5.0
2	145.00	0.04	--	3.00	64.0	29.0	6.0
3	139.80	0.03	0.56	0.84	41.0	44.0	15.0
4	138.10	56.00	53.75	12.90	21.0	48.0	31.0
5	138.00	19.00	8.59	9.20	29.0	41.0	30.0
6	136.90	25.00	--	0.36	96.0	1.0	3.0
7	136.81	21.00	36.91	1.10	91.0	7.0	2.0
8	136.00	0.03	--	2.20	81.0	13.0	6.0
9	135.60	12.00	9.58	5.90	90.0	7.0	2.0
10	131.66	--	0.55	3.70	73.0	25.0	2.0
11	130.81	76.00	28.59	2.50	71.0	23.0	6.0
12	130.28	--	21.69	14.30	25.0	65.0	10.0
13	130.00	58.00	--	11.80	21.0	63.0	17.0
14	129.90	--	47.60	10.70	43.0	53.0	4.0
15	129.80	25.00	--	0.95	24.0	53.0	23.0
16	127.10	16.00	--	16.60	27.0	49.0	24.0
17	127.08	59.00	--	10.00	21.0	60.0	19.0
18	126.87	1.80	--	10.80	20.0	64.0	16.0
19	126.54	10.00	23.74	3.30	37.0	48.0	15.0
20	126.40	--	40.02	7.70	16.0	78.0	7.0
21	126.35	55.00	57.51	3.90	1.0	80.0	19.0
22	126.32	30.00	--	6.60	14.0	70.0	16.0
23	126.30	--	45.85	24.60	3.0	90.0	8.0
24	126.23	25.00	50.12	20.10	6.0	60.0	34.0
25	126.17	19.00	--	12.60	7.0	57.0	36.0
26	125.92	38.00	--	18.60	43.0	46.0	11.0
27	125.73	13.00	--	9.70	25.0	45.0	30.0
28	125.41	0.14	--	0.80	96.0	2.0	2.0
29	123.75	3.10	--	0.50	95.0	2.0	3.0
30	123.72	0.62	--	0.30	95.0	4.0	1.0
31	123.69	6.60	6.19	3.60	63.0	33.0	4.0
32	117.97	1.00	--	0.90	67.0	29.0	4.0
33	117.17	9.60	--	4.40	41.0	48.0	11.0
34	114.31	0.14	--	0.22	98.0	0	2.0
35	114.05	8.90	--	--	44.0	46.0	10.0
36	110.00	0.78	--	0.60	78.0	16.0	6.0
37	108.06	1.70	0.96	5.90	72.0	22.0	6.0
38	107.91	--	1.10	2.30	91.0	7.0	2.0
39	107.61	1.30	--	--	79.0	17.0	4.0
40	107.46	--	1.15	5.50	71.0	27.0	2.0
41	107.32	--	1.44	7.80	35.5	62.5	2.0
42	107.19	4.80	8.02	6.60	47.0	41.0	12.0
43	106.20	0.64	--	--	89.0	8.0	4.0
44	101.51	--	0.70	1.70	94.0	4.0	3.0
45	100.39	3.90	1.70	3.70	32.0	58.0	10.0
46	98.71	--	1.66	6.30	33.0	64.0	2.0
47	98.10	--	0.74	5.10	57.0	31.0	12.0
48	98.00	0.55	--	--	21.0	51.0	27.0
49	97.99	--	1.38	8.40	17.0	67.0	16.0
50	93.75	0.68	0.61	1.90	40.0	55.0	5.0
51	93.67	1.20	--	--	44.0	49.0	7.0
52	93.56	0.83	--	2.30	31.0	60.0	9.0
53	91.28	--	1.76	5.40	36.0	55.0	8.0
54	89.69	--	1.41	3.20	56.0	42.0	2.0
55	88.20	0.51	0.69	1.60	40.0	52.0	8.0
56	88.04	0.77	--	7.40	20.0	63.0	17.0
57	87.80	1.30	0.82	2.40	30.0	57.0	13.0
58	86.50	0.79	--	1.90	33.0	51.0	16.0
59	86.45	0.94	0.36	2.20	23.0	53.0	24.0
60	86.40	0.27	0.03	2.00	11.0	60.0	29.0
61	80.79	0.58	0.65	2.90	36.0	55.0	9.0
62	78.39	0.29	0.19	1.20	79.0	18.0	3.0
63	78.30	--	1.22	0.60	61.5	37.9	0.6
64	78.20	--	0.80	0.70	93.5	6.1	0.3
65	78.04	0.95	--	4.50	61.0	31.0	8.0
66	77.68	0.77	--	1.30	55.0	39.0	6.0

Site	Miles	PCB, ppm		Total organic carbon, %	Sand, %	Silt, %	Clay, %
		USGS	CAES				
67	77.59	0.73	0.72	1.70	57.0	33.0	10.0
68	77.50	--	0.62	2.50	71.8	27.9	0.3
69	71.76	0.04	0.05	0.50	92.0	5.0	3.0
70	67.00	0.26	0.23	2.30	74.0	21.0	5.0
71	56.61	0.03	0.04	0.47	94.0	3.0	3.0
72	53.20	0.23	0.04	1.50	82.0	12.0	6.0
73	53.10	0.13	--	--	87.0	10.0	3.0
74	0	0	0	1.80	88.0	8.0	4.0
75	0	0.51	1.81	6.40	6.0	42.0	52.0
76	0	0.19	--	2.80	50.0	39.0	11.0
77	0	0.01	--	3.80	52.0	37.0	11.0
78	40.10	--	0.22	2.30	83.8	13.9	2.1
79	40.09	0.20	--	--	77.0	18.0	5.0
80	39.58	--	0.55	7.10	61.3	33.6	4.9
81	39.11	--	0.55	4.60	60.9	36.6	2.4
82	39.01	0.28	--	1.30	91.0	5.0	4.0
83	38.54	--	0.12	4.20	75.1	21.7	3.1
84	38.00	--	0.29	10.10	40.0	56.0	4.0
85	37.60	--	1.17	6.50	24.4	68.2	7.2
86	37.44	0.47	--	2.20	21.0	68.0	11.0
87	36.91	--	0.88	8.80	3.2	85.5	11.1
88	36.60	--	0.62	8.39	13.0	77.0	10.0
89	36.35	--	0.21	8.70	2.9	88.3	8.6
90	36.30	0.35	--	3.60	40.0	50.0	10.0
91	35.00	--	1.65	10.60	4.4	81.6	13.9
92	34.65	0.27	--	3.50	39.0	53.0	8.0
93	33.92	0.49	--	2.80	22.0	63.0	15.0
94	33.69	--	1.41	9.90	1.6	81.2	17.0
95	33.50	--	--	--	--	--	--
96	33.30	--	3.16	9.70	2.3	82.3	15.2
97	33.22	0.96	--	2.10	26.0	59.0	15.0
98	32.33	--	1.22	10.90	2.2	79.0	18.7
99	31.60	--	1.62	11.70	1.7	75.4	22.8
100	33.90	--	0	15.90	5.0	85.9	9.0
101	33.70	--	0.11	10.40	48.9	46.6	4.3
102	33.60	--	0.07	11.50	35.0	58.7	6.2
103	33.30	--	0.17	11.90	25.3	69.0	5.5
104	33.20	--	0.19	10.70	23.4	68.2	8.3
105	33.00	--	0.36	11.50	6.9	84.9	8.1
106	32.70	--	0	13.00	0.6	81.5	17.7
107	32.30	--	1.07	13.10	2.3	78.3	19.3
108	32.00	--	0.63	10.70	28.2	57.6	14.1
109	31.29	--	1.12	11.00	1.1	79.5	19.2
110	31.17	0.66	--	4.80	56.0	37.0	7.0
111	31.00	--	0.02	12.35	3.0	75.0	22.0
112	30.34	--	1.25	12.00	0.9	74.2	24.8
113	30.00	--	1.12	14.52	5.0	80.0	15.0
114	29.68	--	1.00	11.50	14.8	63.5	21.5
114	29.68	--	2.46	12.60	1.2	71.5	27.1
114	29.68	--	2.29	11.70	0.7	73.4	25.8
114	29.68	--	2.63	12.40	0.7	73.4	25.8
114	29.68	--	2.60	8.50	0.9	70.2	28.8
114	29.68	--	2.39	12.90	0.3	73.2	26.3
115	29.64	--	1.24	14.15	2.0	73.0	25.0
116	29.60	1.50	--	--	14.0	15.0	71.0
117	29.56	--	1.14	14.52	5.0	80.0	15.0
118	29.52	--	0.97	15.61	2.0	85.0	13.0
119	26.21	--	0.01	0.30	97.0	2.0	1.0
120	25.70	--	0.01	0.40	95.0	3.0	2.0
121	25.07	--	0.29	13.80	10.0	80.0	11.0
122	24.85	0.15	--	2.00	27.0	53.0	20.0
123	24.82	--	0.05	1.20	81.0	17.0	2.0
124	24.65	--	0.76	7.30	43.0	54.0	4.0
125	24.26	--	0.69	8.60	33.0	65.0	2.0
126	23.76	--	1.15	9.70	23.0	74.0	3.0
127	23.39	--	1.08	11.60	9.0	86.0	6.0
128	23.03	--	0.82	12.80	9.0	84.0	7.0
129	23.00	0.84	--	--	28.0	58.0	14.0
130	22.95	0.18	--	--	23.0	57.0	20.0
131	22.91	--	0.28	7.20	41.0	55.0	5.0
132	22.70	--	0.60	11.90	8.0	87.0	5.0
133	22.32	--	1.03	13.40	5.0	86.0	11.0
134	21.76	0.38	--	--	19.0	58.0	23.0
135	21.50	0.62	--	--	10.0	60.0	30.0
136	20.85	--	0.97	8.50	7.0	89.0	4.0
137	20.22	0.88	--	--	4.0	64.0	32.0
138	20.00	1.30	--	--	15.0	45.0	40.0
139	19.48	0.37	--	4.60	17.0	64.0	19.0
140	19.40	2.20	--	--	7.0	43.0	49.0
141	19.30	0.71	--	--	7.0	69.0	24.0
142	0	0.13	0.28	0.58	98.0	0	2.0
143	0	0.13	--	0.53	94.0	4.0	2.0
144	0	--	0.30	5.20	60.0	33.0	7.0
145	0	--	0.07	2.00	92.0	5.0	3.0
146	0	--	0.38	1.80	84.0	15.6	0.3
147	0	--	0.21	8.40	30.2	63.4	6.3
148	0	--	0.28	10.80	11.4	80.6	8.0

Appendix Table B2. Physical and chemical analyses of core samples.

Site	Miles	Depth, in.	PCB, ppm		Total organic carbon, %	Sand, %	Silt, %	Clay, %
			USGS	CAES				
13	130.00	00-06	58.00	--	11.80	21.0	63.0	17.0
13	130.00	06-12	140.00	--	12.50	22.0	49.0	29.0
13	130.00	12-18	--	--	--	15.0	52.0	33.0
13	130.00	18-24	0.36	--	5.90	20.0	55.0	25.0
15	129.80	00-06	25.00	--	0.95	24.0	53.0	23.0
15	129.80	06-12	4.30	--	7.80	10.0	61.0	29.0
15	129.80	12-18	0.07	--	6.20	19.0	52.0	29.0
15	129.80	18-28	0.06	--	4.90	23.0	51.0	25.0
16	127.10	00-06	16.00	--	16.40	27.0	49.0	24.0
16	127.10	06-12	4.40	--	15.10	29.0	39.0	32.0
16	127.10	12-18	0.30	--	16.50	12.0	59.0	28.0
16	127.10	18-24	0.06	--	27.80	27.0	43.0	30.0
17	127.08	00-06	59.00	--	10.00	21.0	60.0	19.0
17	127.08	06-12	76.00	--	13.70	1.0	85.0	14.0
17	127.08	12-18	27.00	--	11.90	17.0	51.0	32.0
17	127.08	18-24	2.50	--	9.60	72.0	19.0	9.0
18	126.87	00-06	1.80	--	10.80	--	--	--
18	126.87	06-12	0.05	--	1.20	--	--	--
18	126.87	12-18	0.02	--	8.40	20.0	64.0	16.0
21	126.35	00-06	55.00	57.51	3.90	1.0	80.0	19.0
21	126.35	06-12	110.00	--	7.60	18.0	63.0	19.0
21	126.35	12-18	66.00	--	7.50	22.0	57.0	21.0
21	126.35	18-24	97.00	--	11.90	12.0	66.0	22.0
21	126.35	24-30	44.00	--	12.90	36.0	46.0	17.0
22	126.32	00-06	30.00	--	6.60	14.0	70.0	16.0
22	126.32	06-12	67.00	--	14.40	22.0	58.0	20.0
22	126.32	12-18	2.70	--	10.40	71.0	23.0	6.0
22	126.32	18-24	0.14	--	5.80	18.0	69.0	13.0
24	126.23	00-06	25.00	50.12	20.10	6.0	60.0	34.0
24	126.23	06-12	0.53	--	23.90	41.0	27.0	32.0
24	126.23	12-18	0.31	--	32.00	20.0	37.0	43.0
24	126.23	18-24	0.20	--	26.50	23.0	51.0	26.0
24	126.23	24-30	0.93	--	28.90	25.0	38.0	37.0
24	126.23	30-36	0.85	--	20.30	23.0	42.0	35.0
24	126.23	36-42	0.17	--	2.50	23.0	46.0	31.0
24	126.23	42-48	0.21	--	17.20	40.0	33.0	27.0
24	126.23	48-54	0.14	--	9.90	46.0	18.0	36.0
24	126.23	54-60	0	--	3.70	16.0	70.0	14.0
24	126.23	60-66	0	--	2.90	22.0	61.0	17.0
25	126.17	00-06	19.00	--	12.60	7.0	57.0	36.0
25	126.17	06-12	4.60	--	17.90	7.0	44.0	59.0
25	126.17	12-18	0.84	--	17.30	8.0	49.0	53.0
25	126.17	18-28	0.10	--	14.40	14.0	66.0	20.0
25	126.17	28-38	0.03	--	3.00	18.0	71.0	11.0
27	125.73	00-06	13.00	--	9.70	25.0	45.0	30.0
27	125.73	06-12	0.12	--	6.90	34.0	38.0	28.0
27	125.73	12-18	0.57	--	4.10	25.0	46.0	29.0
30	123.72	00-06	0.62	--	0.30	95.0	4.0	1.0
30	123.72	06-12	0.67	--	0.90	97.0	1.0	2.0
30	123.72	12-18	0.76	--	0.80	98.0	0	2.0
35	114.05	00-06	8.90	--	--	36.0	53.0	11.0
35	114.05	06-12	7.20	--	--	44.0	46.0	10.0
36	110.00	00-06	0.78	--	0.60	78.0	16.0	6.0
36	110.00	06-18	7.80	--	3.10	44.0	47.0	9.0
37	108.06	00-06	1.70	0.96	--	72.0	22.0	6.0
37	108.06	06-12	1.10	--	--	85.0	10.0	5.0
37	108.06	12-18	0	--	--	72.0	21.0	7.0
39	107.61	00-06	1.30	--	--	79.0	17.0	4.0
39	107.61	06-12	1.20	--	--	81.0	14.0	5.0
39	107.61	12-18	1.40	--	--	85.0	9.0	6.0
42	107.19	00-06	4.80	8.02	--	47.0	41.0	12.0
42	107.19	06-12	3.30	--	--	59.0	33.0	8.0
42	107.19	12-18	0.75	--	--	87.0	9.0	4.0
42	107.19	18-24	4.30	--	--	38.0	49.0	13.0
48	98.00	00-06	0.55	--	--	21.0	51.0	27.0
48	98.00	06-12	0	--	--	14.0	40.0	46.0
51	93.67	00-06	1.20	--	--	44.0	49.0	7.0
51	93.67	06-12	0.38	--	--	63.0	30.0	7.0
51	93.67	12-18	0.01	--	--	94.0	3.0	3.0
56	88.04	00-06	0.77	--	7.40	20.0	63.0	17.0
56	88.04	06-12	0.79	--	6.30	22.0	66.0	12.0
56	88.04	12-18	0.53	--	7.00	14.0	76.0	10.0
56	88.04	18-24	0.22	--	3.40	9.0	71.0	20.0
59	86.45	00-06	0.94	0.36	2.20	23.0	53.0	24.0
59	86.45	06-12	2.60	--	3.40	13.0	62.0	25.0
59	86.45	12-18	1.90	--	3.00	21.0	63.0	16.0
59	86.45	18-24	1.30	--	2.30	19.0	64.0	16.0
76	0	00-07	0.19	--	2.80	50.0	39.0	11.0
76	0	07-14	0.00	--	1.00	51.0	34.0	15.0
76	0	14-21	0.00	--	0.33	55.0	32.0	13.0
77	0	00-06	0.01	--	3.80	52.0	37.0	11.0
77	0	06-12	0	--	1.90	43.0	43.0	14.0
79	40.09	00-06	0.20	--	--	77.0	18.0	5.0
79	40.09	06-12	0.28	--	--	61.0	34.0	5.0
79	40.09	12-18	1.30	--	--	53.0	37.0	10.0
82	39.01	00-06	0.28	--	1.30	91.0	5.0	4.0
82	39.01	06-12	0.08	--	0.83	74.0	19.0	7.0
84	38.00	00-06	--	0.29	10.10	40.0	56.0	4.0

Site	Miles	Depth, in.	PCB, ppm		Total organic carbon, %	Sand, %	Silt, %	Clay, %
			USGS	CAES				
84	38.00	06-12	--	0.74	10.47	48.0	49.0	3.0
84	38.00	12-18	--	0.22	4.07	14.0	81.0	5.0
84	38.00	18-24	--	0.32	6.93	29.0	62.0	9.0
86	37.44	00-06	0.47	--	2.20	21.0	68.0	11.0
86	37.44	06-12	0.00	--	0.98	60.0	32.0	8.0
86	37.44	12-18	0	--	1.10	64.0	27.0	9.0
86	37.44	18-24	0	--	0.13	73.0	20.0	7.0
88	36.60	00-06	--	0.62	8.39	13.0	77.0	10.0
88	36.60	06-12	--	0.80	7.54	20.0	73.0	7.0
88	36.60	12-18	--	1.07	7.95	6.0	82.0	12.0
88	36.60	18-24	--	1.42	10.35	1.0	85.0	14.0
90	36.30	00-06	0.35	--	3.60	40.0	50.0	10.0
90	36.30	06-12	0.02	--	4.20	50.0	35.0	15.0
90	36.30	12-18	0	--	1.40	52.0	36.0	12.0
92	34.65	00-06	0.27	--	3.50	39.0	53.0	8.0
92	34.65	06-12	0	--	3.30	49.0	41.0	10.0
93	33.92	00-06	0.49	--	2.80	22.0	63.0	15.0
93	33.92	06-12	0.41	--	3.50	14.0	16.0	26.0
93	33.92	12-18	0.40	--	1.70	23.0	68.0	9.0
95	33.50	12-18	--	--	5.30	64.0	30.0	6.0
97	33.22	00-06	0.96	--	2.10	26.0	59.0	15.0
97	33.22	06-12	0.54	--	2.90	41.0	53.0	6.0
110	31.17	00-06	0.66	--	4.80	56.0	37.0	7.0
110	31.17	06-12	0.16	--	2.50	53.0	38.0	9.0
110	31.17	12-18	0.00	--	2.00	64.0	28.0	8.0
111	31.00	00-10	--	0.02	12.35	3.0	75.0	22.0
111	31.00	10-18	--	0.00	3.75	74.0	24.0	2.0
111	31.00	18-28	--	0.00	1.83	82.0	9.0	5.0
113	30.00	00-06	--	1.12	14.52	5.0	80.0	15.0
113	30.00	06-12	--	0.62	16.86	10.0	73.0	17.0
113	30.00	12-18	--	0.75	18.42	5.0	80.0	15.0
113	30.00	18-24	--	0.19	10.72	7.0	84.0	9.0
115	29.64	00-06	--	1.24	14.15	2.0	73.0	25.0
115	29.64	06-12	--	1.07	16.19	8.0	81.0	11.0
115	29.64	12-18	--	0.75	14.67	3.0	79.0	18.0
115	29.64	18-24	--	0.11	13.10	3.0	94.0	3.0
116	29.60	00-06	1.50	--	--	14.0	15.0	71.0
116	29.60	06-12	2.70	--	--	26.0	10.0	64.0
116	29.60	12-18	0.38	--	--	26.0	49.0	25.0
116	29.60	18-24	0.13	--	--	66.0	24.0	10.0
117	29.56	00-06	--	1.14	14.52	5.0	80.0	15.0
117	29.56	06-12	--	1.15	16.86	10.0	73.0	17.0
117	29.56	12-18	--	0.92	18.42	5.0	80.0	15.0
117	29.56	18-24	--	0.16	10.72	7.0	84.0	9.0
118	29.52	00-08	--	0.97	15.61	2.0	85.0	13.0
118	29.52	08-15	--	0.21	15.07	1.0	76.0	13.0
118	29.52	15-24	--	0.40	--	--	--	--
118	29.52	24-32	--	0.36	17.11	1.0	87.0	12.0
122	24.85	00-06	0.15	--	2.00	27.0	53.0	20.0
122	24.85	06-12	0.03	--	2.10	--	--	--
122	24.85	12-18	0.03	--	4.00	21.0	65.0	14.0
122	24.85	18-24	0.00	--	3.30	11.0	74.0	15.0
129	23.00	00-06	0.84	--	--	28.0	58.0	14.0
129	23.00	06-12	0.77	--	--	22.0	53.0	25.0
129	23.00	12-18	0.26	--	--	34.0	50.0	16.0
129	23.00	18-24	1.10	--	--	16.0	54.0	30.0
130	22.95	00-06	0.18	--	--	23.0	57.0	20.0
130	22.95	06-12	0.16	--	--	44.0	42.0	14.0
130	22.95	12-18	0.89	--	--	17.0	67.0	16.0
130	22.95	18-24	0.48	--	--	3.0	30.0	7.0
134	21.76	00-06	0.38	--	--	19.0	58.0	23.0
134	21.76	06-12	0.06	--	--	30.0	53.0	17.0
134	21.76	12-18	0.12	--	--	19.0	56.0	25.0
134	21.76	18-24	0.15	--	--	18.0	61.0	21.0
135	21.50	00-06	0.62	--	--	10.0	60.0	30.0
135	21.50	06-12	0.69	--	--	9.0	66.0	26.0
135	21.50	12-18	1.30	--	--	18.0	46.0	36.0
135	21.50	18-24	0.09	--	--	6.0	54.0	40.0
137	20.22	00-06	0.88	--	--	--	--	--
137	20.22	06-12	1.20	--	--	4.0	64.0	32.0
137	20.22	12-18	0.25	--	--	17.0	52.0	31.0
137	20.22	18-24	1.10	--	--	13.0	58.0	29.0
138	20.00	00-06	1.30	--	--	15.0	45.0	40.0
138	20.00	06-12	1.30	--	--	8.0	48.0	44.0
138	20.00	12-18	1.40	--	--	15.0	55.0	30.0
139	19.48	00-06	0.37	--	4.60	17.0	64.0	19.0
139	19.48	06-12	0.09	--	4.30	11.0	59.0	30.0
139	19.48	12-18	0.30	--	4.60	3.0	64.0	33.0
139	19.48	18-24	0.55	--	4.40	19.0	39.0	42.0
140	19.40	00-06	2.20	--	--	7.0	43.0	49.0
140	19.40	06-12	2.20	--	--	13.0	30.0	57.0
140	19.40	12-18	2.00	--	--	1.0	55.0	44.0
140	19.40	18-24	2.20	--	--	8.0	45.0	48.0
141	19.30	00-06	0.71	--	--	7.0	69.0	24.0
141	19.30	06-12	2.60	--	--	18.0	42.0	40.0
141	19.30	12-18	2.30	--	--	12.0	36.0	52.0
141	19.30	18-24	2.20	--	--	7.0	53.0	40.0
141	19.30	24-30	1.00	--	--	11.0	40.0	49.0

Appendix C

All flow and suspended sediment data are shown in Appendix C. Analyses for PCBs were done by USGS laboratories. Data for Great Barrington are shown in A12-A15, Falls Village in A16-19, and Gaylordsville in A20-23.

HOUSATONIC RIVER BASIN

01197500 HOUSATONIC RIVER NEAR GREAT BARRINGTON, MA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 to SEPTEMBER 1980

DATE	TIME	AROCLOR DISSOLVED 1016 PCB SERIES (UG/L)	AROCLOR TOTAL 1016 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1221 PCB SERIES (UG/L)	AROCLOR TOTAL 1221 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1232 PCB SERIES (UG/L)	AROCLOR TOTAL 1232 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1242 PCB SERIES (UG/L)	AROCLOR TOTAL 1242 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1248 PCB SERIES (UG/L)	AROCLOR TOTAL 1248 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1254 PCB SERIES (UG/L)	AROCLOR TOTAL 1254 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1260 PCB SERIES (UG/L)	AROCLOR TOTAL 1260 PCB SERIES (UG/L)
OCT															
04...	1630	--	0.0	--	0.0	--	0.0	--	0.0	--	0.3	--	0.0	--	0.2
NOV															
27...	1100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
MAR															
18...	0900	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
18...	1000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
18...	1100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
18...	1215	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
18...	1330	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2
18...	1515	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.3
22...	0700	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.4
APR															
04...	1330	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10...	0830	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10...	1145	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10...	1455	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
JUN															
30...	1200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.2

SUSPENDED-SEDIMENT MEASUREMENTS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV					
27...	1100	1280	22	76	95
MAR					
18...	0900	1000	63	170	78
18...	1515	1820	76	373	74
22...	0655	2980	226	1820	72
APR					
04...	1330	1060	20	57	63
10...	1145	2410	124	807	86
JUN					
30...	1200	631	18	31	97

HOUSATONIC RIVER BASIN

01197500 HOUSATONIC RIVER NEAR GREAT BARRINGTON, MA--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	1290	10	35	1230	12	40	1040	11	31
2	1330	7	25	975	11	29	858	9	21
3	1370	5	18	837	9	20	750	8	16
4	1300	5	18	865	12	28	674	7	13
5	1250	5	17	887	12	29	618	7	12
6	1230	4	13	790	11	23	618	7	12
7	1110	3	9.0	705	10	19	563	6	9.1
8	960	4	10	650	10	18	510	5	6.9
9	908	4	9.8	612	9	15	472	5	6.4
10	960	4	10	587	8	13	440	7	8.3
11	952	4	10	551	7	10	425	7	8.0
12	960	5	13	522	7	9.9	551	10	15
13	960	4	10	569	10	15	527	6	8.5
14	1030	5	14	712	12	23	445	4	4.8
15	1180	5	16	718	10	19	383	4	4.1
16	1210	5	16	618	8	13	353	6	5.7
17	1320	6	21	505	7	9.5	325	8	7.0
18	1290	5	17	467	6	7.6	302	7	5.7
19	1100	5	15	461	6	7.5	273	7	5.2
20	960	5	13	435	6	7.0	253	8	5.5
21	872	6	14	404	5	5.5	235	9	5.7
22	796	6	13	368	5	5.0	224	8	4.8
23	724	6	12	348	5	4.7	217	9	5.3
24	674	6	11	605	18	37	210	9	5.1
25	631	6	10	2020	61	336	200	10	5.4
26	624	6	10	3040	61	494	193	11	5.7
27	744	11	22	2830	35	267	186	12	6.0
28	990	14	37	2090	19	107	180	12	5.8
29	1350	15	55	1670	14	63	173	12	5.6
30	1450	14	55	1430	11	42	170	11	5.0
31	---	---	---	1230	11	37	---	---	---
TOTAL	31525	---	548.8	29731	---	1753.7	12368	---	259.6

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	173	10	4.7	164	8	3.5	242	7	4.6
2	261	13	9.2	167	10	4.5	214	7	4.0
3	302	13	11	173	12	5.6	200	8	4.3
4	235	11	7.0	160	12	5.2	223	11	7.5
5	203	11	6.0	165	15	6.7	345	14	13
6	186	11	5.5	143	12	4.6	533	21	44
7	170	11	5.0	123	13	4.3	1600	33	143
8	164	9	4.0	128	13	4.5	1580	11	48
9	161	10	4.3	126	12	4.1	888	5	12
10	155	10	4.2	127	11	3.8	549	4	5.9
11	152	10	4.1	140	8	3.0	392	4	4.2
12	147	10	4.0	161	6	2.6	352	4	3.8
13	144	10	3.9	329	20	21	280	4	3.0
14	141	10	3.8	392	13	14	293	3	2.4
15	139	12	4.5	249	12	8.1	301	2	1.6
16	139	13	4.9	216	11	6.4	392	1	1.1
17	316	14	12	197	10	5.3	351	1	.95
18	353	14	13	175	6	2.8	272	1	.73
19	318	11	9.4	220	12	7.1	285	2	1.5
20	244	11	7.2	225	14	8.5	348	3	2.8
21	205	11	6.1	170	12	5.5	315	2	1.7
22	287	12	9.3	176	12	5.7	771	2	4.2
23	326	12	11	176	12	5.7	1110	2	6.0
24	235	12	7.6	163	11	4.8	840	2	4.5
25	196	12	6.4	169	11	5.0	628	1	1.7
26	179	12	5.8	184	11	5.5	525	1	1.4
27	268	14	10	258	11	7.7	479	1	1.3
28	309	14	12	261	12	8.5	419	1	1.1
29	227	12	7.4	154	7	2.9	534	3	4.3
30	192	11	5.7	224	9	5.4	664	2	3.6
31	176	9	4.3	271	8	5.9	---	---	---
TOTAL	6703	---	213.3	5986	---	188.2	15925	---	338.18

HOUSATONIC RIVER BASIN

01197500 HOUSATONIC RIVER NEAR GREAT BARRINGTON, MA--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	674	2	4.4	363	1	.98	705	4	7.6
2	1490	8	33	316	2	1.7	612	4	6.6
3	1550	13	54	510	2	2.8	522	5	7.0
4	1760	19	90	858	2	4.6	477	6	7.7
5	1590	15	64	712	2	3.8	467	6	7.6
6	1260	7	24	581	3	4.7	461	5	6.2
7	1110	6	18	445	3	3.6	545	4	5.9
8	1010	5	14	399	3	3.2	575	4	6.2
9	908	5	12	388	3	3.1	505	3	4.1
10	997	5	13	415	8	9.0	440	4	4.8
11	952	5	13	522	8	11	415	2	2.2
12	879	4	9.5	545	9	13	404	2	2.2
13	894	3	7.2	522	8	11	393	2	2.1
14	872	3	7.1	510	5	6.9	388	4	4.2
15	744	2	4.0	516	4	5.6	363	4	3.9
16	624	1	1.7	488	4	5.3	343	4	3.7
17	581	1	1.6	456	4	4.9	477	6	7.7
18	488	4	5.3	425	4	4.6	500	4	5.4
19	499	7	9.4	404	4	4.4	400	3	3.2
20	510	7	9.6	393	4	4.2	360	3	2.9
21	477	5	6.4	383	4	4.1	340	3	2.8
22	451	5	6.1	373	4	4.0	334	3	2.7
23	445	5	6.0	358	4	3.9	325	3	2.6
24	445	4	4.8	348	3	2.8	353	6	5.7
25	477	4	5.2	348	4	3.8	662	8	18
26	461	4	5.0	440	12	17	1190	40	129
27	451	4	4.9	1260	21	70	1030	59	164
28	440	4	4.8	1500	6	24	718	6	12
29	430	4	4.6	1160	5	16	618	3	5.0
30	420	3	3.4	851	5	11	569	1	1.5
31	399	1	1.1	---	---	---	510	1	1.4
TOTAL	24288	---	447.1	16789	---	264.98	16001	---	445.9

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	445	1	1.2	150	1	.41	120	8	2.6
2	420	1	1.1	155	1	.42	130	8	2.8
3	404	1	1.1	145	1	.39	125	8	2.7
4	350	1	.95	140	1	.38	130	8	2.8
5	329	1	.89	140	1	.38	129	8	2.8
6	290	2	1.6	140	5	1.9	136	8	2.9
7	273	8	5.9	139	5	1.9	144	9	3.5
8	286	8	6.2	140	6	2.3	213	9	5.2
9	270	8	5.8	140	6	2.3	409	9	9.9
10	250	6	4.1	140	5	1.9	325	8	7.0
11	253	6	4.1	135	5	1.8	451	9	11
12	430	6	7.0	131	7	2.5	425	9	10
13	456	6	7.4	126	7	2.4	294	7	5.6
14	383	5	5.2	134	7	2.5	246	5	3.3
15	353	4	3.8	135	5	1.8	217	4	2.3
16	334	4	3.6	149	5	2.0	190	4	2.1
17	316	4	3.4	140	5	1.9	206	6	3.3
18	307	5	4.1	140	5	1.9	1270	109	421
19	307	5	4.1	140	4	1.5	1770	94	462
20	298	6	4.8	140	4	1.5	1160	47	147
21	273	6	4.4	141	4	1.5	1050	43	137
22	261	6	4.2	147	4	1.6	3490	113	955
23	257	6	4.2	149	5	2.0	4060	35	384
24	225	5	3.0	149	5	2.0	2500	30	202
25	210	4	2.3	152	5	2.1	1840	28	139
26	210	4	2.3	149	5	2.0	1520	23	94
27	203	4	2.2	144	3	1.2	1210	18	59
28	189	2	1.0	145	2	.78	1040	17	48
29	189	2	1.0	145	8	3.1	1060	17	49
30	165	1	.45	---	---	---	1350	32	121
31	160	1	.43	---	---	---	1540	24	100
TOTAL	9096	---	101.82	4120	---	48.36	28750	---	3397.8

HOUSATONIC RIVER BASIN

01197500 HOUSATONIC RIVER NEAR GREAT BARRINGTON, MA--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980--Continued

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	1360	13	48	744	8	16	189	6	3.1
2	1120	11	33	587	8	13	183	6	3.0
3	1020	10	28	522	8	11	213	9	5.2
4	1070	16	49	456	8	9.8	253	9	6.1
5	1360	14	51	373	8	8.1	250	7	4.7
6	1310	10	35	373	8	8.1	227	7	4.3
7	1040	8	22	420	10	11	217	6	3.5
8	930	7	18	461	13	16	227	6	3.7
9	952	42	115	456	12	15	220	6	3.6
10	2260	148	846	440	12	14	246	12	8.0
11	3250	12	105	440	10	12	253	12	8.2
12	2620	12	85	393	8	8.5	231	10	6.2
13	1990	12	64	461	8	10	203	8	4.4
14	1650	12	53	656	11	19	186	6	3.0
15	1490	12	48	624	10	17	176	6	2.9
16	1420	12	46	505	8	11	186	14	7.0
17	1220	12	40	410	8	9.3	220	14	8.3
18	1020	12	33	383	10	10	186	12	6.0
19	908	12	29	425	10	11	170	9	4.1
20	830	12	27	430	10	12	161	8	3.5
21	783	10	21	409	8	8.8	161	8	3.5
22	731	10	20	451	6	7.3	158	8	3.4
23	680	10	18	404	5	5.5	149	8	3.2
24	637	9	15	368	5	5.0	141	8	3.0
25	605	8	13	298	7	5.6	141	8	3.0
26	593	8	13	250	5	3.4	139	8	3.0
27	545	8	12	139	7	2.6	139	7	2.6
28	551	11	16	210	7	4.0	136	7	2.6
29	693	15	28	210	6	3.4	155	9	3.8
30	817	12	26	200	6	3.2	581	18	29
31	---	---	---	196	6	3.2	---	---	---
TOTAL	35455	---	1957	12714	---	293.8	6097	---	155.9

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	593	19	30	136	8	2.9	111	7	2.1
2	383	16	17	134	7	2.5	115	7	2.2
3	273	13	9.6	200	10	5.4	108	7	2.0
4	227	10	6.1	176	6	2.9	108	7	2.0
5	193	9	4.7	158	6	2.6	102	7	1.9
6	189	8	4.1	147	6	2.4	119	7	2.2
7	180	8	3.9	155	7	2.9	113	7	2.1
8	173	7	3.3	139	8	3.0	98	7	1.9
9	196	9	4.8	122	8	2.6	92	7	1.7
10	193	8	4.2	81	8	1.7	91	7	1.7
11	176	8	3.8	111	8	2.4	92	7	1.7
12	193	8	4.2	139	8	3.0	92	6	1.5
13	220	11	6.5	136	8	2.9	92	6	1.5
14	186	9	4.5	129	8	2.8	92	5	1.2
15	167	7	3.2	129	8	2.8	96	5	1.3
16	155	7	2.9	126	8	2.7	164	12	5.3
17	147	6	2.4	113	8	2.4	124	9	3.0
18	139	6	2.3	104	8	2.2	131	8	2.8
19	131	5	1.8	106	8	2.3	139	8	3.0
20	126	5	1.7	106	8	2.3	144	9	3.5
21	155	7	2.9	108	8	2.3	136	8	2.9
22	176	8	3.8	108	7	2.0	131	8	2.8
23	186	8	4.0	108	7	2.0	117	8	2.5
24	183	8	4.0	104	7	2.0	102	7	1.9
25	167	8	3.6	100	7	1.9	106	8	2.3
26	147	8	3.2	96	7	1.8	119	8	2.6
27	134	8	2.9	98	7	1.9	149	7	2.8
28	124	8	2.7	100	7	1.9	155	6	2.5
29	122	8	2.6	100	7	1.9	170	5	2.3
30	129	10	3.5	102	7	1.9	147	6	2.4
31	136	9	3.3	102	7	1.9	---	---	---
TOTAL	5899	---	157.5	3773	---	76.2	3555	---	69.6
YEAR	166537		7415.96						

HOUSATONIC RIVER BASIN

01199000 HOUSATONIC RIVER AT FALLS VILLAGE, CT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 to SEPTEMBER 1980

DATE	TIME	AROCLOR DISSOLVED 1016 PCB SERIES (UG/L)	AROCLOR TOTAL 1016 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1221 PCB SERIES (UG/L)	AROCLOR TOTAL 1221 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1232 PCB SERIES (UG/L)	AROCLOR TOTAL 1232 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1242 PCB SERIES (UG/L)	AROCLOR TOTAL 1242 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1248 PCB SERIES (UG/L)	AROCLOR TOTAL 1248 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1254 PCB SERIES (UG/L)	AROCLOR TOTAL 1254 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1260 PCB SERIES (UG/L)	AROCLOR TOTAL 1260 PCB SERIES (UG/L)
OCT															
04...	1230	--	0.0	--	0.0	--	0.0	--	0.0	--	0.0	--	0.0	--	0.1
NOV															
27...	0940	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
MAR															
18...	1115	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18...	1215	0.0	--	0.1	--	0.0	--	0.0	--	0.0	--	0.0	--	0.0	--
18...	1315	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18...	1415	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
18...	1515	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22...	0820	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
22...	0930	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
APR															
04...	1230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10...	0930	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
10...	1230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.3	0.0
10...	1550	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
JUN															
30...	1315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1

SUSPENDED-SEDIMENT MEASUREMENTS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS)	SEDIMENT, SUSPENDED (MG/L)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV					
27...	0940	1850	24	120	97
MAR					
18...	1115	2660	100	718	95
18...	1515	3310	210	1880	96
22...	0815	7550	242	4930	75
APR					
10...	0200	3120	254	2140	89
10...	1550	5500	128	1900	83

HOUSATONIC RIVER BASIN

01199000 HOUSATONIC RIVER AT FALLS VILLAGE, CT--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	2230	17	102	2640	19	135	2120	25	143
2	2250	17	103	2050	12	66	1850	21	105
3	2320	18	113	1810	12	59	1540	16	67
4	2240	16	97	1740	20	94	1430	12	46
5	2170	14	82	1740	19	89	1320	12	43
6	2120	13	74	1550	15	63	1310	12	42
7	1980	12	64	1440	15	58	1220	11	36
8	1830	11	54	1260	11	37	1120	11	33
9	1690	11	50	1230	7	23	979	11	29
10	1890	13	66	1110	6	18	908	14	34
11	2040	14	77	1070	5	14	1010	22	60
12	1960	13	69	964	5	13	1140	24	74
13	1900	11	56	994	6	16	1240	22	74
14	2010	16	94	1280	6	21	954	19	49
15	2540	13	89	1470	6	24	870	16	38
16	2560	11	76	1240	6	20	732	13	26
17	2620	17	120	1060	6	17	632	12	20
18	2500	15	101	902	6	15	648	12	21
19	2230	11	66	898	6	15	497	12	16
20	1950	8	42	914	6	15	491	12	16
21	1810	8	39	905	6	15	510	12	17
22	1620	9	39	745	6	12	441	11	13
23	1450	8	31	768	7	15	490	11	15
24	1430	8	31	1190	13	48	329	10	8.9
25	1270	8	27	4120	107	1210	447	9	11
26	1280	9	31	5740	140	2170	409	8	8.8
27	1570	12	51	5530	102	1520	545	7	10
28	2200	13	77	4760	67	861	74	6	1.2
29	2900	22	173	4050	50	547	382	8	8.3
30	3000	24	194	3160	32	273	314	7	5.9
31	---	---	---	2540	28	192	---	---	---
TOTAL	61560	---	2288	60870	---	7675	25952	---	1071.1

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	302	6	4.9	277	8	6.0	473	21	27
2	469	7	8.9	275	8	5.9	412	15	17
3	543	7	10	325	10	8.8	369	17	17
4	480	6	7.8	284	11	8.4	346	14	13
5	343	7	6.5	416	12	13	418	21	24
6	349	8	7.5	328	11	9.7	718	41	89
7	382	8	8.3	249	11	7.4	1900	89	472
8	281	7	5.3	220	10	5.9	2120	88	504
9	305	7	5.8	215	12	7.0	1710	55	254
10	276	7	5.2	213	14	8.1	1230	40	133
11	289	7	5.5	254	15	10	800	45	97
12	271	7	5.1	342	19	18	631	37	63
13	269	7	5.1	625	30	51	301	22	18
14	277	8	6.0	706	24	46	486	12	16
15	250	7	4.7	588	28	44	556	9	14
16	253	7	4.8	442	18	21	494	8	11
17	253	8	5.5	377	18	18	543	10	15
18	593	12	19	355	16	15	522	9	13
19	672	16	29	423	13	15	400	10	11
20	522	12	17	489	19	25	418	10	11
21	372	9	9.0	434	20	23	493	10	13
22	271	8	5.9	345	17	16	1130	19	75
23	523	16	23	323	24	21	1700	71	322
24	466	14	18	306	19	16	1470	60	251
25	365	9	8.9	302	16	13	1080	22	64
26	290	7	5.5	422	18	21	844	13	30
27	375	8	8.1	411	19	21	740	13	26
28	473	9	11	503	27	37	662	14	25
29	454	8	9.8	447	16	19	882	15	36
30	369	8	8.0	485	38	50	1130	16	49
31	309	7	5.8	518	41	57	---	---	---
TOTAL	11646	---	284.9	11899	---	637.2	24978	---	2710

HOUSATONIC RIVER BASIN

01199000 HOUSATONIC RIVER AT FALLS VILLAGE, CT--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	1090	17	50	794	10	21	1820	18	88
2	2060	143	882	749	10	20	1500	15	61
3	2620	226	1580	1160	12	38	1390	12	45
4	3240	82	717	1790	21	101	1190	10	32
5	3060	72	595	1730	19	89	1130	8	24
6	2870	41	318	1390	16	60	1090	6	18
7	2430	33	217	1200	14	45	1290	4	14
8	2050	23	127	1020	12	33	1380	4	15
9	1800	19	92	956	11	28	1180	4	13
10	1910	18	93	1050	11	31	1060	4	11
11	1880	17	86	1280	12	41	1010	4	11
12	1780	16	77	1370	13	48	970	4	10
13	1600	14	68	1360	15	55	947	4	10
14	1740	14	66	1250	14	47	958	4	10
15	1590	14	60	1210	13	42	902	4	9.7
16	1390	13	49	1140	12	37	866	5	12
17	1210	13	42	1070	11	32	1000	6	16
18	1170	13	41	1010	11	30	950	6	15
19	985	12	32	943	10	25	850	5	11
20	994	11	30	939	10	25	900	4	9.7
21	997	10	27	905	10	24	870	6	14
22	928	9	23	838	10	23	850	6	14
23	908	9	22	865	10	23	870	4	9.4
24	888	10	24	859	9	21	900	4	9.7
25	894	11	27	842	8	18	1360	5	18
26	862	12	28	1020	12	63	2080	21	115
27	855	12	28	2350	41	259	2100	15	85
28	811	11	24	2900	20	157	1860	10	50
29	759	10	20	2540	30	203	1410	9	34
30	865	10	23	2010	22	119	1280	6	21
31	817	10	22	---	---	---	1190	6	19
TOTAL	47253	---	5490	38540	---	1758	37153	---	824.5

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	1040	5	14	393	4	4.2	290	8	6.3
2	1050	4	11	361	3	2.9	233	7	4.4
3	966	4	10	347	3	2.8	290	7	5.5
4	842	4	9.1	352	4	3.8	292	7	5.5
5	809	4	8.7	339	3	2.7	218	6	3.5
6	651	3	5.3	352	4	3.8	218	6	3.5
7	651	3	5.3	217	3	1.8	430	7	8.1
8	716	5	9.7	391	5	5.3	621	8	13
9	603	5	8.1	390	3	3.2	886	15	36
10	580	4	6.3	206	2	1.1	836	11	25
11	748	5	10	352	5	4.8	1180	22	70
12	1390	14	53	359	4	3.9	1130	20	61
13	1300	11	39	313	4	3.4	1090	16	47
14	1120	10	30	335	4	3.6	666	10	18
15	993	11	29	296	3	2.4	567	7	11
16	908	10	25	308	4	3.3	395	6	6.4
17	800	10	22	334	3	2.7	568	6	9.2
18	756	10	20	324	3	2.6	2620	98	873
19	817	9	20	292	3	2.4	3900	107	1120
20	706	9	17	336	3	2.7	2950	54	430
21	695	10	19	315	4	3.4	2490	30	196
22	639	17	29	409	4	4.4	6920	172	3190
23	651	16	28	283	4	3.1	6420	177	3070
24	551	13	19	345	3	2.8	6130	151	2500
25	472	10	13	326	3	2.6	4860	94	1230
26	538	7	10	397	4	4.3	3690	57	568
27	493	6	8.0	347	7	6.6	2830	38	290
28	481	6	7.8	347	8	7.5	2340	39	246
29	474	5	6.4	346	8	7.5	2200	18	107
30	450	5	6.1	---	---	---	2600	24	168
31	450	4	4.9	---	---	---	2920	36	284
TOTAL	23340	---	503.7	9712	---	105.6	62780	---	14605.4

HOUSATONIC RIVER BASIN

01199000 HOUSATONIC RIVER AT FALLS VILLAGE, CT--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980--Continued

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	2750	22	163	1730	17	79	433	7	8.2
2	2340	20	126	1430	10	39	424	8	9.2
3	2080	17	95	1140	7	22	404	8	8.7
4	2180	19	114	1160	6	19	626	7	12
5	2650	34	243	1010	8	22	391	4	4.2
6	2530	27	184	909	9	22	462	5	6.2
7	2230	20	120	950	7	18	497	6	8.1
8	1960	18	95	1060	8	23	424	5	5.7
9	1920	18	97	1020	9	25	493	6	8.0
10	4740	190	2370	957	12	31	425	7	8.0
11	5770	197	3070	935	15	38	487	6	7.9
12	5600	137	2060	908	10	25	473	7	8.9
13	4820	133	1730	887	6	14	427	10	12
14	3840	62	643	1040	7	20	389	9	9.5
15	3420	45	416	1160	7	22	301	7	5.7
16	3110	48	403	891	6	14	440	7	8.3
17	2720	39	286	1040	6	17	401	7	7.6
18	2320	18	113	778	7	15	589	6	9.5
19	2060	18	100	781	11	23	109	6	1.8
20	1870	25	126	837	13	29	279	6	4.5
21	1760	23	109	863	15	35	210	7	4.0
22	1540	13	54	844	15	34	271	8	5.9
23	1500	10	40	805	10	22	312	8	6.7
24	1400	10	38	695	7	13	292	8	6.3
25	1340	10	36	580	9	14	242	7	4.6
26	1320	9	32	553	10	15	270	7	5.1
27	1190	8	26	480	9	12	301	7	5.7
28	1410	9	34	402	8	8.7	258	7	4.9
29	1650	18	80	438	8	9.5	372	7	7.0
30	1760	18	86	440	9	11	1110	20	68
31	---	---	---	423	8	9.1	---	---	---
TOTAL	75780	---	13089	27146	---	700.3	12112	---	272.2

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	1290	21	73	277	8	6.0	161	6	2.6
2	903	15	37	200	7	3.8	168	5	2.3
3	655	12	21	329	9	8.0	178	5	2.4
4	442	10	12	254	8	5.5	172	6	2.8
5	519	9	13	95	8	2.1	168	5	2.3
6	478	9	12	388	10	10	170	5	2.3
7	332	10	9.0	317	9	7.7	184	5	2.5
8	380	12	12	277	8	6.0	170	6	2.8
9	328	12	11	246	6	4.0	152	6	2.5
10	338	9	8.2	178	6	2.9	144	5	1.9
11	347	11	10	166	5	2.2	55	3	.45
12	363	12	12	271	7	5.1	39	2	.21
13	328	9	8.0	271	7	5.1	37	2	.20
14	374	9	9.1	243	7	4.6	39	2	.21
15	308	8	6.7	285	8	6.2	91	2	.49
16	306	8	6.6	210	8	4.5	154	4	1.7
17	265	8	5.7	125	8	2.7	180	4	1.9
18	247	7	4.7	534	8	12	385	4	4.2
19	251	7	4.7	218	8	4.7	200	4	2.2
20	136	9	3.3	214	9	5.2	194	4	2.1
21	236	10	6.4	217	9	5.3	232	3	1.9
22	305	8	6.6	206	9	5.0	229	3	1.9
23	311	7	5.9	199	9	4.8	209	2	1.1
24	386	7	7.3	192	9	4.7	190	2	1.0
25	276	6	4.5	184	8	4.0	190	2	1.0
26	319	6	5.2	176	8	3.8	146	2	.79
27	175	5	2.4	172	8	3.7	105	1	.28
28	211	7	4.0	171	7	3.2	149	2	.80
29	315	9	7.7	168	7	3.2	188	5	2.5
30	180	6	2.9	166	6	2.7	229	4	2.5
31	176	4	1.9	165	6	2.7	---	---	---
TOTAL	11480	---	333.8	7114	---	151.4	4908	---	51.83
YEAR	357318		37885.73						

HOUSATONIC RIVER BASIN

01200500 HOUSATONIC RIVER AT GAYLORDSVILLE, CT--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 to SEPTEMBER 1980

DATE	TIME	AROCLOR DISSOLVED 1016 PCB SERIES (UG/L)	AROCLOR TOTAL 1016 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1221 PCB SERIES (UG/L)	AROCLOR TOTAL 1221 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1232 PCB SERIES (UG/L)	AROCLOR TOTAL 1232 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1242 PCB SERIES (UG/L)
OCT								
04...	1500	--	0.0	--	0.0	--	0.0	--
NOV								
27...	1250	0.0	0 0	0.0	0.0	0.0	0.0	0.0
MAR								
18...	1100	0.0	0.0	0.1	0.0	0.0	0.0	0.0
18...	1200	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18...	1300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18...	1400	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18...	1500	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	1040	0.0	0.0	0.0	0.0	0.0	0.0	0.0
APR								
04...	1315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10...	1045	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10...	1300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10...	1500	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JUN								
30...	1245	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	AROCLOR TOTAL 1242 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1248 PCB SERIES (UG/L)	AROCLOR TOTAL 1248 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1254 PCB SERIES (UG/L)	AROCLOR TOTAL 1254 PCB SERIES (UG/L)	AROCLOR DISSOLVED 1260 PCB SERIES (UG/L)	AROCLOR TOTAL 1260 PCB SERIES (UG/L)
OCT							
04...	0.0	--	0.0	--	0.1	--	0.0
NOV							
27...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAR							
18...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22...	0.0	0.0	0.0	0.0	0.0	0.0	0.1
APR							
04...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10...	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JUN							
30...	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SUSPENDED-SEDIMENT MEASUREMENTS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV						MAR					
27...	1250	3780	43	439	81	22...	0800	14400	386	15000	72
MAR						22...	1030	14800	870	34800	43
18...	0730	3050	160	1320	86	22...	1500	15400	414	17200	67
18...	1030	3390	321	2940	32						
18...	1500	4930	208	2770	82						

HOUSATONIC RIVER BASIN

01200500 HOUSATONIC RIVER AT GAYLORDSVILLE, CT--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	3230	---	---	4190	18	204	3390	30	275
2	3190	---	---	3470	16	150	2890	27	211
3	3310	---	---	2970	16	128	2500	24	162
4	3300	12	107	2940	16	127	2260	23	140
5	3210	12	104	2770	16	120	2070	22	123
6	3100	12	100	2530	15	102	2010	22	119
7	2870	12	93	2320	12	75	1950	22	116
8	2640	12	86	2090	10	56	1730	22	103
9	2620	12	85	1920	8	41	1580	19	81
10	3130	15	127	1840	8	40	1360	18	66
11	3300	14	125	1690	10	46	1570	21	93
12	3050	12	99	1520	10	41	1850	26	130
13	2880	10	78	1540	11	46	1800	19	92
14	3250	16	142	1750	11	52	1560	13	55
15	4100	19	214	2090	11	62	1360	8	29
16	4110	13	144	1840	11	55	1140	6	18
17	4180	14	158	1620	11	48	1060	6	17
18	3930	14	149	1430	11	42	1080	8	23
19	3540	14	134	1390	11	41	902	7	17
20	3100	12	100	1370	10	37	881	7	17
21	2800	11	83	1290	10	35	750	7	14
22	2570	10	69	1180	10	32	803	7	15
23	2380	9	58	1220	14	46	774	7	15
24	2180	9	53	2390	30	224	669	7	13
25	2030	9	49	7340	145	2900	685	6	11
26	2030	10	58	9180	132	3270	672	6	11
27	3110	18	150	8140	95	2090	652	11	19
28	3860	20	208	7240	74	1440	706	11	21
29	4970	36	479	6750	62	1130	395	6	6.4
30	4770	25	322	5090	38	522	673	7	13
31	---	---	---	4030	33	359	---	---	---
TOTAL	96740	---	3574	97130	---	13561	41722	---	2025.4

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	511	10	14	433	18	21	620	8	13
2	706	12	23	506	18	25	539	8	12
3	747	13	26	419	17	19	499	8	11
4	737	11	22	437	16	19	506	8	11
5	678	10	18	413	16	18	479	8	10
6	554	9	13	468	16	20	785	36	96
7	561	8	12	451	15	18	1740	37	170
8	526	8	11	288	12	9.3	2310	33	206
9	498	7	9.4	330	13	12	1970	24	128
10	436	6	7.1	339	11	10	1460	18	71
11	486	6	7.9	475	18	23	1120	15	45
12	428	6	6.9	714	20	39	891	11	26
13	446	6	7.2	1170	26	82	671	9	16
14	364	6	5.9	987	22	59	466	8	10
15	475	5	6.4	911	19	47	627	7	12
16	425	5	5.7	723	16	31	657	7	12
17	416	4	4.5	590	13	21	687	8	15
18	523	7	9.9	534	15	22	575	8	12
19	747	12	24	653	15	26	602	9	15
20	742	14	28	686	15	28	496	9	12
21	641	15	26	664	14	25	606	12	20
22	434	14	16	524	14	20	1320	18	70
23	478	14	18	528	13	19	2100	26	147
24	683	17	31	443	13	16	1840	16	79
25	586	17	27	478	12	15	1380	18	67
26	418	15	17	460	10	12	1220	26	86
27	559	16	24	623	9	15	1000	16	43
28	552	16	24	550	7	10	938	14	35
29	575	17	26	617	9	15	1070	10	29
30	599	17	27	594	9	14	1520	18	73
31	465	18	23	637	9	15	---	---	---
TOTAL	16996	---	520.9	17645	---	725.3	30694	---	1552

HOUSATONIC RIVER BASIN

01200500 HOUSATONIC RIVER AT GAYLORDSVILLE, CT--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	1630	25	110	1110	7	21	2690	11	80
2	2500	31	209	1080	8	23	2300	10	62
3	3180	52	446	1810	23	112	2060	8	44
4	4000	70	756	2760	14	104	1820	7	34
5	3980	53	570	2470	13	87	1750	7	33
6	3980	44	473	2090	12	68	1730	7	33
7	3470	34	319	1780	8	38	2060	6	33
8	2820	25	190	1590	8	34	2160	5	29
9	2490	17	114	1460	8	32	1900	4	21
10	2590	15	105	1570	9	38	1710	3	14
11	2690	12	87	2030	11	60	1550	3	13
12	2630	12	85	2140	10	58	1540	3	12
13	2640	12	86	2060	9	50	1530	2	8.3
14	2480	12	80	1930	9	47	1550	2	8.4
15	2240	12	73	1890	9	46	1460	2	7.9
16	2030	12	66	1790	8	39	1400	2	7.6
17	1810	12	59	1640	7	31	1630	2	8.8
18	1670	12	54	1520	6	25	1570	3	13
19	1510	11	45	1580	5	21	1290	2	7.0
20	1400	10	38	1410	5	19	1400	2	7.6
21	1340	9	33	1450	5	20	1300	2	7.0
22	1350	8	29	1320	5	18	1300	2	7.0
23	1280	7	24	1310	6	21	1360	2	7.3
24	1260	7	24	1320	6	21	1420	2	7.7
25	1250	8	27	1290	6	21	2250	17	103
26	1250	7	24	1840	16	79	3250	11	97
27	1190	8	26	3930	46	488	3190	9	78
28	1090	6	18	4240	33	378	2780	3	23
29	1220	6	20	3770	21	214	2220	2	12
30	1130	7	21	3130	13	110	2000	2	11
31	1120	6	18	---	---	---	1860	2	10
TOTAL	65220	---	4229	59310	---	2323	58030	---	839.6

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	1690	2	9.1	844	3	6.8	500	7	9.5
2	1620	2	8.7	667	3	5.4	455	6	7.4
3	1540	2	8.3	596	3	4.8	400	6	6.5
4	1380	2	7.5	570	3	4.6	541	6	8.8
5	1280	2	6.9	702	2	3.8	415	6	6.7
6	1200	2	6.5	581	2	3.1	426	5	5.8
7	1160	2	6.3	664	2	3.6	530	4	5.7
8	1150	2	6.2	438	2	2.4	969	11	29
9	1110	2	6.0	619	2	3.3	1650	36	160
10	1110	2	6.0	619	2	3.3	1350	14	51
11	1010	3	8.2	449	2	2.4	2000	29	157
12	2750	44	327	588	2	3.2	1890	43	219
13	2160	15	87	469	4	5.1	1460	15	59
14	1900	9	46	474	4	5.1	1160	10	31
15	1760	7	33	594	4	6.4	1100	7	21
16	1560	6	25	461	5	6.2	887	5	12
17	1470	6	24	612	6	9.9	851	5	11
18	1400	5	19	635	7	12	3790	189	1930
19	1300	5	18	591	8	13	5300	115	1650
20	1310	5	18	572	8	12	4150	58	650
21	1230	5	17	609	8	13	4460	46	554
22	1140	5	15	547	8	12	14400	419	16300
23	1130	5	15	659	8	14	11200	145	4380
24	1040	4	11	577	8	12	9470	110	2810
25	887	4	9.6	671	8	14	7940	77	1650
26	811	4	8.8	668	8	14	6240	51	859
27	921	4	9.9	584	8	13	4990	42	566
28	883	4	9.5	510	8	11	4180	28	316
29	849	4	9.2	611	8	13	3840	17	176
30	737	4	8.0	---	---	---	4460	26	313
31	723	3	5.9	---	---	---	4740	28	358
TOTAL	40211	---	795.6	17181	---	232.4	105744	---	33312.4

HOUSATONIC RIVER BASIN

01200500 HOUSATONIC RIVER AT GAYLORDSVILLE, CT--Continued

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980--Continued

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	4440	22	264	2500	12	81	608	8	13
2	3920	19	201	2240	12	73	695	8	15
3	3480	16	150	1950	12	63	666	8	14
4	3790	22	225	1780	11	53	759	8	16
5	4430	34	407	1670	11	50	719	9	17
6	4060	24	263	1460	10	39	563	9	14
7	3640	18	177	1470	10	40	833	9	20
8	3250	14	123	1560	10	42	826	8	18
9	3520	20	190	1650	9	40	761	7	14
10	9190	119	2950	1440	8	31	743	7	14
11	9360	132	3340	1370	8	30	679	8	15
12	8330	94	2110	1450	8	31	692	7	13
13	7180	71	1380	1370	8	30	635	5	8.6
14	5880	45	714	1480	9	36	549	4	5.9
15	5750	42	652	1590	9	39	542	4	5.9
16	5100	29	399	1510	9	37	745	4	8.0
17	4420	22	263	1340	10	36	680	7	13
18	3860	18	188	1280	10	35	733	7	14
19	3400	16	147	1120	10	30	525	8	11
20	3110	15	126	1190	10	32	553	8	12
21	2810	12	91	1300	10	35	561	6	9.1
22	2510	11	75	1310	10	35	355	6	5.8
23	2260	9	55	1240	10	33	364	7	6.9
24	2200	8	48	1080	9	26	602	5	8.1
25	2100	8	45	1040	9	25	435	5	5.9
26	2100	9	51	780	10	21	265	7	5.0
27	2000	10	54	880	10	24	446	8	9.6
28	2300	16	99	603	9	15	396	8	8.6
29	2500	23	155	673	8	15	564	9	14
30	2800	13	98	712	9	17	1450	30	117
31	---	---	---	612	8	13	---	---	---
TOTAL	123690	---	15040	41650	---	1107	18944	---	451.4

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	1750	27	128	370	7	7.0	255	3	2.1
2	1310	18	64	318	6	5.2	341	3	2.8
3	1100	12	36	409	5	5.5	209	3	1.7
4	816	10	22	604	5	8.2	245	3	2.0
5	653	9	16	353	6	5.7	264	3	2.1
6	959	9	23	419	6	6.8	268	3	2.2
7	620	11	18	439	6	7.1	254	4	2.7
8	583	10	16	430	6	7.0	290	4	3.1
9	614	10	17	411	6	6.7	257	3	2.1
10	544	10	15	336	7	6.4	270	3	2.2
11	541	9	13	297	7	5.6	250	4	2.7
12	506	9	12	342	7	6.5	73	5	.99
13	469	9	11	378	7	7.1	73	5	.99
14	587	9	14	376	7	7.1	73	4	.79
15	468	8	10	443	7	8.4	73	3	.59
16	463	7	8.8	391	7	7.4	73	3	.59
17	406	7	7.7	276	6	4.5	374	4	4.0
18	387	7	7.3	311	6	5.0	401	3	3.2
19	390	7	7.4	645	7	12	507	3	4.1
20	329	7	6.2	216	6	3.5	291	4	3.1
21	263	6	4.3	302	6	4.9	261	5	3.5
22	394	6	6.4	356	6	5.8	417	6	6.8
23	518	5	7.0	323	5	4.4	336	7	6.4
24	538	5	7.3	237	5	3.2	258	7	4.9
25	446	5	6.0	273	5	3.7	288	7	5.4
26	386	6	6.3	234	5	3.2	298	7	5.6
27	421	6	6.8	265	5	3.6	119	7	2.2
28	288	5	3.9	394	5	5.3	177	6	2.9
29	361	6	5.8	229	5	3.1	296	6	4.8
30	445	7	8.4	280	4	3.0	332	6	5.4
31	294	8	6.4	196	4	2.1	---	---	---
TOTAL	17849	---	521.0	10853	---	175.0	7623	---	91.95
YEAR	566305		59118.35						